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COMPLETE RESULTS WITH ISOSTATIC REDUCTION

INTERPRETATION OF THE RESULTS

BY

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To the anomalies represented in the profiles of Plates I-VI and in the Maps the indirect isostatic reduction has not been applied; as the corresponding column of the table shows, this brings about a difference from the table of only a few milligals.

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The profiles have been drawn by Mr. A. VAN DER ZWEEP, the coloured maps by Mr. J. W. BLOEM, the three maps of the Indonesian Archipelago and most of the figures by Mr. J. W. BLOKHUIS and the maps of the North Atlantic and of fig. 9 by Mr. J. VAN DYK.

Short Summary.

This publication contains a list of the complete results of the gravity expeditions at sea of the Netherlands Geodetic Commission up to the year 1938, i.e. of 844 stations, isostatically reduced according to the Hayford-Bowie reduction and to the Airy reduction for local compensation and for five degrees of regionality of the compensation, for crustal thicknesses *T* of 20 km and of 30 km.

It further contains an attempt at an interpretation of these results. Chapter II gives a discussion of the gravity results in the Indonesian Archipelago in connection with other geophysical problems as those of the development of folded mountain-ranges and of the sinking of deep basins in these areas. Readers not familiar with mathematical formulas may prefer to skip § 5 of this chapter for a first reading: § 6 contains a summary of its results. In Chapter III the results over and near volcanic islands are dealt with and in Chapter IV those over the continental margins and over some oceanic features as the Romanche Deep, the Bromley Plateau, the Walvis Ridge and the Madagascar Ridge. Chapter V discusses the results obtained in the North Atlantic and in the profiles observed in the South Atlantic, the Indian Ocean and the Pacific. A short discussion of the meaning of wide-spread anomaly-fields closes this chapter.

A more detailed summary is found in chapter I, § 1.

CHAPTER 1.

The isostatic reduction of the gravity results.

§ 1. Introduction and Summary.

In volume II of "Gravity Expeditions at Sea", 1934, the writer has published a study of the gravity results at sea then available as far as they had been obtained by the expeditions of the Netherlands Geodetic Commission. Of the 486 stations nearly three hundred were located in the Netherlands East Indies and the remainder had been observed during the expeditions of Hr. Ms. K II and K XI between Holland and the East Indies, of Hr. Ms. K XIII on the route via Panama to the East Indies and during the voyage of Hr. Ms. O 13 round the Azores and Madeira. As it has been set forth in chapter III of that report the gravity results had been isostatically reduced according to three different methods, the HAYFORD-BOWIE method with the usual value for the depth of compensation of 113.7 km, the AIRY-HEISKANEN method with a normal thickness of the crust of 40 km, and the regional reduction method with a crustal thickness of 25 km as it has been published by the writer in the provisional tables of the Bulletin Géodésique No. 29 (1930). The results of these reductions have been given in the table on page 89 e.s. of that publication.

Since 1934 the Netherlands Geodetic Commission in collaboration with the Netherlands Navy has organized new expeditions, i.e. the voyage of Hr. Ms. K XVIII via Buenos Ayres, Cape Town and Fremantle to Java, the voyage of Hr. Ms. O XVI to Washington and back again, the return voyage of Hr. Ms. O XII from Curaçao and the short trip towards the end of the Channel of Hr. Ms. O XIII; in total 388 stations have been occupied of which thirty on land. A report of these expeditions has been published in volume III of "Gravity Expeditions at Sea", 1941, which contains a list of the stations with the gravity results reduced to sea-level.

The new stations have again been isostatically reduced according to the HAYFORD-BOWIE method with a depth of compensation of 113.7 km. Besides, the entire gravity material, comprising together 874 old and new stations, has been reduced by means of new tables for regional isostatic reductions published by the Netherlands Geodetic Commission in 1941 [1]). In the next paragraph the writer will come back in detail to these tables; they are based on the Airy hypothesis of a floating rigid crust and tables have been made for crustal thicknesses T of 20 km, 30 km and 40 km. For each thickness six different assumptions can be applied, viz local distribution of the compensation or regional spreading of it up to radii of 29.05 km, 58.1 km, 116.2 km, 174.3 km and 232.4 km. The gravity results have been reduced according to these six suppositions and for the values of T of 20 km and of 30 km. The table

[1]) F. A. Vening Meinesz, 1941.

at the end of this publication gives the results of these reductions and so behind each station thirteen isostatic anomalies are mentioned, the HAYFORD-BOWIE anomaly, six anomalies for T = 20 km and six for T = 30 km.

All the isostatic anomalies have also been reduced for the indirect isostatic reduction or BOWIE reduction. This has been done by means of the formulas, tables and maps developed by the writer and published by him in the Bulletin Géodésique, nouvelle série, no. 1.

§ 3 contains a discussion of the methods of reduction in connection with the views about the constitution of the upper layers of the Earth as recently derived from gravimetrical and seismological sources. § 4 deals with some other aspects of the subject of isostasy.

The next chapters give a discussion of the anomalies obtained. These investigations concern as well the results for the old as for the new stations.

Chapter II deals with the Indonesian Archipelago. After a short introduction in § 1, the next § discusses the belts of negative anomalies which are interpreted as the gravity effect of the concentration of crustal matter caused by the pushing together of the crust by the tectonic forces; a great part of this matter must be supposed to bulge downwards, thus replacing subcrustal matter. The relative movement of the crustal blocks on both sides seems everywhere to be the same, viz. in the sense of the arrow on the map. An explanation is needed for the greater shortening of the Earth's crust in the eastern half of the archipelago where we find two belts behind each other than in the western half where only one belt is present. Perhaps this can be accounted for by the fact that the great shortening by the Himalayan tectonic belt does not continue towards the east and that this eastern block of S.E. Asia finds its corresponding shortening in the second Indonesian belt running from East Celebes towards the Philippines.

§ 3 discusses the fields of positive anomalies and points out that part of them may be explained as the effect of the lifting by the belt of negative anomalies of the adjoining areas. For the other fields a study of the deep basins where they often coincide with, seems necessary. § 4 deals with the basins accompanying the negative belt on both sides and interprets their sinking as caused by the partial release of these adjoining belts in consequence of the tectonic belt detaching itself somewhat and rising in response to the tendency towards readjustment of the isostatic balance.

In § 5 the larger basins, as e.g. the Banda basin, are examined. It is shown that their recent formation following with a great time-lag of 15-20 million years on the last great folding period of the tectonic belt, can be explained by the hypothesis of a convection-current having developed because of the cooling of the Earth combined with the slow heating up of the subcrustal layer round the crustal concentration of higher radio-activity in this belt. We may, therefore, suppose it to rise under this belt and to sink below the basin; probably it will stop after about a half turn is made, thus bringing the colder layer brought about by the Earth's cooling below and the warmer layer on top. The current can likewise account for the deep-focus and intermediate earthquakes in the eastern half of the archipelago. It can further explain the fields of positive anomalies as a result of the cooling of the deeper layer caused by this convection process. § 6 gives a final discussion of the positive anomalies in the archipelago.

The last §§ of chapter II deal more in detail with the gravity profiles of the archipelago. § 8 shows how the profiles west of Sumatra correspond to the supposition that the relative movement of the two crustal blocks on both sides of the negative belt has only a small component at right angles to this belt and is mainly parallel to it. The gravity profiles show, besides, the effect of the local compensation of the continental border, coinciding with this coast.

In § 9 the profiles south of Java are discussed. They show much stronger negative anomalies in the tectonic belt corresponding to the fact that the component at right angles to this belt of the relative movement of the two crustal blocks is much larger here and likewise, therefore, the subcrustal root formed by the compression. The same is true for the profiles over the smaller Soenda Islands to the east of Java discussed in § 10. In the profiles of § 9 we find evidence of the local compensation of the border of the Asiatic continent corresponding to the abrupt thinning here of the sialic layer but in those of § 10 this effect is probably absent; this points to this area having entirely a continental character. For the Sawoe Sea, north of Timor, this is questionable; this sea may perhaps be considered as originally a continuation of the Indian Ocean.

The cross-section of the belt of negative anomalies is found to be slightly asymmetric in areas where the belt is curved; an explanation of this asymmetry is attemped in § 10.

§ 11 discusses the three gravity profiles over the strongly curved part of the tectonic belt to the east of the Banda Sea. We find here the Weber deep between the outer and the inner arc and an explanation of it is proposed in this § bij supposing it to be caused by the overlapping of the sinking caused by the convection below the basin and the sinking brought about by the rising of the tectonic belt as discussed in § 4.

In § 12 the three profiles over the Mindanao Trough area are examined. The trough seems partly to be caused by the overriding of the ocean-floor by the Philippines block partly perhaps also as the same reaction on the rising of the tectonic belt as mentioned in § 4.

The discussion in § 13 of the profiles over the Yap and Nero deeps can not be otherwise than vague as a single profile over each deep is insufficient for drawing strong conclusions.

Chapter III deals with the results found over and near volcanic islands. In § 1 a discussion is given of the Hawaiian Archipelago and Madeira. For both areas it is found that regional isostatic reduction takes away the high positive values found on the islands and makes them comparable to the results obtained at sea near the islands. Regional compensation can be interpreted as a proof of the presence of a strong rigid crust under the surrounding ocean and so this result points against the possibility of horizontal movements of the kind Wegener has supposed.

§ 2 contains the results for the other volcanic islands where gravity determinations have been made, viz. St. Vincent (Cape Verde Islands), Bermudas, Canary Islands, St. Miguel, Fayal, Mauritius and Tristan da Cunha. These gravity results are less numerous than for the two areas treated of in § 1. With the exception of the Azores and Tristan da Cunha the results all confirm the conclusion obtained for Hawaii and Madeira; for Tristan da Cunha the two available stations do not allow a decision. In the Azores archipelago the results vary but for some of the profiles local compensation or a small degree of regionality seems preferable; it appears likely that this is caused by fault-planes crossing the archipelago which allow a more local adjustment of the isostatic balance.

Chapter IV discusses mainly the results found in profiles over the continental shelves. § 1 gives a summary of 26 profiles; in general the topography of the continental margins seems to be locally compensated. This corresponds to the idea that the margins are marked by a sudden thinning of the upper sialic layer.

In § 2 three profiles are dealt with over the end of the English Channel. Besides the above general effect we find evidence of light sedimentary masses at the edge of the shelf and in the slope which agrees to the seismic results found in BROWNE's recent gravimetric and seismic expedition. § 3 shows the results of a profile west of Lisbon which points to the normal condition of local isostatic compensation. § 4 discusses four profiles on the west coast of Africa; they do not allow definite conclusions.

§ 5 deals with two profiles on the coast of Virginia. The results are abnormal as they appear to indicate regional isostatic compensation. It is likely that this is connected with the seismic results found by EWING which point to a gradual sloping down of the tertiary surface towards the ocean and possibly also with the indications of the old continental area of Appalachia which geologists suppose to have been present here in older periods and to have sunk away.

The four profiles on the westcoast of Mexico and California treated of in § 6 show a striking similarity to those west of Sumatra. Combined with the faults and earthquakes on the continent this seems to indicate a sliding movement of the continental block with regard to the oceanic one with a slight overriding of the latter.

In § 7 a few profiles over topographic features in the Atlantic between West Africa and South America are dealt with. We may mention here only the result over the Romanche Deep where gravity shows regional isostatic compensation of the topography. In view also of the shape of this deep this seems to point to its being a caldeira.

Of the six profiles of § 8 on the eastcoast of South America the two profiles near Rio de Janeiro and to the southwest of it show a similar abnormal behaviour as those on the coast of Virginia; they do not appear to indicate a continental edge near the coast. This is no doubt connected with the submarine plateau present here which thus seems to have a continental character.

In § 9 profiles over the Bromley Plateau, over Tristan da Cunha and over the Walvis Ridge are examined. The two profiles over the Bromley Plateau point to local compensation but one of them is more complicated as it shows a feature that is regionally compensated; this is probably a submarine volcano. The plateau itself seems a sial-block rising to greater elevation than the ocean-floor because of its greater thickness than the normal oceanic sial-layer.

The profile over the Walvis Ridge shows two elevations of which the western one seems regionally compensated and probably therefore of volcanic origin, while the eastern one appears locally compensated. It is also possible that both ridges are regionally compensated with a small radius of regionality; this might be explained by their being effected by crustal shearing along two fault-zones.

Of the four profiles of § 10 on the coast of South Africa the two western ones seem to show normal local compensation; but the two on the southeast coast are more difficult to interpret. A possibility is suggested of this being a coast where shearing occurs in such a way that the Karroo block is more or less pressed down by the block on the oceanic side. More data are needed, however, for making this conclusion acceptable.

The crossing of the Madagascar ridge south of this island is dealt with in § 11; the results point towards local isostatic compensation of the topography. The irregular bottom profile to the south east of Mauritius, likewise treated of in this §, points on the contrary to regional compensation and so, possibly, to a volcanic origin of these irregularities.

In § 12 two profiles on the west coast of Australia are discussed. They show surprisingly large negative anomalies. The similarity to the profiles on the westcoast of California and Mexico and to those west of Sumatra seems to point to an analogous phenomenon, viz. an overriding of the continental block over the oceanic one along a fault-zone parallel to the coast of which the fault-escarpment of the Darling Range is possibly a surface expression.

Short reference is made at the end of this chapter to a profile south of Ceylon which points to the normal local compensation of the coastal topography and to an incomplete profile near Socotra which leads to the same conclusion.

A short summary closes the chapter.

Chapter V deals with the gravity results over the oceans in general. § 1 contains a discussion of the values obtained in more than 150 stations in the North Atlantic. Two facts can be stated here. In the first place the prevailing of positive anomalies which seem to show a correlation to the areas of somewhat smaller depth without, however, following all the ridges intersecting this region, and secondly the absence of belts of negative anomalies. The earthquakes can, therefore, not be attributed here to a tectonic activity similar to that in the East Indies and elsewhere in orogenic areas but must probably be due to shear-phenomena along extensive fault-planes which are revealed by a great number of rectilinear ridges, probably mainly of volcanic origin.

Two directions seem to prevail in these ridges, viz. in the azimuths of 40° and 115° East of North. This has led the writer to a hypothesis already published in 1942 and 1947 (Transactions of the American Geophysical Union) about a shift of the poles bringing about a shear-pattern over the whole Earth's crust caused by its adaptation to a new direction of the Earth's flattening.

The gravity anomalies are in harmony with the supposition that in general the ridges follow fault-planes and that they have mainly a volcanic character: some of the profiles show regional isostatic compensation and others local compensation or a small radius of regionality. This behaviour can be explained by the fault-planes allowing occasionally a more local isostatic adjustment than an unbroken crust.

An examination of the different gravity profiles over the Mid-Atlantic Ridge shows that the detailed topography over this ridge is mostly regionally compensated and therefore probably of volcanic origin but the ridge as a whole seems to be locally compensated which points to its being caused by a thickening of the sialic layer.

The fields of positive anomalies already mentioned above are the most difficult to account for. An explanation might perhaps be found in the general tendency of rising magma in the areas where the crust is most dissected as e.g. in the area over the Azores where the largest field of positive anomalies occurs.

In § 2 the following profiles over the other oceans are discussed, a profile from Mar del Plata in the Argentine to Capetown, one from Socotra to N. Sumatra, one to the southeast of Mauritius, one to the west of Australia and one from San Francisco to Guam with its continuation towards the Philippines. A table is added giving the mean isostatic anomaly over a great many oceanic profiles or parts of profiles computed for local and regional compensation.

In the discussion of these profiles the writer does find no foundation for a systematic longitude term in the formula for normal gravity which would point to a flattening of the Earth in the equator-plane.

Attention is drawn to a curious coincidence of the areas where negative anomalies have been found with areas where geologists suppose subsidence. This coincidence may be fortuitous and more surveying is no doubt needed before anything more definite can be stated in this regard. An attempt at an explanation of such a coincidence is, therefore, premature.

As a possible explanation of extensive fields of anomalies the following causes can be mentioned. In the first place areas of deviations of the normal temperature in the Earth; in the second place convection-currents of large dimensions in the subcrustal layer and in the third place volcanic and plutonic activity as suggested above for the Azores area and other areas in the North Atlantic. This list is doubtlessly not complete. It may be remarked that deviations of the geoid from the regular equilibrium spheroid of the Earth must be attributed to such wide-spread mass-disturbances; the effect of smaller mass-anomalies can be neglected for this problem.

This discussion of the gravity results over the oceans in general brings our investigations to a close.

§ 2. The isostatic reduction of the gravity results.

We need not enlarge here on the well-known HAYFORD method of reduction with the usual depth of compensation of 113.7 km. A short description, however, may follow of the more recent tables for local and regional reduction which have likewise been used.

The principle of this reduction is based on the AIRY hypothesis of a rigid crust floating on a denser plastic substratum and bending under the load of the topography in the same way as an elastic plate floating on a liquid bends under the weight of a superimposed load. At the lower surface of the crust the down-bending causes the crustal matter to replace the substratum and it thus brings about a root of mass-deficiency similar to that supposed for the normal AIRY hypothesis for local compensation. The roots, however, are broader in this case and thus the corresponding compensation masses are likewise spread over a larger area than the topography to which they belong. For oceanic areas the crust is supposed to bend upwards under the effect of the mass-deficiency of the ocean-water and so a positive compensation comes into being.

The adopted system of elastic bending has been derived from the solution by HERTZ of the deformation of an infinite elastic plate floating on a denser liquid and loaded by a concentrated force on the surface [1]). The main feature is of course the down-bending of the central part round the load. HERTZ introduces the length l depending in the following way on the elastic properties of the crust and its thickness T:

$$l = \sqrt[4]{\frac{m^2 E T^3}{12\,(m^2 - 1)\,(\vartheta_1 - \vartheta_0)\,g}} \qquad (1)$$

where E = modulus of elasticity,
m = coefficient of Poisson,
ϑ_0 = density of the crust,
ϑ_1 = density of the plastic substratum,

[1]) H. Hertz, Gesammelte Werke, Bd. I, p. 288, 1895.

and finds the maximum down-bending f below the load P to be

$$f = \frac{P}{8(\theta_1 - \theta_0) l^2} \, . \tag{2}$$

The bending curve is given by the following values of the sinking z for different distances x from the force P:

$$\begin{array}{ll} x = 0 & z = f \\ x = l & z = 0.646\, f \\ x = 2\, l & z = 0.258\, f \\ x = 3\, l & z = 0.066\, f \\ x = 3.887\, l & z = 0 \end{array} \tag{3}$$

For greater distance we get waves of small amplitude, quickly diminishing with the distance, and a wave-length of $\pi \sqrt{2}\, l = 4.44\, l$. For simplifying the matter these waves have been neglected and in order to maintain the total volume of the bending root at its true value, the border of the central area has been slightly reduced. Keeping the above figures for z for $x = l$ and for $x = 2\, l$, we obtained the bending curve represented in fig. 1. The value R of x for which z becomes zero has thus been altered to $2.905\, l$.

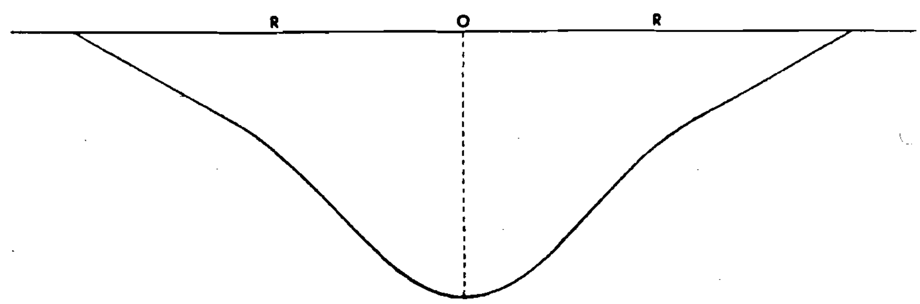

Fig. 1. Bending-curve accepted for the crust under the effect of a concentrated load

The curve of fig. 1 seems acceptable, even if we should not feel too sure that the crust really behaves as a purely elastic plate. In any case the maximum down-bending in the centre has to become zero at some distance away from it and the character of the curve can not deviate much from the adopted one. Neglecting the shallow outer waves of the deformation might well be an even better approximation of the real situation of the crust than taking them into account.

For avoiding great complications we have introduced a second simplification. Instead of assuming the compensation of a column of the topography of small cross-section to have the shape of the bending root at the lower surface of the crust and a density of $\theta_1 - \theta_0$, we bring this compensation about by spreading out the local compensation of this topographic element, supposed according to the Airy-Heiskanen system, in a purely horizontal sense and in such a way that the density of the compensation is everywhere proportional to the ordinate z of the bending curve. This assumption brings about the same amount of compensation in every vertical column as the first one but it slightly alters its position in a vertical sense. The writer has adopted it because it makes it possible to find the compensation of the complete topography by adding together the compensations of all the topographic elements while for the first supposition a simple addition would lead to a physical impossibility. It is, moreover, easy to see that for a topography of the same elevation over a great area our assumption gives a compensation identical to that given by our original bending hypothesis: in this case not only the amount of compensation in every column is the same but also its position in a vertical sense. So the writer thinks we may adopt the assumption without being afraid of a too great deviation from the intended mass-distribution.

We can not predict a figure for the length l as we do not know enough of the physical properties of the rigid crust for deriving a reliable value. So we can not make an estimate for the radius R of the area over which the compensation of a topographic element is to be spread. The writer has, therefore, made tables for five values of l and R in order to enable us to try different values and to investigate which one best fits the gravity results in a certain area; we may thus obtain some light on the crustal properties. Besides those five values for l and R the value zero has also been taken corresponding to local compensation; these columns of the tables, therefore, coincide with those of Heiskanen or Cassinis for local compensation.

So the tables have been made for the following values of l and R:

$$\begin{aligned} l &= 0 \text{ km}, & R &= 0 \text{ km}, \\ l &= 10 \text{ km}, & R &= 29.05 \text{ km}, \\ l &= 20 \text{ km}, & R &= 58.1 \text{ km}, \\ l &= 40 \text{ km}, & R &= 116.2 \text{ km}, \\ l &= 60 \text{ km}, & R &= 174.3 \text{ km}, \\ l &= 80 \text{ km}, & R &= 232.4 \text{ km}, \end{aligned} \tag{4}$$

The largest value has been so chosen that it exceeds what we may expect to occur. We may make an estimate of this by deriving the wavelength of the waves that can originate in the crust by tangential pressure. As the reader may find on page 70 e.s. of this publication, this wave-length is a function of the same elastic and other properties of the crust that determine the value of l and so this wave-length and l are related. According to the result there obtained, a value of l of 80 km corresponds to a wave-length of about 500 km and the writer does not think that the topography of the Earth's surface shows any larger periods although perhaps some topographic waves come near to it. So, probably, the range of values for R is sufficient for our purpose, although there is a slight possibility that still larger values may prove to be required.

Two sets of tables have been derived both based on the distribution of zones of Hayford as afterwards modified by the division of the zones C, D, E, F and O in two parts. The first set, published in the Bulletin Géodésique No. 63 under the title: ,,Tables fondamentales pour la réduction isostatique régionale", has been based on the same principle as the well-known fundamental tables of Cassinis [1]). The first column, for local compensation, is identical with those tables and gives the attraction by a column of unit density reaching from sea-level to a depth H; the tables give the values for all whole numbers of kilometers from $H = 0$ to $H = 60$ km. The other columns give the attraction of the same masses but spread out horizontally up to a radius R in such a way that the decrease of density from the centre to the edge is given by the curve of fig. 1. The values of R for the different columns have been mentioned in the above list. The computation of these tables has been laborious; together the work has taken nearly three years although the accuracy of the values does not exceed one part on a thousand. Details about the methods applied and about the formulas may be

1) G. Cassinis. P. Dore, S. Ballarin, 1937.

found in „Fundamental tables for regional isostatic reduction of gravity values", Verh. Kon. Ned. Akad. v. Wet., 1st Sect. XVII, 3.

The second set of tables [1]) was made for practical use and has been derived from the first set. It is more directly based on the hypothesis of AIRY of a rigid crust floating on a denser substratum. Adopting the same values HEISKANEN has taken for his tables, the densities of the crust and the substratum have been chosen at 2.67 and 3.27. The compensation has been adapted to the assumption of equality of pressure on surfaces underlying the crust and not on equality of mass. So they correspond to Heiskanen's tables of 1931 [2]) but they differ slightly from those of 1938 [3]) based on the latter assumption. They consist of three sets of tables, one for a value of the crustal thickness T of 20 km, one for $T = 30$ km and one for $T = 40$ km. The first column of each table refers to local compensation and is identical with the corresponding table of Heiskanen, the other five columns assume the compensation to be spread out as described for the fundamental tables. Details of the tables may be found in the publication.

As it has already been mentioned in the preceding § the entire gravity material obtained by the expeditions of the Netherlands Geodetic Commission has been reduced by means of these tables. The reductions have been made for $T = 20$ km and for $T = 30$ km. In § 3 we shall discuss the possibilities covered by this choice. For the reductions we have used all the columns of the tables and so we dispose of the anomalies for local Airy isostasy as well as for five degrees of regional compensation. The table at the end of this publication contains the results. On the left page, behind the data for each station of position and depth we find the free-air anomaly, the HAYFORD anomaly and then in the first line the AIRY anomalies for $T = 30$ km and in the second line for $T = 20$ km. The right page gives the effect of the topography for the zones $A - O_2$ and then for each reduction the indirect effect, the effect of the compensation for the zones $A - O_2$ and that of the topography and the compensation combined for the zones $18 - 1$ for the 388 new stations. An appendix providing the elevations and the figures of the Hayford reduction for each zone will be sent on special request.

To all the results the indirect isostatic or BOWIE reduction has been applied which, as it is well known, takes into account that the removal of the masses of the topography and the compensation causes a slight shift of the geoid. Starting from the assumption that for the new Earth obtained by the reduction the masses between the new geoid and the original one are not isostatically compensated and that the zero and first order harmonic terms of the isostatic reduction have to be removed, the writer has developed formulas, tables and maps [4]) for the application of this small reduction by means of which the above reduction of the gravity material has been made. The tables give a slightly different result from those of LAMBERT and DARLING [5]) which are based on the supposition that the masses between both geoids are compensated, but the differences are small; they do not appreciably exceed 3 milligal for the HAYFORD reduction and 1 milligal for the local and regional reduction with $T = 30$ km or $T = 20$ km.

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1) F. A. Vening Meinesz, 1941.
2) W. Heiskanen, 1931.
3) W. Heiskanen, 1938.
4) F. A. Vening Meinesz, 1946.
5) W. D. Lambert and F. W. Darling, 1936.

§ 3. The reductions for $T = 20$ km and $T = 30$ km and the constitution of the Earth's crust.

It is likely that the constitution of the Earth's crust is more complicated than is given by the supposition of only one layer of a thickness of 20 or 30 km. Probably there are at least two discontinuity surfaces, at 10-15 km and at 25-40 km depth. The upper layer consisting of granite is, moreover, in many places covered by layers of sediments; the second layer, called by JEFFREYS the „intermediate layer" and consisting according to him of tachylite, may perhaps also be more complicated. GUTENBERG thinks at least that the seismic results in California point to discontinuity surfaces at 14 km, 25 km, 31 km and 39 km depth [1]). In 1937 JEFFREYS derived two surfaces at 17 km and 26 km depth [2]).

In 1941 the writer shortly discussed the consequences of this greater number of surfaces of discontinuity for the theory and practice of the isostatic reductions in "Tables for regional and local isostatic reduction", § 1, p. 10 e.s. [3]). The first problem is to determine the deformations these surfaces underwent in special topographic features. Two possibilities can be supposed. If the topography is formed by a superimposed load or by the removal of mass at the surface we may assume that all surfaces are deformed in the same way. In case the crust is unbroken these deformations have a bending character of the same type as has been mentioned in connection with regional isostatic reduction.

If, on the other hand, the topography has been caused by the lateral compression by horizontal stresses of the whole crust we may suppose as a first attempt that the thickening of all the layers is procentually the same, the deformations of the different discontinuity surfaces are then no longer equal. If we assume the establishing of local isostatic equilibrium of the crust as a whole and if we know the jumps in density Δ_1, Δ_2, ... etc at those surfaces, we can derive the deformations. If the depths of the surfaces are given by z_1 z_2 .... etc. and if

$$M = \Sigma z \Delta \tag{5}$$

we find a deformation h_z of a surface at a depth z of

$$h_z = -\left(3.27 \frac{z}{M} - 1\right) h \tag{6}$$

where h is the elevation of the topography at the surface and 3.27 the subcrustal density. This deformation gives of course rise to a compensating mass over this height h_z and of a density equalling the jump in density Δ at this surface.

In reality the pushing together of the Earth's crust will no doubt lead to a more complicated distribution of the matter of the different layers in the zone of compression.

If we dispose of tables for isostatic reduction for values of T equalling the different values of z of the surfaces of discontinuity we can derive the reductions for both cases mentioned; we can do so too by using the general tables of the "Bulletin Géodésique", no. 63. The writer, however, proposes to simplify this procedure by an approximation which seems reasonable, i.e. by substituting to it the normal Airy reduction of the local or

1) Gutenberg. 1932.
2) Jeffreys. 1937.
3) Vening Meinesz, 1941.

regional kind with only one crustal layer of a thickness T chosen in such a way that the centre of gravity of the resulting compensation coincides with the centre of gravity of the compensating masses according to the discontinuity surfaces as assumed for the crust. Supposing these centres of gravity to coincide with the depths z of these surfaces — which of course means another, rather rough, approximation — we obtain for a surface density of the topography of 2.67

$$T = \frac{0.375}{h} \Sigma z h_z \Delta \tag{7}$$

We may remark here that in making suppositions about the discontinuity surfaces in the crust we need not assume that the depth where plasticity begins coincides with the deepest of these surfaces; it may also be larger. There is no need to go deeper in this matter here.

We may now apply our proposed approximation to a few simple suppositions about the crust. Beginning by that of Jeffreys of 1937 who assumes two discontinuity surfaces at 17 km and 26 depth, we shall suppose the density jumps to be 0.4 resp. 0.2 and we find for the two cases of equal deformations resp. lateral crustal compression:

A. JEFFREYS 1937, $z_1 = 17$ km, $z_2 = 26$ km, $\Delta_1 = 0.4$, $\Delta_2 = 0.2$.

I. *Equal deformations.*

As

$$h_z = \frac{2{,}67}{0.6} h = 4.45\, h$$

we find

$$T = 1.667\, \Sigma\, z\, \Delta = 20 \text{ km} \tag{8a}$$

For ocean-depths larger than 4550 m the upper crustal layer disappears.

II. *Lateral crustal compression.*

By means of equations (6) and (7) we obtain

$$T = 21.13 \text{ km} \tag{8b}$$

We come to the conclusion that for both cases the reduction with $T = 20$ km is an acceptable approximation.

We shall now deal with a second supposition of two crustal layers, both thicker than in the former case. The lower reaches to 40 km, i.e. to a depth about equal to the deepest discontinuity given by GUTENBERG for California and the upper layer to another of Gutenberg's depths.

B. 2nd Supposition, $z_1 = 25$ km, $z_2 = 40$ km, $\Delta_1 = 0.4$, $\Delta_2 = 0.2$.

I. *Equal deformations.*

We find

$$T = 1.667\, z\, \Delta = 30 \text{ km} \tag{9a}$$

The upper layer disappears for ocean-depths greater than 6690 km.

II. *Lateral crustal compression.*

Formulas 6 and 7 combined give

$$T = 32.08 \text{ km} \tag{9b}$$

For both cases $T = 30$ km is an acceptable approximation.

For the two suppositions A and B we may apply the two sets of isostatic anomalies for $T = 20$ km and $T = 30$ km given in this publication.

It is easy to extend the number of suppositions approximately fulfilling the condition that one of the two sets of anomalies of this publication is valid for it or that the corresponding anomalies can with sufficient approximation be derived from these two sets by interpolation.

§ 4. Discussions and investigations on the subject of isostasy.

1. *General considerations, differential reductions.*

In general we shall base the investigations of the gravity anomalies obtained at sea on the results of the local and regional isostatic reduction founded on the Airy principle of a rigid crust floating on a denser substratum. It is true that we might imagine part of the topography at the Earth's surface to have originated because of changes of density in the lower layers, e.g. by changes of state, of temperature or of chemical constitution and that if these changes had occurred over 113.7 km depth the Hayford system of isostatic reduction would give the best approximation, but it does not seem probable that this could have occurred on a great scale and so we shall not further discuss it.

We can not expect the isostatic compensation of all the topographic features to have the same local or regional character. As we shall e.g. see in chapter III the volcanic islands appear in general to be regionally compensated while the steep slopes of the continental coasts show a more local type. It is clear that the way of compensation must depend on the manner the topography came into being and this must be hugely different for the different features. If it originated without disturbing the cohesion of the whole crust as e.g. we may expect in most cases for erosional and volcanic features, it is probable that the isostatic compensation is regional but the extent of the regionality may differ according to the properties of the crust. If the cohesion of the crust has been disturbed as it is probably the case for folded mountain ranges and also for features which we might suppose to have originated through block-faulting of the whole rigid crust, part of the topography at least must be expected to be locally compensated. The same must be true for the continental coasts if we are right in our hypothesis to be examined in chapter IV that this main topographic feature of the Earth's surface has come into being because somehow the granitic layer of the continents disappears suddenly at the continental edges or becomes much thinner there. So all kinds of conditions have prevailed and the type of isostatic compensation must differ accordingly.

As a consequence of this we shall have to make maps and profiles of the gravity anomalies for all different suppositions for allowing us to investigate which system best smoothes out the anomalies over some special feature which we may surmise to have originated by a single cause. In areas, however, where features of different origin occur side by side and where we may expect different systems of compensations, it will not always be possible thus to arrive at conclusions because of the effects of the reductions overlapping each other. We then shall have to make the reductions in a more complicated way. We may do it by marking on the maps used for estimating the elevations of the zones to which part of the topography we want to apply local compensation and to which parts regional compensation according to different degrees of regionality. By means of the corresponding tables we may then separately determine the effect of the compensation for each part of the topography and then add them together. This is a complicated procedure taking much time.

We can also do it by reducing according to one of the systems and then apply the difference of the reductions for those parts of the topography where we wish to use another system. For these parts we then have the advantage of a somewhat simpler reduction because for the same value of the crustal thickness T the difference of local and regional reductions becomes negligible at relatively small distances from the stations. So this differential reduction is easier to make than the ordinary isostatic reduction.

As we have mentioned the local reduction is usually preferable for the topography represented by the steep slopes at the edges of the continents, while most of the other topographic features are more or less regionally compensated. So in many cases it seems indicated to reduce according to a regional system and to apply a differential reduction to change the reduction for the coastal slope topography into the local system. As this last topography has usually a more or less two dimensional character being about constant in a sense parallel to the coast-line, the writer thought it would be worth while to make differential tables of a two-dimensional type for making it possible to do this in a simple way. These tables have been made for a crustal thickness T of 30 km. They have been published in the Bulletin Géodésique, nouvelle série No. 2 (1946) where two applications have been given of which one may be mentioned here, the differential reduction for a continental slope of a depth of 4878 m extending over a horizontal distance of 20 km. The results are shown by fig. 2.

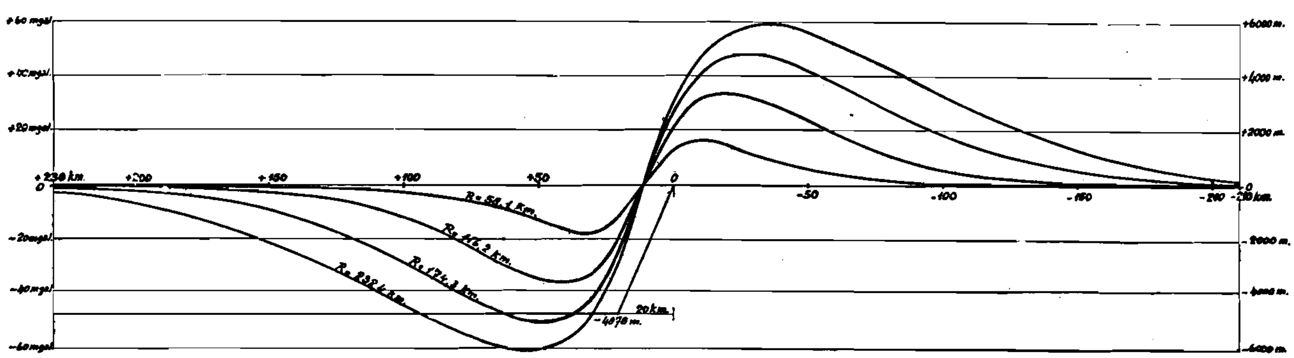

Fig. 2. Differences of local isostatic anomalies and regional isostatic anomalies ($T = 30$ km) near a continental margin (sea-depth = 4878 m.).

The curves give the differences between the isostatic reductions for the regional and the local methods for $T = 30$ km and so we may also interpret them as the differences between the anomalies reduced according to local isostatic compensation for $T = 30$ km minus those reduced according to regional compensation for a radius of distribution R and the same value of T. Examining the figure we see that indeed the differences sink to small values for relatively small distances from the continental slope; at a distance R from the middle of the slope they are already less than five milligal. They show a bulge of negative values at sea and a similar bulge of positive values on land and so we see that regional reduction increases the anomalies at sea near the slope and diminishes those on land. The curves attain their maximum and minimum values at distances from the middle of the slope of about $3\sqrt{R}$ and the absolute values of the maxima and the minima are slightly more than $\frac{1}{4}R$; these last values are no doubt about proportional to the height of the continental slope.

We shall use these results and curves in the discussions of the gravity anomalies of the next chapters.

II. *Crustal shear isostatic reduction; shear problems.*

In special cases a new type of isostatic reduction seems indicated which the writer proposes to call the *crustal shear reduction.* He refers to the case of topography caused by the shearing of the whole crust and a relative movement in vertical sense of one side with regard to the other. Such a movement must not only bring about a topographic feature at the Earth's surface but also a disturbance of the lower boundary of the crust which both may be expected to be compensated according to the assumption of regional distribution of the compensation. Possibly at greater depth the increasing plasticity of the crustal layers may change the shear in flexure but we shall neglect the effect of this on the mass-distribution. Our conception is not defined by the shape of the topographic feature alone, it depends also on the angle the shearing plane makes with the vertical; from this angle follows the location of the disturbance at the lower boundary of the crust. For our reduction we shall assume that this angle is zero or, in other words, that the shearing occurred along a vertical plane. In this case the topographic mass brought about by the shearing is accompanied by a mass of the same cross-section, vertically below it, having a density equal to the difference of the subcrustal density θ_s and the crustal density θ_o. This second mass is $(\theta_s - \theta_o)/\theta_o$ times the topographic mass; it might be considered as the local compensation of a hypothetic topography equal to $-(\theta_s - \theta_o)/\theta_o$ times this topographic mass.

We shall denote the subcrustal mass combined with the regional compensation of the whole formation by the name *crustal shear isostatic compensation* and its attraction at the Earth's surface by *crustal shear isostatic reduction.* According to what has been said, this reduction must be composed of the attraction of the local compensation of $-(\theta_s - \theta_o)/\theta_o$ times the topography and of the regional compensation of $1 + (\theta_s - \theta_o)/\theta_o = \theta_s/\theta_o$ times the topography. So, if we indicate the anomalies found by local reduction by A_o, by regional reduction by A_R and by crustal shear reduction by A_s we have

$$A_s = A_R + \frac{(\theta_s - \theta_o)}{\theta_o}(A_R - A_o) \qquad (10)$$

By means of this formula it is simple to derive the anomalies for the new reduction.

As the difference of A_R and A_o usually increases with increasing values of the radius R of the regionality we see that such an increase has in general the same effect as the new reduction. So when interpreting the gravity anomalies we have the choice between two equivalent possibilities as far as the gravity anomalies are concerned, i.e. a larger degree of regionality or a disturbance of the lower boundary of the crust, corresponding to crustal shear.

It is clear that if the shearing plane of the crust is not vertical the crustal shear reduction must leave an anomaly. From fig. 3 we can derive at once that in case of 3a we must expect a small negative anomaly corresponding to the cross-hatched section; according to its position it must be slightly shifted to the right of the shear at the surface. In the same way we must expect, for the event of 3b, a small positive anomaly slightly shifted to the left. As the anomalies can not be large, it is questionable whether it will be possible to derive in this way the slope of the crustal shearing plane from the gravity anomalies.

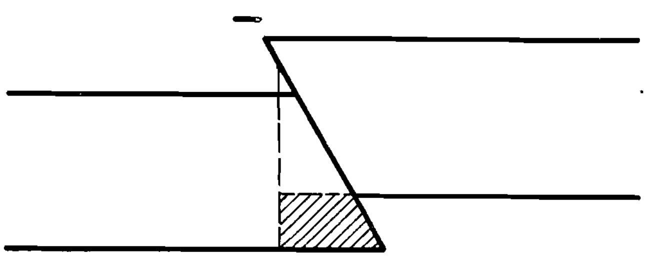

Fig. 3a.

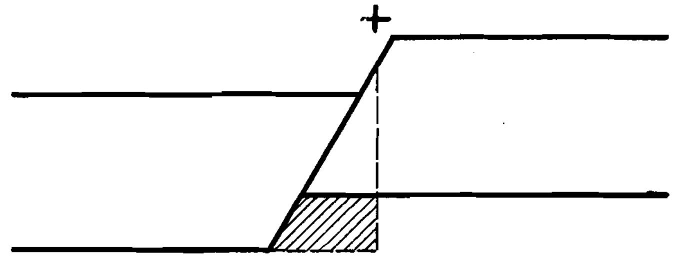

Fig. 3b.

Fig. 3a en 3b. Deficiency and excess of compensation for inclined fault-planes through the crust.

It is hardly necessary to point out that these considerations may find their application in case we have to interpret the gravity field over "graben" zones.

We have hitherto not raised the problem how crustal shearing accompanied by relative vertical movements can come into being. In taking this subject up we shall leave aside the possibility of its being brought about by forces exerted by the subcrustal layer and so we shall assume that forces in the crust are responsible for it. In case we have only one shearing-plane it is clear that the case of fig. 3a must be caused by horizontal compression and that of fig 3b by horizontal tension. In both cases the amount of the vertical movements of the two parts depends on the amount of the shortening respectively lengthening of the crust and on the slope of the shearing plane, but in the last case the vertical movements will not exceed a certain limit defined by the position of free hydrostatic equilibrium of the two crustal parts; for a further lengthening of the crust these parts will come apart, leaving a gap which will no doubt at once be filled by a crumbling together of the crust or by effusive processes from below. The position of free hydrostatic equilibrium on both sides of the shearing plane differs in vertical sense because the shape of the parts does not correspond to equilibrium on the normal level of the floating crust. In fig. 4 they have been supposed to be in the

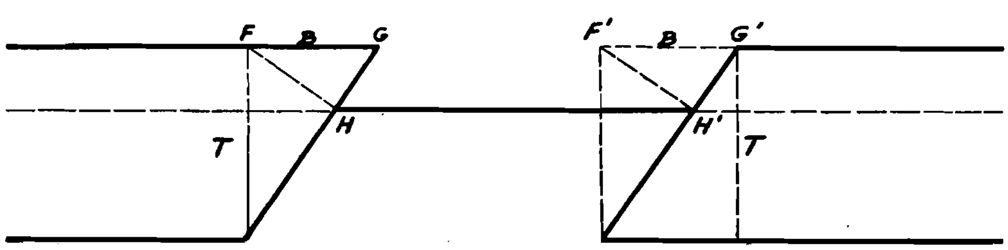

Fig. 4. Showing uncompensated triangles of crustal cross-section near inclined fault-plane.

normal level and we see that on the left side the weight of the non-compensated triangle *FGH* exerts a downward drag, while on the right side the drag acts in upward sense because of the missing of the triangle *F'G'H'*, congruous with triangle *FGH*, which is required for hydrostatic equilibrium. So the left part will bend down wards and the right part upwards and it depends on the properties of the crust how far this deformation will extend and whether breaking will occur which may perhaps lead to the formation of a second shear-plane. In general we way expect this distance to be about the same as the radius R of the regionality of the isostatic compensation.

If two shearing planes are present we may suppose the following possibilities for the vertical movements because of these forces:

A, for tension in the crust

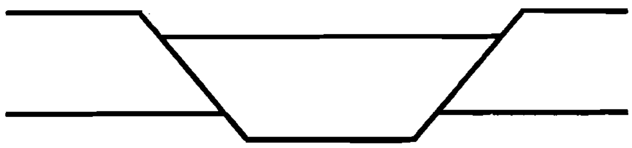

Fig. 5a.

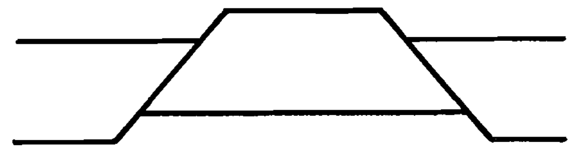

Fig. 5b

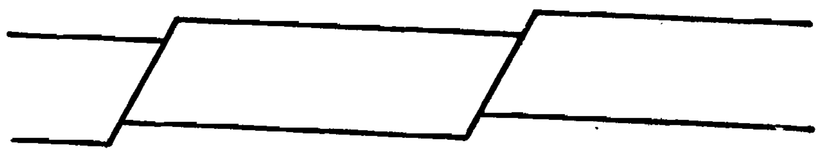

Fig. 5c.

B, for compression in the crust

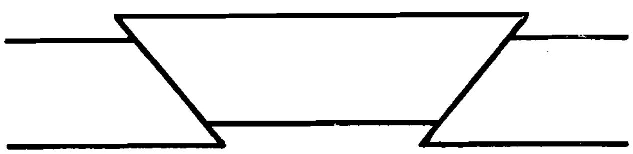

Fig. 6a.

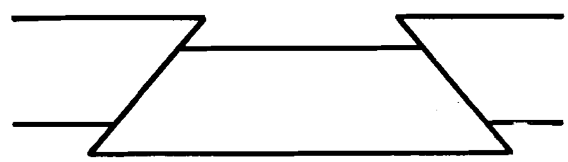

Fig. 6b.

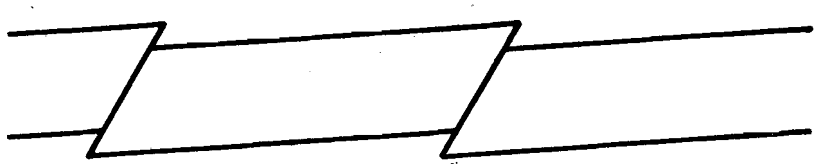

Fig. 6c.

We do not know whether they all occur; no instances are e.g. known to the author where the case of 5b is supposed to have taken place. We might perhaps explain the absence of this case by a certain probability of the tension in the crust being accompanied by a sinking tendency of the subcrustal matter and this would of course favour the coming into being of the case of 5a.

If we should wish to compute the amount of the vertical movements in case the crust was free to adjust itself in hydrostatic equilibrium, we may start from the formula for the vertical forces working on both sides of a single shearing plane. If we denote the breadth of the horizontal projection of the shearing planeby B and the upward movements of the two parts by q_l and q_r, q_l being negative, we find for the downward drag of the left part of fig. 4

$$K_l = \frac{\theta_0 (\theta_s - \theta_0)}{2 \theta_s} B T + \theta_0 B q_l - \tfrac{1}{2} \theta_s \frac{B}{T} q_l^2 \qquad (11\text{ A})$$

and for the upward drag of the right part

$$K_r = \frac{\theta_o (\theta_s - \vartheta_o)}{2 \theta_s} B T - (\vartheta_s - \theta_o) B q_r - \tfrac{1}{2} \theta_s \frac{B}{T} q_r^2 \tag{11 B}$$

The last terms are nearly always less than one per cent of the first and so we may neglect them. For $\theta_o = 2.67$ and $\vartheta_s = 3.27$ we thus get

$$K_l = 0.245\, B T + 2.67\, B q_l \tag{12 A}$$
$$K_r = 0.245\, BT - 0.60\, B q_r \tag{12 B}$$

For determining the vertical movements q_l and q_r we shall simplify our problem by assuming that we may sufficiently represent the bending of the crust by a rotation of the adjacent crustal part round a hinge at a distance R from the shearing line. For the single shearing plane we thus find that hydrostatic equilibrium would correspond to

for the left part

$$0.245\, B T + 2.67\, B q_l = -\tfrac{1}{2} \times 3.27\, R q_l$$

and so

$$q_l = - \frac{0.150\, T}{\frac{R}{B} + 1.633} \tag{13 A}$$

and for the right part in the same way to

$$q_r = \frac{0.150\, T}{\frac{R}{B} + 0.367} \tag{13 B}$$

Substituting $T = 30$ km, $B = 20$ km and $R = 150$ km we thus obtain

$$q_l = -490 \text{ m}$$
$$q_r = 570 \text{ m}$$

This would, therefore, lead to a difference in height of 1060 m between both sides.

For the "graben" case of fig. 5a, i.e. for two anti-parallel shearing planes which we suppose to be at a distance b from each other at the surface of the "graben", we get for the sinking q_b of the graben part in case the crust was free to adjust itself in hydrostatic equilibrium

$$0.245\, B T + 2.67\, B q_b = -3.27\, (\tfrac{1}{2}b - B)\, q_b$$

and so

$$q_b = - \frac{0.150\, T}{\frac{b}{B} - 0.367}\,. \tag{14}$$

For $T = 30$ km and $B = 20$ km and for a breadth b of the graben of 60 km, which corresponds about to the dimensions of the Upper Rhine graben, this formula gives

$$q_b = -1710 \text{ m}.$$

Combined with the rising of the sides of 570 m this would give a graben of a depth of about 2300 meter and so this is the depth to which hydrostatic equilibrium would lead for the adopted dimensions. In case the lengthening of the crust is less than that required for this equilibrium, the vertical dimensions would be smaller.

W shall not further enlarge on these and analogous problems because they are not directly involved in the investigations of the gravity anomalies of this volume.

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CHAPTER II.

The Indonesian Archipelago.

§ 1. General conclusions from the anomaly-maps.

The three maps of the gravity anomalies of the East Indies are based on the isostatic reduction according to the Airy hypothesis of a rigid crust floating on the plastic substratum. The thickness of the crust has been supposed to be 30 km. Map n°. 1 gives the anomalies for local isostasy, map. n°. 2 for a radius of regionality of the compensation of 116.2 km. and map n°. 3 for a radius of 174,3 km. We see at once that the picture of the anomalies of map nr. 1 is more irregular than that of the two others; the belt of negative anomalies shows this for instance quite clearly. It seems, therefore, probable that a certain regionality of the compensation is present but the radius of it cannot be concluded from these maps; there appears no reason to prefer 3 to 2 or the reverse.

It must also be pointed out that it is not likely that the same type of compensation prevails over the whole archipelago; it comprises so many different types of topographic features of so varying origin that we cannot expect the hydrostatic equilibrium of the crust to have originated in one single way. We saw already that regionality of compensation seems to prevail for the belt of negative anomalies and this is in harmony with the fact that this belt still persists; if local adjustment were everywhere possible it ought to have disappeared. It might on the other hand be questioned whether the topography brought about by the sinking of the deep basins in the eastern half of the East Indies is regionally compensated. This sinking down seems in many cases to be bounded by faults and so the compensation of the topography as far as it is caused by the vertical movements along these faults might have local compensation. If, however, the sinking is caused by currents in the substratum, as the writer thinks to be the case, this conclusion no longer holds. We may derive from the maps that the positive anomaly over the Banda basin is smaller for local than for regional compensation but for the deep basins N.W. of Boeroe and N. of Celebes the reverse is true. Concluding we may say that for the deep basins the maps do not indicate any preference for one or the other system of isostatic compensation.

§ 2. The belts of negative anomalies.

In discussing these belts the writer will suppose them to be caused by a downward bulge of the crust in the heavier subcrustal plastic layer brought about by horizontal compression of the crust. This explanation is now more and more generally accepted. It has first been advanced by him in 1930 [1]) and it received strong support from UMBGROVE'S study of

1) Vening Meinesz, 1930 and 1934.

the geology of the East Indies which showed that the area's where, in the upper miocene, the last great folding and overthrusting took place, are all coinciding with the anomaly-belts. He has already published this with an accompanying map in 1934 in his contribution to the second volume of this publication and he has further elaborated it in more recent papers on the geology of the East Indies among which we may especially mention the paper published in 1938 in the Bulletin of the A.A.P.G., vol. 22.1. The geology of map 3 of this volume is taken from these papers.

The above supposition that the compression of the crust is bringing about a downward bulge and not an upward one is based on two considerations, first that probably the resistance of the subcrustal layer has the character of a resistance offered by a viscous fluid or, in other words, that it is proportional to the speed and may therefore be small, secondly that the energy needed in connection with the gravity field for the formation of an upward bulge is proportional to the density of the crust while for a downward one it is proportional to the difference of the density of the crust and the subcrustal layer. If we take the normal density-assumptions the ratio of the two is $2.67/0.6 = 4.45$. These two considerations are making it clear that if the crust reacts to the compression by forming a one-sided bulge it has to do so downwards and not upwards.

A second question may, however, be asked, namely why the crust is not bulging to both sides and in such a way that isostatic balance would entirely be maintained. This would involve a ratio of the downward to the upward bulge equal to a figure which for the normal density-assumptions has the above value of 4.45 (fig. 7).

Fig. 7. Two ways of deformation of the crust under horizontal compression.

The answer to this much more difficult question is that if the compression is sufficient, the one-sided downward bulge absorbs less energy. For explaining this we have to make a deeper study of the processes involved. For making it clear we shall start by comparing the phenomenon to that which occurs when we compress a beam. According to the theory of elasticity the beam is simply becoming thicker and shorter as long as the compressive force is smaller than a certain limit called the buckling-limit. The amount of the elastic shortening as well as the thickening is determined by the elastic properties of the material of the beam: this is likewise so for the buckling-limit which, besides, depends on the length of the beam and the shape and dimensions of its cross-section or, more accurately expressed, the moment of inertia of the cross-section.

If the compressive force is greater than the buckling-limit the beam will react by buckling, i.e. by a side-ways deformation taking the shape of a wave which quickly increases its amplitude till the middle part of the beam gives way by breaking.

We may compare the reaction of the earth's crust to horizontal compression to this phenomenon. If the crust is entirely homogeneous and has the same thickness everywhere a compressive force will only bring about a slight thickening of the crust as long as its value remains below a certain limit. Once that limit is exceeded it will cause a wave-formation, which increases and leads to downward bulging in one of the downward waves. The length of the waves depends on the densities, the dimensions of the crust and its elastic properties. As, however, the crust is not entirely homogeneous we must expect the wave-formation to come only about in the weakest part and so it may possibly comprise only one or two waves. The weakest downward wave will buckle downwards.

The study of the phenomenon after the limit of elasticity of the crust has been reached in the middle of the downward wave is a very difficult one and we shall not take it up here. It seems certain that somehow a plastic deformation takes place forming a downward bulge of the crust pressing downward in the subcrustal layer. The surface layers have obviously acted differently for different mountain ranges. For the Alps great overthrusting and folding took place in the surface layers: these layers seem not to have been carried downwards by the main crustal movement, but they have more or less been squeezed out perhaps because of their being less resistant. For other mountain-systems other surface phenomena are prevailing. Often shear-planes converging towards the axis of the system seem to have formed. We shall not examine these phenomena here; such a study would mean a detailed investigation of the geology of the different mountain-ranges which we shall not take up here.

The plastic deformation of the crust is well illustrated by the beautiful experiments of KUENEN [1]) of which one case is here reproduced. He took a layer of a mixture of vaseline and wax floating on water and compressed it by two wooden bretts which he pushed together.

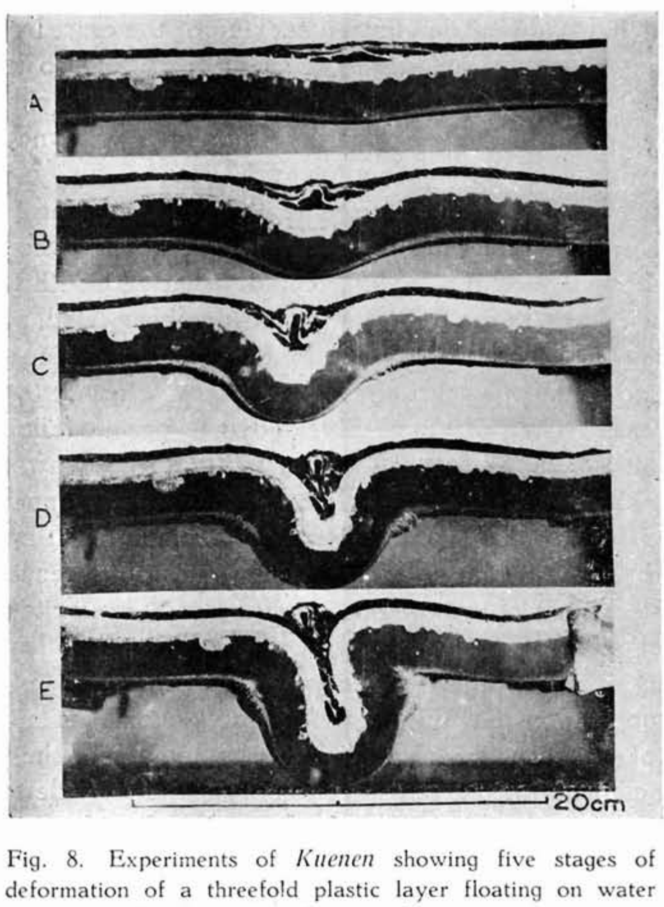

Fig. 8. Experiments of *Kuenen* showing five stages of deformation of a threefold plastic layer floating on water and subjected to horizontal compression.

1) Kuenen, 1936

After a general wave-formation a downward bulge of one of the waves got gradually into being. By using different layers of increasing strength downwards he tried to imitate crustal conditions; we may expect the sedimentary layers to be weaker than the granite. For further particulars the writer may refer to Kuenen's original paper [1]). The experiments clearly confirm the conclusion we arrived at of the crustal bulge forming downwards and not upwards. They likewise give many helpful suggestions about the mechanism of the plastic deformation which may have taken place in the crust. They can, however, not be interpreted as proofs that the crustal deformation came indeed about in this manner. The physical conditions of the experiments, which differ so much in scale from the crustal phenomena, deviate too much from those of the crust for allowing such a conclusion; the difference in scale makes it impossible to make an exact copy of those conditions. Still the writer thinks that KUENEN's experiments give a valuable support to the hypothesis of the crustal downward buckling.

We can not leave this subject without mentioning also the experiments made by GRIGGS and published by him in an important paper on the general subject of mountain-building [2]). GRIGGS supposes the downward bulge of the crust to have been brought about by a convection-current descending under the tectonic belt and giving strong horizontal compression in the crust as well as a downward movement under the belt itself. As far as the first of these two effects is concerned it is identical with the theory advanced above but the second brings in a new view-point. The downward movement of the crust would in this case not be a buckling phenomenon but a direct downward sucking of the crust by the current. This certainly would explain the downward bulging in a simple way and so the hypothesis appears attractive. There are, however, some slight difficulties about it which make the writer feel uncertain. First of all the orogenic cycle begins by forming a geosyncline which is in good accord with the supposition of a wave-formation at this stage. This syncline is filled with sediments and it appears somewhat difficult to imagine that this concentration of crustal matter would not tend to increase the temperature in the neighbourhood of the belt and thus counteract a sinking current here before the folding could occur. Also the current according to Grigg's hypothesis would have to continue for a considerable period, viz. from the beginning of the syncline formation up to the last great folding taking place in this area and this seems hard to understand. Lastly the writer thinks that it is difficult to explain the sinking of the deep basins in the eastern half of the archipelago in a period following with great time-lag on the period of folding in the belt without assuming a downward convection-current under these basins; we shall discuss this problem which is also connected with that of the deep earthquakes in § 5 of this chapter. Accepting the explanation it appears difficult to harmonize it with Grigg's hypothesis and to admit such a great difference in the effect on the crust for these two systems of sinking convection-currents. The writer, however, feels that these objections are not strongly founded and so he should want to leave it an open question whether Griggs's or his own hypothesis is nearer the truth.

Admitting the supposition that the belt of negative anomalies is caused by the presence of a downward bulge of crustal material at the lower boundary of the crust we can in a simple way make a rough estimate of the cross-section of the bulge by determining the sum of the negative anomalies in a cross-section of the belt. Assuming that the mean of the two positive

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1) Kuenen, 1936.

2) Griggs, 1939.

anomalies on both sides of the belt gives the value of normal gravity for this area we take the sum of the differences of the anomalies from that mean positive value. We can deduce for our purpose the formula

$$F = \alpha \frac{\Sigma A}{2 \pi k^2 (\theta_1 - \theta_0)} \tag{15a}$$

where k^2 = Newton's coefficient,
θ_1, θ_0 = densities of the substratum and the crust,
F = cross-section of the bulge,
α = a factor dependent on the breadth b of the belt of A and the depth d of the centre of the bulge.

Introducing $\theta_1 - \theta_0 = 0.6$ and values of $b = 300$ km and of $d = 40$ km which give a value of α of about 1.2 we find

$$F_{\text{km}^2} = 4.8 \, \Sigma A_{\text{mgal}/100\ \text{km}} \tag{15 b}$$

Applying this formula for instance to the belt south of Java we find a cross-section of about 1200 km². Assuming for the thickness of the crust a value of 30 km and for the breadth of the bulge the double of this amount we find the mean depth of the bulge to be 20 km. It shows this phenomenon to be far greater than the surface-inequalities brought about by the orogeny.

The above computations are no doubt only a schematic approximation. We must consider it likely that the rigid crust consists of more than one layer and that the increase of density from the surface downwards to the subcrustal plastic layer is partly distributed over intercrustal discontinuity surfaces. Especially in geosynclines we have to expect layers of sediments at the surface which usually will be lighter than the deeper layers. This will change the above picture and the pushing together of the crust must no doubt bring about a more complicated pattern of density distribution. The main conclusion must, however, remain true; it is easy to see that the same amount of mass-deficiency must be concentrated in this area as in the case of the simple picture given above and so we may continue to use our formulas.

We may no doubt conclude from our results that downward buckling of the crust is the main phenomenon of the mountain-formation. The mountains at the surface may partly come about as in the Alps by the upward folding and overthrusting of surface-layers which are not carried along downwards by the main crust but the principal cause must no doubt be the rising of the belt by the tendency towards readjustment of the isostatic balance. For the Alps for instance it is known that the main rising occurred in a later period than the folding and this is in good agreement with our hypothesis; it is clear that for an isostatic adjustment the belt has more or less to detach itself from the adjacent crust and so a decrease of the compression in the crust must be needed. Such a rising seems also to have taken place in at least some of the areas of the belt in the East Indies but evidently great negative anomalies are yet left. Part of these anomalies, moreover, will probably never disappear, viz. those which are caused by the light surface layers of the crust moving downwards in the centre of the belt and remaining enclosed amidst the surrounding deeper layers.

We see that the general history of a geosyncline is in good harmony with the downward buckling-hypothesis of the crust: the formation of a syncline in the beginning, then sedimentation, afterwards folding and more and more evidence of compression at the surface, then, often in a later period, rising of the whole area to great elevation often carrying along adjacent non-folded areas. This last feature can be brought about by the cohesion of the crust which is bending upwards as a whole, but it may also be caused by the gradual melting of the downward root which no doubt takes place because of its getting to a level of higher temperature and its spreading out to greater breadth along the lower boundary of the crust; as a consequence of this the rising area must become broader.

Assuming the thickness of the crust h to be 30 km we may derive the shortening of the crust by dividing the cross-section F of the bulge by h and so we find

$$S_{\text{km}} = 0.16 \Sigma A_{\text{mgal}/_{100 \text{ km}}}. \tag{16}$$

For the crust south of Java we thus obtain a shortening of 40 km.

The four gravity-profiles n^{os} 1—4 West of Sumatra show a different picture from that found elsewhere over the belt. The curve of the anomalies is asymmetric and the intensity of the anomalies is much smaller. The regional anomaly-curves are again more regular and are better in mutual harmony than the local ones. Those for a radius of compensation of 116.2 km seem to be slightly better harmonizing than those for a radius of 232.4 km but the difference is so small that the conclusion does not carry much weight. As the writer has already pointed out in vol. II p. 122 the anomaly-curve seems fairly well to agree to the supposition that the crustal block on the Sumatra-side is overriding the block on the ocean-side. We shall come back to these profiles in § 8 and we shall find that the anomaly-curve brought about by the pressing up of one side of the crust and the pressing down of the other combined with two other effects is indeed similar to the four observed curves.

Our conclusion seems also to be borne out by the topography west of Sumatra. The slight ocean-deep on the outside of the row of smaller islands might well be explained as evidence of the crust being pushed down here by the overriding of the Sumatran crustal block. So our result points to a different phenomenon going on here than south of Java. As the writer has already mentioned in Vol. II this might be explained by the supposition that the whole area of the crust north of Java and Sumatra forms one unit and that this unit moves with regard to the block south of the belt in the direction of the arrow of map n°. 3. For the belt W. of Sumatra this relative movement of the two blocks would mean that it would mainly have been a shearing movement along faults parallel to the belt with only a small component at right angles to it. This shearing would have destroyed the connection between the two blocks and so it is clear that the second component was not likely to bring about a wave-formation but that it caused an overriding of the eastern block over the western. Our hypothesis is in good agreement with the crustal movement occurring during earthquakes in Sumatra; these movements generally take place along faults parallel to the axis of Sumatra and it is always the eastern block that moves south with regard to the western one.

South of Java the direction of the belt is such that the component of the relative movement of the blocks at right angles to the belt is the largest of the two and so we can understand that here it brings about a wave-formation and, subsequently, a down-buckling of the crust.

In the eastern part of the Archipelago we find a similar dependence of the character of the gravity profile over the belt from the direction of the belt and the sense of the relative movement of the blocks must be roughly the same. The clearest indications are given by the profiles Nos. 14 and 16 over the Tanimbar Islands and from the Banda Sea to the ENE towards the Arguni Bay in New Guinea; the first shows a nearly symmetrical anomaly-profile and the second an asymmetrical one which for $R = 58.1$ km is similar to the Sumatra profiles and for $R = 116.2$ km not much different from it; the belt is about parallel here to the supposed direction of compression and so this can not differ much from the real one.

The profile between, i.e. n°. 15, is more complicated. It shows the great depths of the Weber deep on the inside of the curved belt and a more or less straight trough on the outside in a direction towards New Guinea; i.e. diverging from the belt. We shall come back to these profiles in § 11 where we shall find our suppositions confirmed of a relative movement of the blocks on both sides of the belt in the sence of the arrow on map n°. 3.

We shall find the same result in § 12 for the profiles n^os. 18, 19 and 20 over the Mindanao Deep. The most northern one over Strait Surigao gives again a suggestion of the western block overriding the eastern one and the topography seems likewise to support this view; the deep Mindanao Trough in this area might well be caused by such a pressing down of the ocean-floor. This conclusion is again in harmony with a relative movement of both crustal blocks in the sense of the arrow; this arrow encloses only a small angle with the eastcoast of this part of the Philippines and with the trough.

The area between these profiles and the former ones over the Banda Sea area shows a more complicated pattern of anomalies. The continuation of the negative belt over the Mindanao Trough and the Talaud Islands towards the southwest forms a second belt of even stronger negative anomalies than the first. It seems to disappear under the eastern arm of Celebes. Although this arm has not yet been gravimetrically surveyed, its geology points to strong folding and so the belt seems to continue here. The belt has such an irregular cross-section that the application of the formula 16 for the computing of the crustal shortening can not give more than a rough approximation.

We shall discuss this area again in § § 10, 11 and 12 and we shall find that it is difficult to understand the complicated behavior of the crust in this area without assuming an effect of the crustal block to the east under Halmaheira and New Guinea. It is not unlikely that this effect is related to the great Marianas arc which joins here the New Guinea axis. Many more gravity data in this area will be needed, however, before a more definite conclusion will be possible.

Resuming we see that the western half of the archipelago shows a fairly simple picture pointing to one single block north of the belt moving with regard to the block south of it in the direction indicated by the arrow in the map. The eastern half is more complicated. We have two belts here of negative anomalies, the northern one from E. Celebes to the Philippines and the Southern one over Timor and the outer Banda arc, and so we have at least three blocks, one to the north of the northern belt, one between the two belts and one to the south and east of these blocks. The movement of the two first blocks relative to the third appears to have both had the same direction viz. that of the arrow. Considering, however, that the shortening of the distance from the northern block to the southern block in the eastern half of the archipelago is composed of the shortening in two tectonic belts, while in the western part it is only caused by the southern belt alone, the two northern blocks must be separated by a shear-zone along which those blocks must have had a relative movement equalling the shortening caused by the buckling in the northern belt. We saw already that this shortening is even greater than that in the southern zone, which, itself, seems to be the same in the eastern and western parts.

This fault zone between the two northern blocks must start from the western end of the northern tectonic belt, i.e. probably at thewestern end of the eastarm of Celebes. Examining the map and the geology we may reasonably suppose this zone to continue in NW direction through the southern narrow part of the northarm of Celebes, i.e. east of Donggala, where the geology seems to show faults or strikes in this sense. It probably continues towards the Mangkalihat Peninsula at the eastcoast of Borneo. We shall presently come back to this zone.

Considering the fact that this direction appears to continue in the S.E. arm of Celebes the question arises whether this arm might perhaps also represent a fault-zone. This suggestion seems to find some support in the fact that UMBGROVE [1]) assumes a tectonic zone in the mesozoic from Ceram towards the end of this arm and the present anomaly-field shows a weak anomaly belt from Boeton towards Banda which might be a remnant of such a connection. We must, therefore, recognize the possibility that the middle one of the three eastern blocks, i.e. the block between the two present tectonic belts, has in older periods been divided in two separate blocks by the above tectonic zone and as the southern part of it seems to form a whole with the crustal block to the west this would indeed lead to assume a shearzone in that time over the S.E. arm of Celebes.

At this stage of our investigation of the archipelago where we come to suppose a combination of crustal blocks divided by fault-zones or down-buckling belts we may mention a hypothesis of the auther about a general pattern of fault-zones over the whole Earth-surface which was advanced by him in 1943 [2]) of which a short summary is given in chapter V p. 134 e.s. This pattern is reproduced here in fig 9; it is supposed to have been brought about by a shift of the poles in a very early period of the crust's history, the shift being assumed to have been caused by a movement of the crust around the interior. The map only gives directions of shear; the dimensions of the crustal blocks cannot be predicted. We see that for the archipelago one of the two directions of shear coincides remarkably well with the direction of the belt to the west of Sumatra, with the faultzone mentioned above from the Mangkalihat peninsula towards the S.E. arm of Celebes and with the two parts of the anomaly-belt to the N.W and to the S.E. of Ceram for the last of which we had some reason to suspect a relative movement of the blocks on both sides along a shear-plane.

The second direction of the pattern seems to coincide with that of the E. arm of Celebes and the belt to the east of it and with the direction of the axis of Timor. As we have mentioned the anomaly map shows perhaps a third axis in this direction, viz. between Banda via the Toekang Besi Islands towards the island of Boeton, where we find a belt of weaker anomalies; the topography also shows a structural feature here in the shape of a system of more or less connected ridges. The above coïncidences give no doubt a stronger foundation to the supposed blocks and fault-zones derived from the anomaly-field. We thus arrive at the hypothesis of a major fault-zone over the S.E. arm of Celebes and the Mangkalihat peninsula of Borneo which divides the archipelago in two parts. The western part forms one block limited to the south and southwest by the anomaly-belt outside Java and Sumatra. The eastern

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1) Umbgrove 1938, fig. 6, p. 24.

2) Vening Meinesz 1943 and 1947.

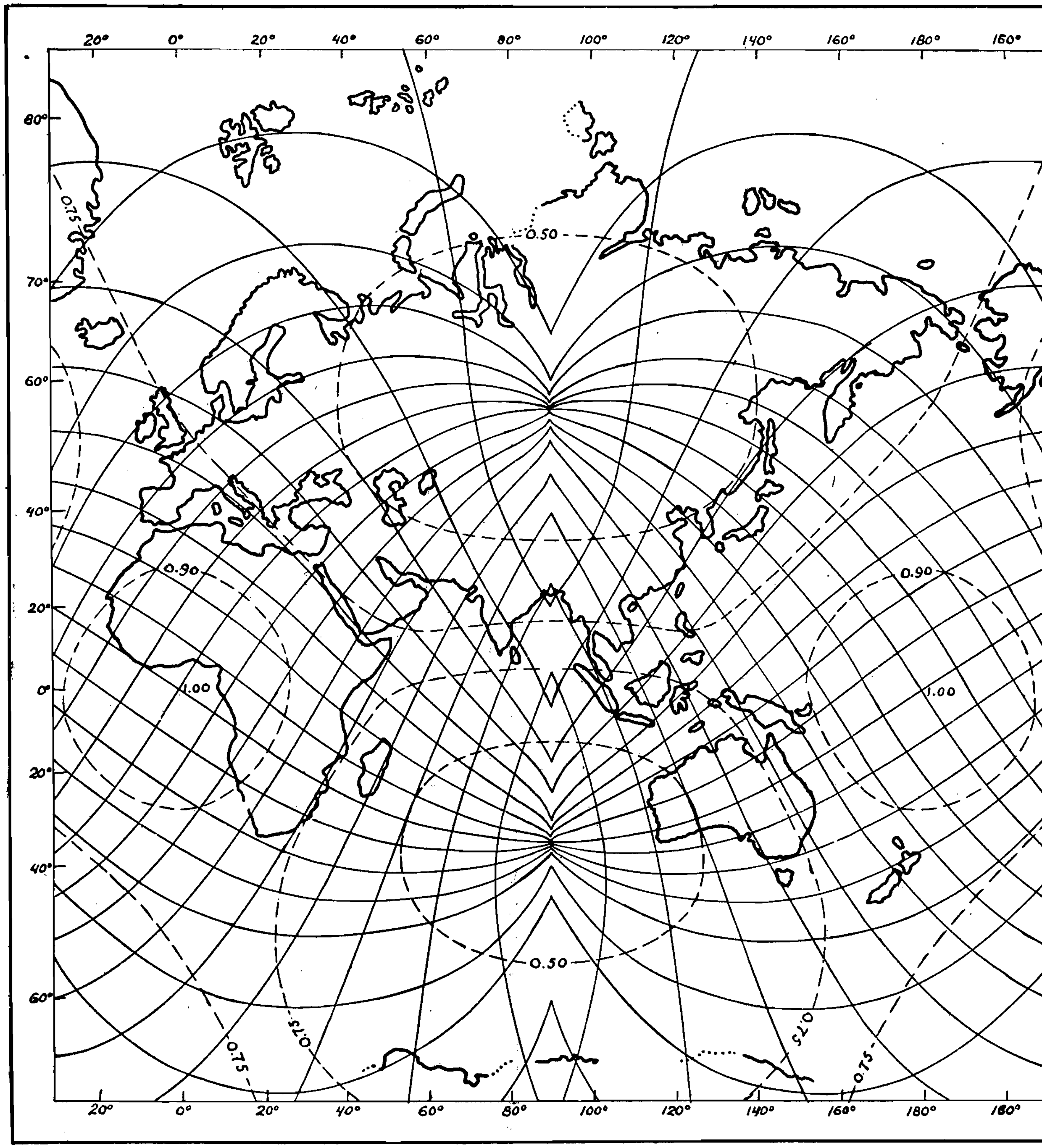

Fig.

Shear-pattern of the Earth's crust for a polar shift from

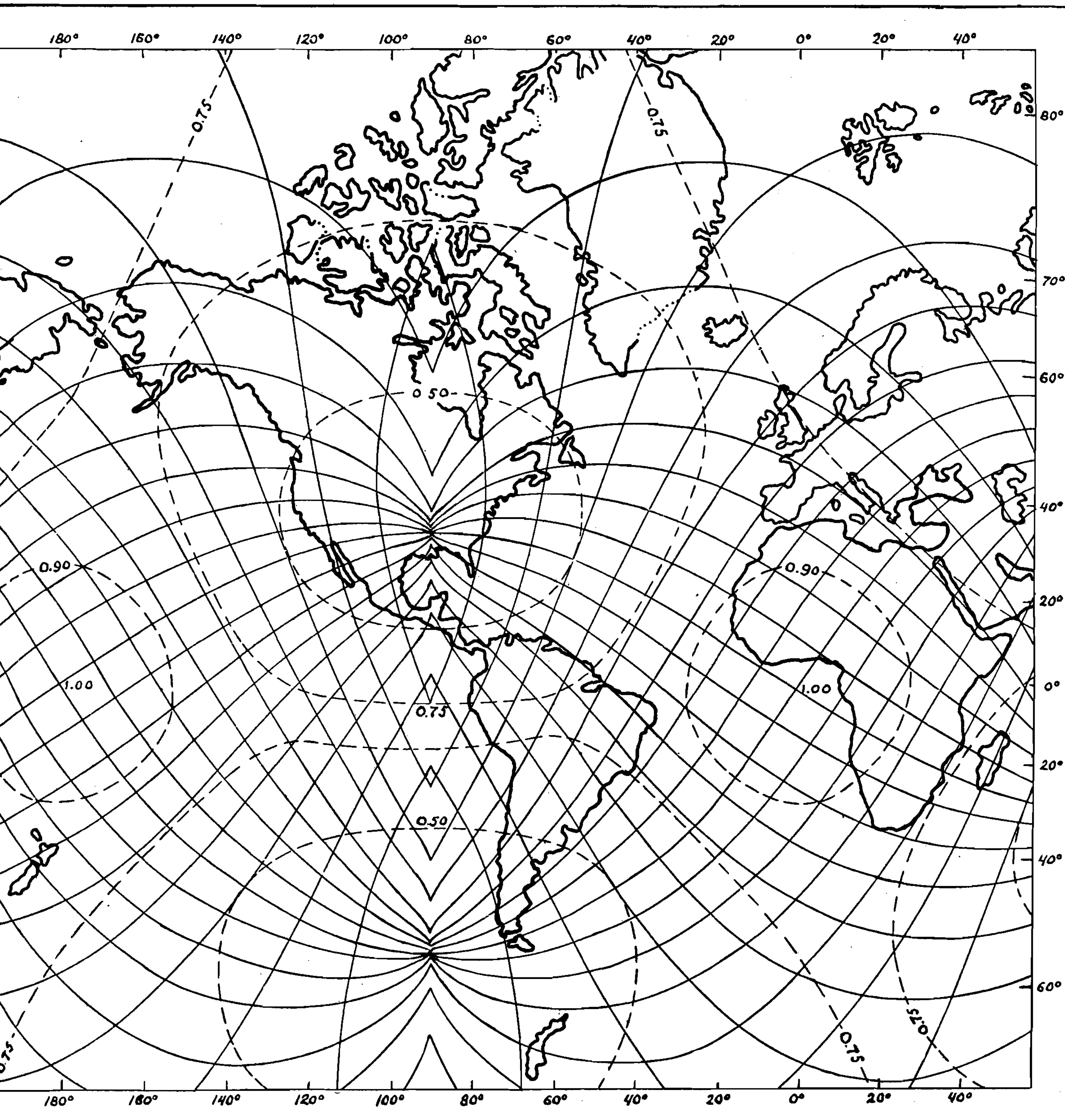

Fig. 9

for a polar shift from 20° N.L., 90° E.L. to the present position part, as far as it is inside the anomaly-belts over the Talaud Is, the island of Ceram and the continuation towards Timor consists of two blocks divided by the anomaly-belt over E. Celebes and the Molucca Sea. Possibly the southern one of these blocks is itself divided into two parts by a zone between the Toekang Besi Islands and Banda. The whole area surrounding the great anomaly-belt from the N. point of Sumatra up to New Guinea seems to act as one crustal block. The block east of Mindanao is probably another one as it seems likely that there is a separation-zone running over the low anomaly N. of Sorrong and further over Yap, Guam, the Marianas and the Bonin Islands. The block of Halmaheira east of which this zone curves around towards New Guinea seems to act as a disturbing factor on the crustal blocks to the west and southwest of it.

We have already mentioned that we can explain the anomaly-belts by assuming only one direction of movement of all the blocks inside these belts relative to the crust outside, viz. the direction given by the arrow of map n° 3. This may bring about an overriding of one block over the other if the separation zone encloses only a small angle with the force, and a wave formation and down-buckling of the crust between the two blocks if the angle is greater. In the first case the separation-zone is more or less straight, as e.g. west of Sumatra, and it coincides with one of the shear-directions of the map of fig. 9. The second dividing zone of some length in this direction, viz. that over S.E. Celebes and the Mangkalihat peninsula is also straight but we cannot yet know whether there occurs overriding here too; the topography does not point this way. Possibly an absence of overriding in this zone could be explained by the fact that the components of the movement of the blocks at right angles to the dividing zone are equal or only slightly different and that, therefore, the blocks have no large relative movement in this sense.

The separation-zones of the blocks showing a down-buckling are not straight as is clearly shown by the curved character of the anomaly-belts in those areas. They mostly do not follow the direction of the shear-zones given by fig. 9; south of Java, for instance, it clearly cuts the block between those zones in two parts. The curvature of the zone would be difficult to explain for a shear-phenomenon as it occurs west of Sumatra; for the down-buckling on the contrary we can understand it. Because of the Earth's curvature a down-buckling in the sense of the vertical causes compression in the downbulging root in the sense of the belt and so the downward movement will probably deviate from the vertical in order to diminish this compression and, therefore, the energy needed for it. It is simple to see that a curved track reduces the deviation from the vertical required for this end and so we might thus perhaps explain the curvature of the axis of the downbuckling parts of the belts. We shall come back to this subject in § 10.

We shall now examine the relative movement of the blocks on both sides of the major shear-zone over the Mangkalihat Peninsula and S.E. Celebes. As we have already remarked there seems to be no shift along this zone in the belt over Timor nor in the inner island arc and so we may assume that the block directly to the north of these arcs is one unit. If the zone of smaller anomalies from the Toekang Besi Islands to Banda would point to a shortening of the crust along this line in an older period, the two blocks to the north of this line would probably have had a relative movement along the zone over S.E. Celebes. The blocks to the north of the line through the arm of E. Celebes must have had a considerable relative movement in a more recent period along the prolongation of the shear-zone towards the Mangkalihat Peninsula; the down-buckling of the belt over E. Celebes must have brought about a great shortening of the crust while no such shortening occurred to the west of the shear-zone. According to formula 16 we may roughly estimate the shortening in the Molucca Sea at some 60—80 km and so this is the minimum relative movement of the blocks to the north of it.

We may derive from this the conclusion that this major shear-zone must at least continue until some other tectonic zone of crustal shortening is met which could have neutralized this relative movement. If we prolong it in the sense given by fig. 9 we find such a zone in the Himalayan range which it touches just at its eastern end. In the tertiary when no doubt the tectonic belts in the archipelago have shown great folding and overthrusting this range has likewise been active and so the block to the west of our shear-zone underwent a corresponding shortening while to the east of it nothing occurred. It is probable, therefore, that this shortening neutralized the relative movement of the blocks and that the shear along this zone thus ended here. In other words the shortening of the crust over the arm of E. Celebes and the Molucca Sea would seem the continuation towards the east of the Himalayan shortening; it has in fact to compensate the shortening of the block to the west of our major shear-zone caused by the Himalaya and Birma folding and overthrusting. If this interpretation is right our shear-zone must indeed continue up to the eastern end of the Himalaya, i.e. to the area of the upper courses of the Irawaddi and the Mekhong and so the direction shown by the map of fig. 9 would be confirmed. The question is whether the geological evidence in the whole area is in accordance with this shear-movement. It is of course not necessary that it has occurred along one fault in the surface layers; it may have been distributed over a whole zone and it may also have taken the character of flexure. The writer does not dispose of the data needed for investigating this problem. He may, however, remark that if such a shear-zone would neither be present here, nor to the north of the Himalayan ranges, the ending of the crustal shortening represented by these ranges, would remain a mystery. Morphological evidence of the supposed shear-zone may perhaps be found in the east-coast of Annam which must about coincide with it, as well as in the western slope of the deep area of the South-Chinese Sea.

Examining its course through the archipelago we see that it marks great differences of morphology between the areas west and east of it. The eastern part consists of deep basins and island-ridges, mostly with steep transitions between, and the greater islands in this part with the only exception of a small part of N.E. Borneo show linear character. The western part on the contrary is one big block with no basins at all. The topography over the anomaly belt in this last part as far as it can be considered to have been caused by down-buckling, i.e. in the part south of Java and east of it up to the island of Soemba, shows low elevation; it is a submarine ridge mostly not attaining the 2000 m contour and showing on its highest part soundings of not less than 1200 m depth. To the East of Soemba, however, where the belt borders the eastern part of the archipelago the topography over the belt comes up to sea-level and in the island of Timor it shows even mountains of more than 2000 m with one peak of 2920 m.

The anomaly field shows likewise great differences between the two parts. In the eastern part we see an irregular field showing the set of belts of low gravity anomalies already mentioned and between them positive fields of varying intensity over the deep basins. We notice great values of the gravity gradient between the two, e.g. between the negative anomaly of — 204 mgal west of Halmaheira and the positive anomaly of + 133 mgal to the south of it near the Soela Islands. In the western part the field is much more regular, except the surrounding belt of strong negative anomalies. It shows in general positive anomalies of a moderate amount. Over N.E. Java we find a trough of slight negative anomalies continuing to the east; they coincide with the special type of geo-syncline, called idio-geosyncline by Umbgrove [1]) which in fact is mostly accompanied by smaller gravity values. In E. Sumatra, E. Borneo and S. Celebes these smaller anomalies are still positive. Examining the field it seems likely that the latter field is connected with the idio-geosyncline of N.E. Java by the belt running north of Bali, Lombok and Soembawa and then curving northeastwards towards the anomalies of + 7 and + 11 mgal south of S. Celebes.

A further difference is found in the fact that the main anomaly-belt south of Java shows north of it a belt of fairly strong positive anomalies, which is absent north of the belt in the Eastern half of the Archipelago.

The great difference between the two parts of the archipelago may perhaps be attributed to two causes, a difference in the compression of the crust in the present period and the occurring of convection-currents in the plastic layer below the crust in the eastern part. The second subject will be at length dealt with in the ensuing paragraphs, especially in § 5. The first will also be further investigated; it is clear that it may partly be connected with the convection-currents which, by their drag on the crust, may diminish the compression in some areas, but it is no doubt also possible that the two northern blocks, separated by the great shear-zone, exert a different pressure on the blocks of the archipelago.

§ 3. The fields of positive anomalies.

The extensive fields of positive anomalies in the archipelago form one of the most difficult parts of the gravity field to explain. One feature seems simple, i.e. the positive anomalies directly adjoining the belts of strong negative anomalies. We may expect the mass-deficiency causing these anomalies to exert a strong upward force on the crust and so the adjoining belts of the crust on both sides must be lifted above their equilibrium position and thus cause corresponding positive anomalies. As, however, these upward waves of the crust can not be expected to extend further than a few hunderd kilometers outside the edge of the mass-deficiency which exerts the force and as because of the depth of these masses the belt of negative anomalies must be somewhat broader than the belt of mass deficiencies, these positive anomalies can not be expected at greater distance from the edge of the negative anomalies than about 150 to 200 km; they could not extend over broad fields. We see clear evidence of such anomaly belts in the positive anomalies on the outside as well as on the inside of the negative belt to the southwest and south of Sumatra and Java. We see it likewise in the high positive values in stations round the strong negative anomalies of the Molucca Sea, i.e. in a station to the N.N.W. of Ternate, in a station to the east of Gorontalo and in a station to the south of the Soela Islands although his last station forms part of a greater positive patch with high values at such distances from the negative anomalies that other causes must also be responsible. We may perhaps likewise trace this lifting effect in the high positive values in two stations to the west and east of Boeton, in the narrow strip of positive anomalies to the south of East Ceram and in the anomaly in a station to the N.N.E. of the Kai Islands.

It is clear, however, that this explanation can not apply to the main part of the fields

1) Vening Meinesz, Umbgrove, Kuenen 1934 and Umbgrove 1938 and 1947.

of positive anomalies occurring in the archipelago. Examining the anomaly-maps we see that the whole area between Borneo, Sumatra and Java, which is characterized by shallow seas shows positive anomalies varying around 30 mgal and the eastern part of the archipelago, with the exception only of the belts of negative anomalies already mentioned, shows also positive anomalies. The fields in the latter part are more irregular and the anomalies are larger than in the first, especially for the anomalies corresponding to regional compensation. Nearly everywhere this eastern half of the archipelago shows deep basins and for several at least we have good reasons to suspect that they originated or became deeper in a recent period. Before continuing our investigation of the positive anomalies we shall, therefore, have to study these sinking basins and their anomaly-fields; it seems possible that those recent phenomena have affected the gravity-field.

§ 4. The basins in the archipelago adjoining the tectonic belt.

As Kuenen has already remarked in 1934[1]) we can distinguish two main types of basins in the archipelago, the basins of mostly linear character adjoining on both sides the belts of negative anomalies and the wide basins of more irregular ground-plan which in general fill the spaces between the different island-ridges, between the arms of Celebes and Halmaheira, and between Borneo and Celebes.

The first type is no doubt directly connected with the tectonic phenomena in the belts of negative anomalies; they do not in general show strong positive anomalies. We may list them as follows:

1. Outside the main belt: the trough west of the islands west of Sumatra, the deep Java trough south of Java, the Timor trough between Timor and the Sahoel shelf, the Aroe basin between the Kai Islands and the Aroe Islands and the trough to the north and east of Ceram.
2. Inside the main belt: the Mentawei basin between the islands west of Sumatra and Sumatra, the trough directly adjoining the southcoast of Java, the Weber deep west of the Kai Islands and its continuations towards both sides. It is questionable whether the Sawoe Sea between Timor and Flores has to be mentioned here.
3. Outside the northern belt: the southern and eastern strips of the Molucca Sea adjoining the Soela Islands and Halmaheira and continuing in the Morotai basin to the west of this island and the Mindanao Trough.
4. Inside the northern belt: the Gorontalo basin in the northeastern part of the Molucca Sea and the Sangihe Trough between the Talaud Islands and the Sangihe Islands.

These troughs and basins show often a V-shaped section which in itself points already towards their connection with the tectonic phenomena. Exceptions on this rule are e.g. formed by the Sawoe Sea north of Timor, the Aroe basin west of the Aroe Islands and the Weber deep west of the Kai Islands, which all show a more or less flat bottom. We shall come back to these areas in § § 10 and 11.

It is not unlikely that we may interpret many of these basins and troughs as strips of the crust which have originally been lifted up by the upward force working on the neighbouring tectonic belt as a consequence of the tendency of this belt of negative anomalies towards readjustment of the isostatic balance, but which have afterwards sunk down when this belt detached itself somewhat from the adjoining parts of the crust; this release thus led

1) Vening Meinesz, Umbgrove, Kuenen, 1934, p. 184 e.s.

to the rising of the tectonic belt and the sinking of the adjoining strips which in this way formed the basins and troughs here considered. [1]) The presence of the strong negative anomalies in the tectonic belt shows that this process is yet far from being finished. It is impossible, moreover, to predict how far it will go; it is not unlikely that the cohesion of the crust will prevent its continuing till the negative anomalies have disappeared entirely. In several parts of the belt, e.g. in Timor, the geological evidence shows that the rising of the island and the sinking of the neighbouring basins have occurred quite recently and probably are still continuing.

For the deep troughs adjoining the tectonic belt, as, e.g. the through west of the Mentawei Islands to the west of Sumatra, the deep Java trough south of that island and the Mindanao deep the explanation probably does not hold. It seems more likely that these troughs may be considered as the original surface of the crust bending down towards the main deformation zone without any process of the above kind having taken place afterwards. In some places of the belt as e.g. south of Java this deformation may be a down-buckling of the main crust covered by a crumpled mass of surface layers coming from one side — in this case the Java side — which is not engulfed in the downward movement (fig. 10a). In other cases, as e.g. the belt west of Sumatra and the Mindanao Deep where we may expect the relative movement of the crustal blocks on both sides to be mainly parallel to the belt, the deformation is probably an overriding of one block over the other caused by a small component of this relative movement at right angles to the belt (fig. 10b).

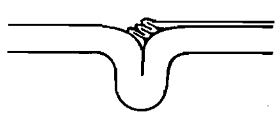

Fig. 10a.

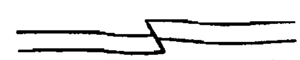

Fig 10b.

Fig. 10a en 10b. Trough development by buckling and overriding of the crust.

We have thus described two possible types of basins and troughs adjoining the tectonic belt which probably more or less coincide with the two groups distinguished by KUENEN in his above-mentioned paper. It is no doubt possible that mixed cases occur which have originally been formed in the second way but which have afterwards been deepened by the process first mentioned. It appears even possible that most of the troughs and basins here examined must be considered in this way.

The gravity field does not reveal much about these basins and troughs on both sides of the tectonic belt because they are so near it that in most cases their gravity field is drowned by the effect of the great mass-deficiency below the main belt.

We shall come back to these problems in the detailed study of the anomaly-profiles.

§ 5. The second type of basins in the archipelago; convection currents.

The second type of basins has mostly a rather irregular ground-plan, a flat bottom and fairly steep sides which seem to point to their having been formed by sinking. As KUENEN remarked, the sides are usually not steep enough to consider them as faults; it appears more often to be a flexure of the crust, possibly accompanied by systems of small faults.

1) This view has already in 1936 been given by Kuenen (see Kuenen, 1936, p. 203 e.s.).

All these basins show fairly large positive anomalies for regional isostatic reduction but for local reduction the anomalies are not much greater than those in the Java Sea.

The largest and deepest of these basins are the southern Banda Sea, the sea south of the Soela Islands and the Celebes Sea; all these basins have a depth of slightly over 5000 m. A second group of basins, already distinguished from the first group by KUENEN in his paper of 1934, is less deep, viz. 2000—2500 m, but seems otherwise to have, morphologically speaking, a similar character; they are mostly continuations of basins of the first group. We find them in Strait Makassar between Borneo and Celebes, in the Gulf of Bone between the south and south-east arm of Celebes and in the Gulf of Tomini south of its north arm, perhaps also in the Weda basin to the south-east of Halmaheira.

We shall begin by studying the first group of these basins. It is probable that they have rather recently been formed. Although no exact date can be given of their sinking down, we may be sure that it occurred since the miocene. The whole tertiary period up to that time does not show evidence (UMBGROVE 1938 p. 57) of other than littoral and neritic rocks, deposited in a shallow sea.

In several places the folded miocene (ibid. p. 58) on the island arcs is intersected at an angle by the present coast-line of the deep basins and so these basins must have come into being after the folding-period. Partly this regards basins of the type of the preceding §, as e.g. for the coast-line of Timor, but partly also basins of the last type as e.g. for the coast-line of Boeton. UMBGROVE mentions two suppositions about the period of sinking; it might have been contemporaneous with the formation of the pliocene graben on Timor, the Kai and Tanimber Islands or, more likely still, it might have been connected with the strong rising of these islands in the pleistocene. This last supposition would make it still more recent.

The shape of the three basins is given by the surrounding islands and island-arcs. They do not seem, therefore, to be primary formations and this also appears to point towards an origin by sinking. They have the character of island-arc basins, as e.g. the Caribbean Sea, the Sea of Japan, etc; they are bordered by the tectonic belts. They have likewise another property in common which is not present for any of the other basins of the archipelago; in their central parts they are the seat of deep earthquakes. An explanation shall have to cover that fact also. In view of these facts we can hardly doubt that their origin must have been brought about by the tectonic phenomena and they must especially be expected to be connected with the last great folding in the main belt which took place in tertiary f 2 i.e. in a period which we may estimate at some 20 million years ago. It is, however, a remarkable fact that they originated with such a great time lag after that period; as we have already mentioned, UMBGROVE puts their origin in the later pliocene or probably even in the pleistocene, i.e. some 1—5 million years ago.

As the writer has on a previous occasion put forward [1]) he thinks that these facts can be accounted for by the hypothesis of convection-currents originating in the subcrustal plastic layers, rising below the belts of negative anomalies and sinking below the basins. The cooling of the Earth brings about a temperature gradient in these layers which must tend to bring about the possibility of convection-currents, the lower temperature being on top of the higher temperature. It depends on two circumstances whether such a current will come into being in the Earth.

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1) Vening Meinesz, Umbgrove, Kuenen, 1934, p. 135.

In the first place there is a minimum thickness of homogeneous fluid needed for rendering convection possible. Lord Rayleigh discovered this fact and derived the formula for the minimum value of the height of the layer [1]); it depends on the temperature gradient β, on the kinematic viscosity ν, on the thermal expansion coefficient α, on the thermometric conductivity λ and on the boundary conditions. Taking [2])

$$\beta = 10^{-5}$$
$$\alpha = 2 \times 10^{-5}$$
$$\lambda = 0.01$$

and introducing for ν the value of 1×10^{22} following from the post-glacial rebound in Scandinavia[3]) we find that, depending on the boundary conditions, a thickness of 200—250 km is sufficient.

The seismological results do not indicate any discontinuity below the lower boundary of the crust up to a depth of at least some 700 km and probably none is present even in the whole mantle up to the core at a depth of 2900 km. So there seems to be no need for doubt on this account about the possibility of convection-currents

There is, however, another point which is questionable. The above mentioned formula of Rayleigh is true for pure viscosity but the question is whether these layers are in this condition?Jeffreys has raised doubt on this point and the writer is of the same opinion; there are several reasons for assuming that the layer below the rigid crust has still a little strength which has to be overcome before the fluid stage is reached. Considering the existing deviations of isostasy the writer is inclined to assume a limit of only 10 kg/cm² for the shear-stress; for equilibrium disturbances in the substratum caused by effects at the surface this corresponds to deviations of isostasy ranging from + 11 mgal to — 11 mgal and this seems an acceptable limit for such anomalies. At greater depth it seems probable that because of the higher temperature the strength diminishes and possibly disappears entirely.

The strength mentioned prevents a convection-current to form unless a special circumstance arises for starting it. Such a circumstance is provided by the downbulge of the crust in the tectonic belt. It means a concentration of sialic material and as this is richer in radio-active elements than the subcrustal layer the effect must be a slow heating up of the area around the bulge. After a long period the excess of temperature in the surrounding subcrustal layer must be such that the equilibrium in this layer is sufficiently disturbed for overcoming the strength and starting the convection-current. Because of the higher temperature the surface of the substratum must rise and, in consequence of this, subcrustal matter must flow off towards the side where least resistance is met, which, in East Indonesia is the area of the Banda basin; we shall presently come back to this point. This gives an excess of pressure in the area which thus becomes loaded by this matter and so the loaded column will sink and a return current towards the tectonic belt will form at a lower level. The circuit is thus closed and the convection-current is started.

Examining this process we see that in the beginning the temperature difference of the rising column under the belt and the sinking column besides it will increase, as the first will contain more and more matter of lower level and, therefore, of higher temperature while

1) Rayleigh, 1916.
2) See also Jeffreys, 1929, p. 140.
3) Vening Meinesz, 1937.

the second will receive more and more matter of the surface current which has lower temperature. The speed of the current will, therefore, increase till about a quarter of a revolution is made.

During this time the cooling of the sinking column must bring about a shrinking of this column of which a part is showing itself at the Earth's surface as a sinking of this area while in the same way the surface above the rising column which is heating up will show a rising; we thus may explain the sinking of the Banda basin and the other basins in Indonesia. We shall afterwards see that the current can also account for the deep-focus and intermediate earthquakes but for making this clear we shall more in detail have to study the stresses accompanying the current.

After some time the process of the increase of the current-speed must be reversed as the temperature of the sinking column will gradually increase again when the higher temperature matter has pervaded the whole top-layer and enters this column from above while that of the rising column falls because the lower temperature matter enters it via the lower layers from below and so the speed is slowly diminishing till the whole process stops.

Roughly speaking this must occur after a half revolution. The low temperature matter is then entirely at the bottom and the high temperature on top and so thermal equilibrium is again restored in the Earth. No further current is any more possible until the cooling of the Earth has sufficiently lowered the temperature of the upper layer and the lower matter has been heated so that at a certain period instability will again have been established.

In this rough review of the process the heat-conduction has been neglected. It must be shown how far this may be done and in what way it changes the picture. We shall, therefore, presently try to make a more exact investigation and we shall find that we can not expect the formation of a steady convection-current which would continue indefinitely.

The above suppositions about convection-currents have been following the same lines as David Griggs in his important study "A Theory of Mountain-building" [1]) in which he gives an explanation of the periodicity of the great orogenetic periods of the Earth's history. As the dimension of the convection-currents in this case are many times those in the Archipelago, we may imagine that the periods must be correspondently greater.

One point has still to be examined. In general we find the basins only on one side of the tectonic belt and this is always on the inside of the curve of this belt. It does not seem difficult to explain this by our convection-current hypothesis. In the case e.g. of the south-eastern Banda basin it seems evident that a sinking current on the inside of the semi-circular tectonic belt must meet less viscous resistance than a current sinking in a belt adjoining the tectonic belt on the outside of the curve; such a belt would have a long and narrow cross-section while in the first case the cross-section is about circular.

If in other areas the tectonic belt is straight it is still probable that in most cases the current will only develop towards one side. There are always small differences in resistance for the currents on the two sides and so the strength-limit will first be reached on one of the sides. Once started on that side the current will probably continue there and there seems to be no reason why it should afterwards develop too on the other side. This meets an objection made by UMBGROVE[2]) who argued that in case the convection supposition were right we ought

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1) Griggs, 1939.
2) Umbgrove 1947, p. 163.

to expect basins on both sides of the straight belts in the Tonga Islands. The dominating factor for the developing of the convection-current is on what side the resistance is smallest.

Before attempting our investigation of the currents, we shall first examine whether the time needed for the starting of the current could indeed account for the great time-lag of 15-19 million years between the folding period in tertiary f 2 and the period of the sinking of the Banda basin and other basins. For determining the excess of heat brought about by the bulge below the crust in the belt we have to make an estimate of the cross-section of this root. If we assume it to consist entirely of granite we may put the density of the root at 2.67 and of the surrounding substratum at 3.27 (peridotite = 3.23, dunite = 3.29) and so the difference would be 0.6, i.e. the normal figure applied e.g. by Heiskanen and many others. In that case the gravity cross-profiles south of the Banda Sea and of Java seem to point to a cross-section of the root of 1200-1500 km^2; as formula 15b shows such a value would account for the difference of the negative anomalies in the belt and the positive anomalies to both sides. For a more accurate computation the writer may also refer to the figures for a root of 20×60 km^2 as given in fig. 20 on page 121 of Gravity Expeditions at Sea Vol. II and to profile no. 16 (from Java towards Christmas Island) on Plate II of the same publication. This cross-section has, however, to be increased by the cross-section of the root already taken into account by means of the isostatic reduction, the effect of which, therefore, is no longer present in the anomalies; for the eastern half of the belt this must certainly be of the order of 300-500 km^2. Taken together we can not be far from the truth when we assume a cross-section of some 1700 km^2.

The rigid crust, however, does not consist entirely of granite but also of one or more deeper layers. The opinions on their nature vary greatly. Some authors suppose granodiorite, others diorite, others again gabbro (e.g. Daly) and some even ultrabasic rocks. It is difficult, therefore, to make a more or less accurate guess at their densities. So the difference in density of these deeper layers from that of the subcrustal layer is unknown. It is clear that in order to explain the gravity anomalies the cross-section of that part of the granite in our belt which in our supposition has to be replaced by deeper material has to be increased in such a way that the ratio of the new to the original cross-section is inversely proportional to the ratio of the new density-difference from the subcrustal matter to the original value of this difference of 0.6. It is roughly speaking, of little importance what part of this replacement is made in the root and what part in the crustal belt above the root.

If we could adhere to our original picture of a crust consisting entirely of granite we could with some confidence derive the excess of radio-activity brought about in the belt. Using the figures given in the "Handbook of physical constants" by BIRCH, SCHAIRER and SPICER and in "Internal Constitution of the Earth" by GUTENBERG, c.s., we find for the heat-production in granite in the first a figure of 5.6×10^{-6} cal/gram/year or 4.8×10^{-13} cal/cm^3/sec and as a mean of three figures in the second 7.8×10^{-13} cal/cm^3/sec. The mean of both values is 6.3×10^{-13} cal/cm^3/sec. For ultra-basic rocks the "Handbook" gives 0.9×10^{-6} cal/gram/year or $0.9 \times {}^{-13}$ cal/cm^3/sec and in Gutenberg's list we find as a mean of the values for peridotite and dunite the figure of 1.5×10^{-13} cal/cm^3/sec; the mean of both figures gives a heat-production for ultra-basic rocks of 1.2×10^{-13} cal/cm^3/year. For the excess of heat produced in the root we obtain, therefore, $(6.3 - 1.2) \times 10^{-13} = 5.1 \times 10^{-13}$ cal/cm^3/sec. For a cross-section of the root of 1700 km^2 we thus obtain an excess heat-production of 9 cal/sec per thickness of 1 cm.

In the actual conditions where part of the excess crustal matter in the belt does not consist of granite but of unknown other materials it is difficult to say how much this result has to be changed. If the differences in heat-production between those unknown materials and the subcrustal matter were proportional to the differences in density, no correction would at all be necessary, but this is certainly not the case; we know that the heat-production of these more basic materials is le s than according to this ratio. As it is not likely that more than half of the excess of crustal mass is other than granite, we shall diminish the above figure for the excess heat-production to 7.5 cal/sec per 1 cm thickness of the cross-section. It does not seem probable that this figure would be wrong by more than 50%.

We have now to solve the problem of finding the temperature distribution caused by this source of heat after a time of 15—19 million years. The equation of the temperature brought about by the heat-conduction for the two-dimensional case is given by

$$\alpha \Delta \theta = \frac{\partial \theta}{\partial t} \tag{17 A}$$

where $\Delta \theta$ expressed in polar coordinates r, φ is

$$\Delta \theta = \frac{\partial^2 \theta}{\partial r^2} + \frac{1}{r} \frac{\partial \theta}{\partial r} + \frac{1}{r^2} \frac{\partial^2 \theta}{\partial \varphi^2} \tag{17 B}$$

and

$$\alpha = \frac{\lambda}{c \varrho} \tag{17 C}$$

λ = coeff. of thermal conductivity
c = heat capacity
ϱ = density.

The quantities λ, c and ϱ have regard to the subcrustal material.

As our whole computation can not be more than a rough approximation we can simplify our problem by assuming a circular cross-section of the root and a concentration of the heat-production in the centre. For obtaining a cross-section of 1700 km² the radius r_0 has to be 23 km. If there were no Earth's surface these suppositions would reduce our problem to a simple axially symmetric one; the free surface at the Earth's surface, however, involves a temperature that is constant there. This condition can in a simple way be taken care of, viz. by adding a second axially symmetric temperature distribution around a sink of heat of the same amount as the heat-source and located symmetrically to this source with regard to the Earth's surface. Assuming the distance of the source to the surface to be 48.5 km (30 km for the Earth's crust and $\frac{1}{2} \times 1700/46 = 18.5$ km for the distance below the crust we find the heat-sink to be situated at a distance of 97 km above the heat-source. It is obvious for reasons of symmetry that the temperature-change at the Earth's surface brought about by the source is cancelled by that caused by the sink.

For an axially symmetric heat-conduction around a concentrated source the equations 17 reduce to

$$\alpha \left(\frac{\partial^2 \theta}{\partial r^2} + \frac{1}{r} \frac{\partial \theta}{\partial r} \right) = \frac{\partial \theta}{\partial t} \tag{18}$$

The solution is an exponential integral, which we shall, as usual indicate by the symbol *Ei*. If q is the heat-production in cal/cm/sec in the centre we find

$$\theta = \frac{q}{4\pi\lambda}\left[-Ei\left(-\frac{r^2}{4at}\right)\right] \qquad \left(Ei\,(x) = \int_{\infty}^{-x} \frac{e^{-u}}{u}\,du\right) \tag{19}$$

Introducing

$q = 7.5$ cal/cm/sec.
$\lambda = 0.01$ (see "Handbook", p. 254)
$c = 0.20$ (see "Handbook", p. 235 e.s.)
$\varrho = 3.27$

we obtain

$\alpha = 0.015$

We shall apply our formula for two values of t, viz. $t = 3.000.000$ years $= 0.945 \times 10^{14}$ sec and $t = 18.000.000$ years $= 5.67 \times 10^{14}$ sec. The second period is a mean estimate of the time elapsed since the last great folding in tertiary *f* 2, the first a rough estimate of the time-interval since the more recent folding in the pliocene which took place in E. Celebes, in the island of Boeton and in the oil-geosynclines of northern Java, E. Sumatra etc. In many parts of the main tectonic belt, as e.g. Timor, the Tanimbar Islands, the Kei Islands, etc. trough faults or "graben" were formed during this last period and although it does not appear likely that this has been a period of great shortening of the crust in this belt and that, therefore, a considerable part of the crustal root revealed by the anomalies could have been formed at that time, it seems worth while to include this supposition as a possibility.

Using the table for *Ei* $(-x)$ in "Funktionentafeln" by JAHNKE U. EMDE, p. 21 and 22 we find

r km	$t = 3.000.000$ years			$t = 18.000.000$ years		
	$x = r^2/4\,at$	$-Ei\,(-x)$	θ	$x = r^2/4\,at$	$-Ei\,(-x)$	θ
23	0.933	+ 0.246	+ 14°.67	0.1555	+ 1.432	+ 85°.4
40	2.822	+ 0.0164	+ 0°.98	0.470	+ 0.599	+ 35°.8
60	6.35	+ 0.00027	+ 0°.016	1.058	+ 0.200	+ 12°,0
80	11.28	+ 0.000001	+ 0°.0001	1.880	+ 0.0506	+ 3°.0
100	17.64	+ 0.000000	+ 0°.0000	2.940	+ 0.0141	+ 0° 8

We find that the temperatures brought about by the heat-production of the root are remarkably small and the process extremely slow. After 3.000.000 years the heating has practically not reached further than to 17 km outside the root and after 18.000.000 years not up to more than 77 km outside the root. Even in the last case there is no practical need to add the effect of the heat-sink at a distance of 97 km above the source; in our rough computation this effect is obviously negligible. The above estimates may slightly change if we take into account that the heat is produced throughout the whole root instead of only in its centre but at a small distance this difference must already die out.

Examining the small radius up to which the heating has proceeded in 3.000.000 years it seems unlikely that this heating can have been effective for starting a convection-current of a diameter of a few hundreds kilometers even in case the heat production of the root would have had a value double that used for our computation. So also on this account it does not seem likely that the root has formed so shortly ago, i.e. in the pliocene, and another mechanism for producing a lag of this amount has not occurred to the writer.

For investigating whether the temperature distribution brought about after 18.000.000 years may lead to the starting of a convection current we shall make a rough estimate of the rise of the surface of the substratum caused by it. In doing so we shall neglect the elastic stresses accompanying this local heating and we shall simply determine approximately the rise brought about by the thermal expansion as if it was free to expand in a vertical sense.

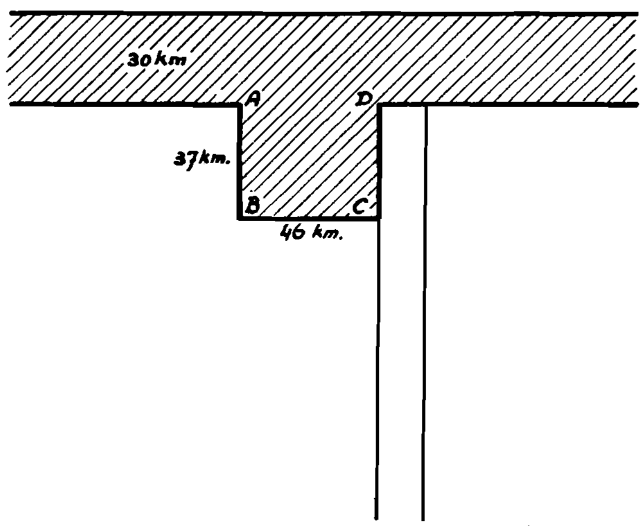

Fig. 11.

Assuming in this instance a rectangular root of the same breadth of 46 km as formerly supposed and a height of 37 km determined by its assumed cross-section of 1700 km², we shall derive the heating of a column bordering this root as indicated in the figure. Supposing a temperature of 85°.4 over the length C D and below this a distribution as given by the last column of the above table, i.e. a temperature of 35°.8 at 17 km below C of 12°.0 at 37 km below this point, etc., the expansion of the entire column when adopting a coefficient of thermal expansion of 2×10^{-5} is 97 meters. Although this coefficient has regard to volumetric thermal expansion it has been assumed that the adjustment of hydrostatic equilibrium which usually acts much quicker than the intervals of time considered here [1]) produces the entire expansion at the surface. If because of the stress-limit in these layers this adjustment has not been complete the figure of 97 m has to be diminished accordingly. If we should have introduced the temperature figures after an interval of 3.000.000 years the figure found for the rise of the surface would have been 14 m.

For a density of the substratum of 3.27 these two figures for the rise correspond to

1) In Scandinavia the period for the readjustment of half of the deviation after the disappearance of the ice is of the order of 10000 years.

figures for an excess-pressure of 12 kg/cm² resp. 1.7 kg/cm². The first seems of the right order of magnitude for overcoming the stress-limit of the substratum and so we can imagine it to be sufficient for starting the convection-current. The figure of 1.7 kg/cm² brought about in 3.000.000 years, however, appears too small and so this likewise confirms our conclusion that for the formation of the current the older and stronger folding must probably have been responsible.

Having thus cleared away the problem of the great time-lag between the folding-period and the originating of the convection-current, we shall now study the current itself. For gradually approaching our problem we shall examine the equations and formulas for a simpler one viz. for a steady convection-current. We shall use the formulas for steady convection derived by the writer in "Equations for elastic solids in spherical coordinates, etc." [1]) and we shall neglect for our case the Earth's curvature; we thus will use the formulas 25a, 30, 31, 32 and 33 (p. 475—477) for a plain fluid layer. The Z axis is taken here in a contrary direction than in this paper i.e. positive downwards, the X axis at right angles to the belt and the Y axis parallel to it. We shall treat our problem as a two-dimensional one in the XZ plane and so we shall introduce for the function K (formulas 12, 13 and 15 ibid) which determines the distribution in the horizontal plane of the vertical component ω of the speed, of the pressure p $\left(p = -{}^1/_3\ (\sigma_x + \sigma_y + \sigma_z) \right)$ and of the temperature θ [2])

$$K = \cos fx$$

and so

$$\begin{aligned} \omega &= \omega_0 \cos fx \\ p &= p_0 \cos fx \\ \theta &= \theta_0 \cos fx \end{aligned} \tag{20}$$

where ω_0, p_0 and θ_0 are only functions of z.

If L is the distance between the rising and the sinking columns we have obviously

$$f = \frac{\pi}{L}.$$

By means of the formulas 25 and 30 ibid we have

$$\frac{\delta^4 \omega_0}{\delta z^4} - 2 f^2 \frac{\delta^2 \omega_0}{\delta z^2} + f^4 \omega_0 + \frac{\alpha \varrho g}{\eta} f^2 \theta_0 = 0 \tag{21}$$

where

α = coeff. of thermal volumetric expansion
ϱ = density
η = coeff. of viscosity

For our case of slow steady motion the equation for the temperature conduction simplifies to

$$\beta \omega = \lambda \nabla^2 \theta \tag{22}$$

where

β = vertical temperature gradient for no motion (pos. downwards)
λ = coeff. of thermal conductivity

1) Vening Meinesz 1945.

2) In this problem of slow steady convection the temperature θ indicates the deviation from the temperature for no motion.

Introducing (20) we obtain

$$-\frac{\beta}{\lambda}\,\omega + \frac{\delta^2\theta_0}{\delta\,z^2} - f^2\theta_0 = 0 \tag{23}$$

Eliminating θ_0 from the equations (21) and (23) we find the following equation for ω_0 derived already long ago by Lord RAYLEIGH [1])

$$\frac{\delta^6\omega_0}{\delta\,z^6} - 3\,f^2\,\frac{\delta^4\omega_0}{\delta\,z^4} + 3\,f^4\,\frac{\delta^2\omega_0}{\delta\,z^2} - f^6\,\omega_0 + \frac{\alpha\,\beta\,\varrho\,g}{\eta\,\lambda}\,f^2\,\omega_0 = 0 \tag{24}$$

In deriving this equation it has been assumed that all the constants of the factor of the last term are independent of z except β and λ; for η this is no doubt only a rough approximation. If also β and λ would be constant the solution of (24) is simple; we find for ω_0

$$\omega_0 = A_1\,e^{im_1 z} + \ldots\ldots\ldots\ldots + A_6\,e^{im_6 z} \tag{25a}$$

where A_1 .... A_6 are integration constants depending on the boundary conditions and m_1 .... m_6 the roots of the equation:

$$(m^2 + f^2)^3 = \frac{\alpha\,\beta\,\varrho\,g}{\eta\,\lambda}\,f^2 \tag{25b}$$

These roots have the shape

$$m_{1,2} = \pm\,p \quad m_{3,4,5,6} = \pm\,q \pm ir \tag{25c}$$

where p, q, r are real quantities. Introducing this we can write (25a) in the shape

$$w_0 = A\,\sin\,(pz + \omega) + Be^{rz}\,\sin\,(qz + \varphi) + Ce^{-rz}\,\sin\,(qz + \gamma) \tag{25 d}$$

in which the integration constants are A, B, C, ω, φ and γ.

We shall not further study this solution because the assumption that β is independent of z is obviously far beside the truth; we shall somehow have to take into account that β strongly diminishes with the depth. As we do not know the history of the subcrustal layers nor their contents of radio-active minerals, the temperature distribution is unknown, but we can make an estimate. Assuming a gradient in the crust diminishing because of its radioactive constituents from 30°/km to 10°/km we find at the bottom of a crust of a thickness of 35 km a temperature of about 700°.

If we assume that periodically the sub-crustal layer has been subject to convection-currents which have destroyed the temperature-gradient, the gradient in this layer has in the present time to show, as Gutenberg [2]) remarks, a much smaller value which we may estimate e.g. at about 0.1°/km; from 100 km—500 km he assumes a temperature of 1500°—1800°. The upper part of this layer has been cooling during the interval since the last current stopped and so here the gradient must be larger. We shall assume it to be 10°/km where it touches the crust, i.e. the same value as in the adjoining layer of the crust and diminishing towards the value of 0.1°/km in 500 km. We can represent this distribution reasonably well by the formulas for the temperature θ and the gradient β as follows

$$\theta = 1086°\ (1 - e^{-mz}) + 700° \tag{26 a}$$

$$\beta = 1086\ me^{-mz}\ \text{centigrade/km} = 10\,e^{-mz}\ \text{centigrade/km} \tag{26b}$$

$$m = 0.00921\ \text{km}^{-1} \tag{26 c}$$

1) Lord Rayleigh, 1916.

2) B. Gutenberg, 1939, p. 162.

The coordinate z is counted from the surface of the subcrustal layers. For different values of z from 0—500 km this gives

z km	θ centrigrade	β centrigrade/km
0	700	10
100	1354	4.0
200	1614	1.6
300	1717	0.06
400	1758	0.025
500	1775	0.010

The temperature curve is represented in fig. 12.

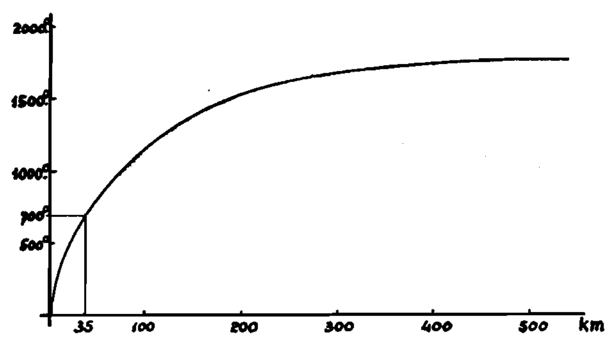

Fig. 12. Supposed temperature-curve in the Earth.

Examining this distribution it appears satisfactory for the upper 500 km. For greater depth we may expect an increase again of the temperature gradient to 1°/km or slightly more. If this is present from 500 km up to the centre of the Earth, the temperature at this last point would be 7650° and this value does not seem too high. The increase of the gradient could be explained by the absence or at least less frequent occurrence of convection-currents in these deeper parts of the Earth. It is possible, moreover, that the gradient of 0.1°/km which we assumed for a depth of 500 km is too small and that the temperature-curve has to be slightly less steep for small values of z and slightly steeper for greater z. For our investigation of the problem of convection-currents in the upper 700 km, however, we shall keep to this formula as it allows a simpler mathematical treatment than other types of formulas and as it does not seem unacceptable for this region.

We shall, therefore, now write our equation as follows:

$$\frac{\partial^6 \omega_0}{\partial z^6} - 3 f^2 \frac{\partial^4 \omega_0}{\partial z^4} + 3 f^4 \frac{\partial^2 \omega}{\partial z^2} - f^6 \omega_0 + \varepsilon^3 f^6 \omega_0 \, e^{-mz} = 0 \qquad (27\,a)$$

where

$$\varepsilon^3 = \frac{\alpha \, \beta_0 \, \varrho \, g}{\eta \, \lambda \, f^4} \qquad (\beta_0 = 10°/\text{km}) \qquad (27\,b)$$

The quantity ε has zero dimension.

This equation in w_0 can not be solved by a closed formula and the writer had difficulties in finding a solution. He mentioned the problem to DR. J. G. VAN DER CORPUT of the University of Amsterdam and VAN DER CORPUT helped him at once to a way of handling it. He published the solution in the shape of a quickly converging series in "Simon Stevin" [1]) to which we may refer. The formulas for three of the six roots are

$$\omega_{01} = \sum_{k=0}^{\infty} \frac{(-)^k}{\{k!\, m^k\, (m + 2f) \ldots (km + 2f)\}^3} \frac{f^{6k}}{} \varepsilon^{3k} e^{-(f+km)z} \tag{28 a}$$

$$\omega_{02} = \left[fz + 3 \sum_{h=1}^{k} \frac{f}{hm + 2f} + 3 \frac{f}{m} \left(\frac{1}{1} + \frac{1}{2} + \ldots + \frac{1}{k} \right) \right] \omega_{01} \tag{28b}$$

$$\omega_{03} = \left\{ \left[fz + 3 \sum_{h=1}^{k} \frac{f}{hm + 2f} + 3 \frac{f}{m} \left(\frac{1}{1} + \frac{1}{2} + \ldots + \frac{1}{k} \right) \right]^2 + \right.$$
$$\left. + 3 \sum_{h=1}^{k} \frac{f^2}{(km + 2f)^2} + 3 \frac{f^2}{m^2} \left(\frac{1}{1^2} + \frac{1}{2^2} + \ldots + \frac{1}{k^2} \right) \right\} \omega_{01} \tag{28c}$$

and the other three are found by substituting $-f$ for f. The general solution of 27a is the sum of these six roots, each multiplied by an arbitrary integration-constant. For deriving these constants we have to take into account the boundary conditions; we shall presently come back to this point.

Having determined ω_0 we can now derive the other elements for the convection-currents. For this purpose we shall apply the equations 13, 31 and 32 (p.p. 473, 476 and 477) of the above-mentioned paper of the writer [2]) and we thus obtain for the component u of the speed of the current in the direction of the X axis

$$u = -\frac{1}{f} \frac{\partial \omega_0}{\partial z} \sin fx \tag{29}$$

and for the stresses

$$\frac{p_0}{\eta} = \frac{\partial \omega_0}{\partial z} - \frac{1}{f^2} \frac{\partial^3 \omega_0}{\partial z^3} \text{ with } p = p_0 \cos fx \tag{30a}$$

$$\frac{\sigma_x}{\eta} = -\left(\frac{\partial \omega_0}{\partial z} + \frac{1}{f^2} \frac{\partial^3 \omega_0}{\partial z^3} \right) \cos fx \tag{30b}$$

$$\frac{\sigma_z}{\eta} = \left(3 \frac{\partial \omega_0}{\partial z} - \frac{1}{f^2} \frac{\partial^3 \omega_0}{\partial z^3} \right) \cos fx \tag{30c}$$

$$\frac{\tau_y}{\eta} = -f \left(\omega_0 + \frac{1}{f^2} \frac{\partial^2 \omega_0}{\partial z^2} \right) \sin fx \tag{30d}$$

As usual for a two-dimensional problem for which the third dimension (here the y dimension) is assumed to be infinite, we have $\sigma_y = \frac{1}{2} (\sigma_x + \sigma_z)$ and $p = -\frac{1}{3} (\sigma_x + \sigma_y + \sigma_z) = -\frac{1}{2}(\sigma_x + \sigma_z)$.

The temperature θ is given by formula (21) p. 45.

By introducing the solution 28 for ω_0 we find the formulas for all these quantities.

For the upper boundary we have obviously to introduce the boundary condition $\omega_0 = 0$ and because the presence of the rigid crust on top of the plastic layer must prevent appreciable movements in a horizontal sense at the surface of this layer, also the condition $u = 0$.

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1) Van der Corput, 1947.
2) Vening Meinesz. 1945.

The stress-components σ_z and τ_y on this surface-plane will in general not be zero. Values of σ_z will bring about vertical movements of the surface in such a way that the gravity effects involved will correspond to σ_z. Values of τ_y will exert a drag on the crust which may bring about tectonic deformations of the crust.

The conditions at the lower boundary of the layer may be simplified by assuming that the thickness of the layer is infinite and that the current dies out with increasing z. This simplification is an approximation which seems allowed because we may assume that the layer continues much further downwards than the breadth of the current and it is not likely that the depth of the current will far exceed the breadth. For our further study we shall especially concentrate our efforts on the eastern part of the Banda Sea where we may estimate the horizontal distance between the axis of the rising current under the tectonic belt and the axis of the sinking current in the middle of the basin at 340 km; this dimension simplifies our computations as it makes f equal to m. It is difficult to feel certain about the thickness of the layer where currents can take place but the author thinks that the absence of any evidence from seismic sources of a discontinuity in density in the mantle points to the whole mantle and so this would put the thickness at about 2900 km.

Our assumption involves that the three roots found by substituting $-f$ for $+f$ in the formulas 28 must disappear in our solution because their terms all contain the factor e^{fz}. We thus keep only the three roots given by 28a. b and c so we have three integration-constants A, B and C left by which these roots are multiplied. Their ratio can be derived from the two conditions mentioned above for $z = 0$, i.e. $\omega_0 = 0$ and $u = 0$. They are thus given except a common factor c and this factor is not determined by the physical conditions of our problem. We can try to derive it from one of the quantities which can perhaps be measured: the temperature at the surface, its vertical movements (connected with σ_z at the surface), the drag on the crust exerted by τ_y at the surface or the gravity-anomaly. Of these quantities the vertical movement is no doubt the least difficult to measure although even here uncertainties arise; we shall come back to this point.

In studying the solution we thus arrive at the conclusion that currents are possible for all positive values of the quantity ε, which according to (27b) involves all positive values of the temperature-gradient β_0 at the surface; an infinitely small positive value of β_0 is even possible. This result differs from the solution 25 for the case of a constant value of the temperature gradient over the whole layer; in his investigation mentioned above, LORD RAYLEIGH found a lower limit below which no convection is possible. This limit depends on the thickness of the layer and it becomes infinitely small for infinitely great thickness. It seems likely that our assumption of an infinitely thick layer is the cause of our result.

The investigation of our solution has shown that for values of ε up to 2 the solution is still near to the solution for ε being infinitely small. For the solution 25 with a constant value of β over the whole layer we find that if the layer has a definite thickness but infinite extent in a horizontal sense and the possibility of the horizontal dimension L and, therefore, also $f = \pi/L$ being free to arrange itself, this dimension will assume a value which corresponds to a value of ε of 2 (see 27b). Returning to our present problem we may remark that it is questionable whether greater values of ε will ever occur because it is not unlikely that in case a value of β_0 is present larger than what corresponds to $\varepsilon = 2$ no steady convection-current will form but a current increasing in intensity till the speed exceeds the limit above which our formulas are no longer valid. We may add that for steady convection greater values of ε would lead to currents going deeper and so the question is whether such currents will come into being or not. A further study of the problem will be required before an answer to this question can be given.

For our present problem formula (27b) gives a much greater value of ε. Introducing the following values

$\alpha = 2 \times 10^{-5}$ centigrade^{-1},
$\beta_0 = 1086$ m $= 10$ centigrade km^{-1} $= 10^{-4}$ centigrade cm^{-1},
$\varrho = 3.27$ gram cm^{-3},
$g = 980$ cm sec^{-2},
$\eta = 3 \times 10^{22}$ gram sec^{-1} cm^{-1},
$\lambda = 10^{-2}$ sec^{-1} cm^2,
$f = \pi/3.4 \times 10^7 = 0.921 \times 10^{-7}$ cm^{-1},

we find

$$\varepsilon^3 = 297$$

and

$$\varepsilon = 6.67$$

It seems hardly possible that this great value of ε^3 which is 37 times the value of 8 corresponding to $\varepsilon = 2$ could lead to steady convection and so we come to the conclusion that, as we expected it, the speed of the current must become such that the conduction can not keep pace with it. This must no doubt lead to the phenomenon as we have described it, in which a partial revolution, probably about a half turn, will lead to the restoring of thermal equilibrium, bringing the low temperature matter below and the high temperature matter on top.

Although our equations of steady convection do not represent this case we shall pursue our study of them for clarifying some problems which may give us an idea of our case. We shall use the equations for small values of ε because they are so much simpler than those for larger values of ε. We shall add the results obtained by the writer for $\varepsilon = 2$ and this will show how little difference it makes.

For small values of ε we can neglect all the terms of the formulas 28 except the first for $k = 0$.
This gives us:

$$\omega_{01} = e^{-fz} \qquad (32\text{ a})$$
$$\omega_{02} = fz\, e^{-fz} \qquad (32\text{ b})$$
$$\omega_{03} = f^2 z^2 e^{-fz} \qquad (32\text{ c})$$

We see at once that the two boundary conditions for $z = 0$, viz. $\omega_0 = 0$ and $\partial\omega_0/\partial z = 0$, are fulfilled by the third root and so we obtain

$$\omega_0 = c f^2 z^2 e^{-fz} \qquad (33)$$

Applying the formulas 21, 29 and 30 this leads us to

$$\theta = -8\, \frac{\eta f^2}{\alpha \varrho g} c\, e^{-fz} = -2.13 \times 10^{10}\ c\, e^{-fz} \qquad (34\text{ a})$$
$$u = c(f^2 z^2 - 2 fz) e^{-fz} \sin fx \qquad (34\text{b})$$

$$\sigma_x = 2\,\eta\, fc(fz - 1)\ (fz - 3)\ e^{-fz} \cos fx = 5.66 \times 10^9\, c(fz - 1)\ (fz - 3)\ e^{-fz} \cos fx \ \text{kg/cm}^2 \qquad (34c)$$

$$\sigma_x = 2\,\eta\, fc(-f^2z^2 + 3)\ e^{-fz} \cos fx = 5.66 \times 10^9\, c(-f^2z^2 + 3)\ e^{-fz} \cos fx \ \text{kg/cm}^2 \qquad (34d)$$

$$\sigma_\Delta = \frac{\sigma_x - \sigma_z}{2} = 2\,\eta\, fc(f^2z^2 - 2\,fz)\ e^{-fz} \cos fx = 5.66 \times 10^9\, c(f^2z^2 - 2\,fz)\ e^{-fz} \cos fx \ \text{kg/cm}^2 \qquad (34e)$$

$$\tau_y = -\,2\,\eta\, fc(fz - 1)^2\ e^{-fz} \sin fx = -\,5.66 \times 10^9\, c(fz - 1)^2\ e^{-fz} \sin fx \ \text{kg/cm}^2 \qquad (34f)$$

We have added to the list of stresses the quantity $\sigma_\Delta = \frac{1}{2}(\sigma_x - \sigma_z)$ which for $x = 0$ and $x = \pi/f$, i.e. for the axis of the rising and sinking columns, represents the maximum shearing-stress τ_{45} in each point; this is present in planes enclosing 45° with the coordinate-planes. The maximum shearing-stress for arbitrary values of x is given by

$$\tau_a = \sqrt{\sigma_\Delta^2 + \tau_y^2} \qquad (34g)$$

It is working in planes enclosing angles α with the coordinate-planes given by

$$tg\, 2\,\alpha = \frac{\sigma_\Delta}{\tau_y} \qquad (34h)$$

Fig. 13 gives a cross-section over the current in which the areas of maximum shearing-stress which we will presently determine are indicated; it further gives curves for ω_0, u_0, τ_{45} and τ_y. According to what has been said on page 40 the current has only been drawn on one side of the tectonic belt.

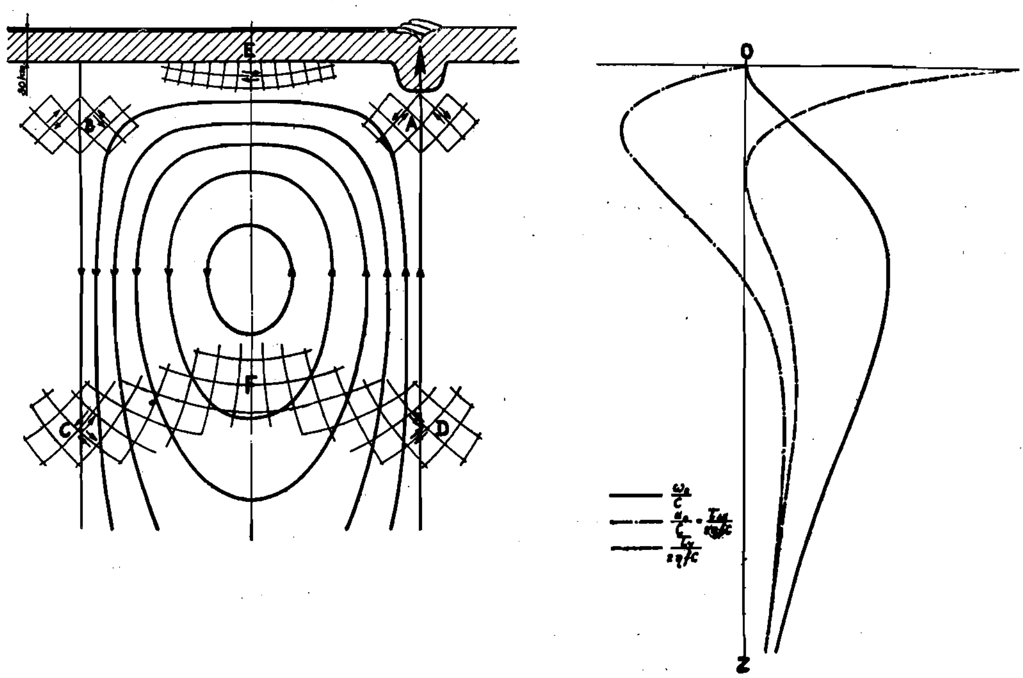

Fig. 13. Convection-current under the Banda Sea area with indication of areas of maximum shearing-stress; curves for ω_0, u_0, τ_{45} and τ_y.

The maximum value of ω_0 found by equalling $\partial\, \omega_0/\partial\, z$ to zero occurs at a depth

$$z = \frac{2}{f} = 216 \text{ km} \qquad (35a)$$

and has a value

$$\omega_{om} = 4\, c\, e^{-2} = 0.542\, c \qquad (35b)$$

This enables us to make a rough estimate of c. As the current has probably originated some 2.000.000 years ago and as the depth of the basin suggests that at least a great part of the low temperature matter of the upper sheet has been transferred to the vertical column below the basin, we may roughly estimate that the total movement along the axis of the current must have been some 200 km and so we arrive at a speed of 10 cm per year. This is no doubt not much more than an order of magnitude but we shall continue to use it as a reasonable guess. It leads to

$$c = 5.86 \times 10^{-7} \qquad (36)$$

We shall now investigate the location and size of the maximum values of the shearing-stress in our current-system in order to see whether they roughly coincide with the seismic results in the Banda Sea area.

The maximum values of τ_{45} for $x = 0$ and $x = L = 340$ km, i.e. in the axis of the sinking and rising currents, follow from formula (34e); the two cases will be denoted by accents [1]).

$$z' = \frac{2-\sqrt{2}}{f} = 63.4 \text{ km} \qquad z'' = \frac{2+\sqrt{2}}{f} = 370 \text{ km} \qquad (37)$$

$$\tau'_{54} = -5.66 \times 10^{9}\, c(2\sqrt{2}-2)\, e^{-(2-\sqrt{2})} \text{ kg/cm}^2. \quad \tau''_{45} = 5.66 \times 10^{9}\, c(2\sqrt{2}+2) e^{-(2+\sqrt{2})} \text{ kg/cm}^2.$$

and for the above value of c

$$\tau'_{45} = -1530 \text{ kg/cm}^2 \qquad \tau''_{45} = 528 \text{ kg/cm}^2 \qquad (38)$$

The values of z' and z'' have to be increased by the thickness of the crust af about 35 km for obtaining the depths below the Earth's surface and so we thus get 100 km and 400 km.

For $x = \frac{1}{2}L = 170$ km the maximum values of the shearing-stress τ_y, working in horizontal and vertical planes are given by formula 34 f. We obtain [2])

$$z = 0, \qquad z'' = 3/f = 325 \text{ km},$$

$$\tau_y' = 5.66 \times 10\, c \text{ kg/cm}^2. \qquad \tau_y'' = -5.66 \times 10^9 \times 2^2 \times e^{-3}\, c \text{ kg/cm}^2$$

and for the above-menitoned value of c

$$\tau_y' = 3320 \text{ kg/cm}^2, \qquad \tau_y'' = 660 \text{ kg/cm}^2. \qquad (40)$$

The depths z' and z'' have again to be increased by the crust's thickness.

For values of x between 0 and $\frac{1}{2}$ L resp. $\frac{1}{2}$ L and L we can derive the maximum values of the shearing-stress from formula (33g) and the position of the planes in which they are working by means of (32h). The results are represented in fig. 13.

Examining this figure we see that the areas A and CF correspond remarkably well with the locations of the intermediate and deep earthquakes and the position of the shear-

1) For $\varepsilon = 2$ and $w_{om} = 10$ cm per year the values are
$z' = 69.2$ km $\qquad z'' = 400$ km
$\tau'_{45} = -1400$ kg/cm² $\qquad \tau''_{45} = 504$ kg/cm²

2) For $\varepsilon = 2$ and $w_{om} = 10$ cm per year the values are
$z' = 0,$ $\qquad z'' = 347$ km,
$\tau'_y = 2830$ kg/cm². $\qquad \tau''_y = 660$ kg/cm².

planes likewise. As the writer mentioned already in an earlier paper[1]) these two types of earthquake-centres do not seem to occur, as it is often thought, in one shear-plane dipping under an angle of 45°, but rather in two clouds separated by a gap of which the centres lie in such a plane; the deep earthquakes, moreover, often occur in a fairly broad belt. As fig. 13 shows this behaviour is well explained by our hypothesis. It seems, moreover, hardly possible that in a plastic substratum a shear-plane of such dimensions could maintain itself.

Our hypothesis is also in harmony with the result obtained by KONING[2]) for the direction in which for a deep earthquake below the Toekang Besi Islands the shear occurred along the shear-plane. It is indicated in fig. 13. This also is difficult to explain if we assume a huge shear-plane dipping down under 45° from the tectonic belt as e.g. Umbgrove does in "The Pulse of the Earth" 2nd edition[3]).

An explanation has to be given of the fact that, in case our supposition is right, the areas B and FD do not in general come into action, although there is some slight evidence that occasionally they do, as e.g. the centres at 100 km depth in the centre of the Banda Sea and that at 500 km km depth to the south of the island of Boeroe appear to indicate. In this earlier paper the writer advanced the supposition that the activity in the areas A and C is favoured by the rising of the crust in the tectonic belt which, according to the geological and geomorphological evidence, has likewise occurred in the most recent period. This rather quick rising must give rise to fairly sudden stresses in the substratum and these stresses might well be the trigger effect for shear along a plane continuing from the surface belt through the areas A and C. We shall, however, presently find another reason why we must expect these areas to be especially active.

We may notice that the values z' and z'' of the centres of these areas are inversely proportional to f and so directly proportional to the horizontal dimension L of the current-system. If this system is broader we must expect greater depths of the deep earthquake-centres and this is in harmony with the facts in the Indonesian Archipelago; further to the west of the Banda Sea area hitherto considered, we see greater depths of the foci, i.e. 600—700 km, at greater distance from the tectonic belt. The proportionality mentioned means that the plane AC of fig. 13 ought to have a constant dip which, according to our formula, must be expected to be given by[4])

$$tg\,\alpha = \frac{2+\sqrt{2}}{\pi} = 1.087 \qquad (41)$$

The size of the shear-stresses given by (38) seems to be sufficient for expecting break. At the higher temperatures of about 1100° resp. 1800° in these two areas we may well expect the limit for sudden break to be considerably lower than at the Earth's surface.

We need hardly add that this limit is a quite different one from the strength-limit above which slow flow may be expected in these subcrustal layers; as we have already remarked this last limit must be much lower.

The explanation our convection hypothesis may thus give for the occurring of the

1) Vening Meinesz, 1946.
2) Koning, 1941.
3) Umbgrove, 1947, pp. 160 e.s.
4) For $\varepsilon = 2$ we find $tg\,\alpha = 1.18$.

deep-focus and intermediate earthquakes in the archipelago seems a strong support for it. As GUTENBERG has already remarked[1]) they can hardly be explained without subcrustal flow and they have to be expected where the stresses are maximum and not necessarily where the speed is greatest.

Continuing our investigation of the shear-stresses we shall now examine the stress in the area E of fig. 13 which represents the drag exerted on the crust. Formula 40 for τ_y' gives its maximum value, occurring in the point E, and we see that it is considerable. Although it is only situated at a depth equal to the thickness of the rigid crust, and, therefore at a temperature which we estimated at some 700°, we may expect that it ought to lead to break and, therefore, to shallow earthquakes. This result is not contrary to the seismic data; they indeed indicate shallow foci in the border areas of the basins or under the inner arc.

It seems possible that the vertical plane in which this shearing-stress is also working has likewise been active as shear-plane and that it thus has brought about the fault or flexure zone of the Earth's crust between the inner arcs and the basins. It seems worth while to study this zone and the earthquake-foci in its neighbourhood for investigating the possibility of this interpretation.

An attractive point which may in passing be noticed is the coincidence of the row of volcanoes with this zone; this certainly appears to be in harmony with the supposition of a shear-zone in the crust. The situation of this zone also seems to check with our hypothesis; if the zone were rectilinear we ought to expect it half way between the axis of the basin and the tectonic outer arc and if it were circular probably at such a place that it would halve the area encompassed by the outer arc, i.e. at a radius equalling 0.7 times the radius of the latter. In our case it is likely to be between those two extreme cases. This would lead to a distance between the inner and the outer arc of 0.3—0.5 times the distance from the axis of the basin to the outer arc and this appears to agree well with the facts.

A doubtful point in this supposition as well as in the whole hypothesis of convection-currents is the fact that volcanoes as well as deep foci are also found in the Java area and that no basins and flexure zones seem to be present there. It is difficult to decide what can be the cause of this different behaviour. We may notice that no deep foci are present in the sea east of Sumatra and as the negative anomalies of this part of the belt are much weaker we might explain this by the fact that the sialic root below the crust is too small for bringing about the rise of temperature needed for starting the convection-current in the interval of 15—20 million years elapsed since the last period of folding.

For the Java area we may notice another fact besides the absence of basins viz. the much lower elevation of the tectonic zone compared with that in the Banda Sea area; it has a mean elevation here of not more than about 2000 m below sea-level. As the transition of both formations between the two areas occurs in the same way and in corresponding places it seems likely that there is a relation; the great depth north of the row of volcanoes of the inner arc disappears near the eastern part of Soembawa and in this same area the tectonic strip sinks below sea-level. It further strikes us that west of E. Soembawa a narrower and less deep basin continues Westwards in the belt north of the row of volcanoes and we may remark that this basin continues over the whole length of Java in the northern half of this island in the shape of the idio-syncline as it has been called by

1) B. Gutenberg and C. F. Richter, 1941, p. 113.

UMBGROVE, who already in 1934 drew special attention to this formation in his contribution to Vol. II of this publication.

The combination of these facts might perhaps be explained by the hypothesis that the heating of the tectonic belt by the crustal root has been slightly slower here than further to the east where the greater size of the negative anomalies indicates a larger cross-section of the root; as a consequence of this, the subcrustal convection-current could so recently have been started that only a little amount of lower temperature matter has yet concentrated in the sinking column and a corresponding small amount of higher temperature in the rising column and that thus no appreciable sinking resp. rising has as yet taken place at the surface above these columns.

This supposition would imply the assumption that the speed of the current in this very early stage after its originating is already large enough that the shear-stresses can bring about deep focus earthquakes. This seems acceptable because of our hypothesis of a certain strength having first to be overcome before the current starts; it does not seem unlikely, therefore, that in the beginning the speed has quickly increased. We may add that intermediate earthquakes are rare in this area. It seems possible that the shear-stresses in this part of the current have not yet reached sufficient size.

We must yet leave it an open question whether the narrow belt of sinking north of the row of volcanoes which we have mentioned above can be considered as the beginning of the crustal sinking which further to the east has led to the deep basins. This view has been expressed by UMBGROVE in his 2nd edition of "The Pulse of the Earth" (p. 194). We shall afterwards come back to this problem. At this moment the writer wishes only to mention the difficulty of explaining that this sinking belt would be so narrow and that the axis would be shifted so far from the area of the deep foci.

The supposition advanced here by the writer for explaining the different behaviour of the Java area with regard to the eastern part of the archipelago is no doubt questionable. One point to be raised is whether it is likely that a current could be present below the crust which has already strength enough to cause deep focus earthquakes without vertical movements showing at the surface. We must leave this question yet unanswered.

Before leaving this discussion of the shear-stresses caused by the convection-current we must lay stress on the fact that the results were obtained by means of the formula for steady convection and that we, therefore, can not be too sure of their validity for our problem. It seems likely, however, that the general stress-distribution will not differ too much as the distribution of the velocities probably approaches what is given by fig. 13.

We shall now return to the equations 34 for trying to derive the temperature, the vertical movements of the surface above the current and the gravity anomalies caused by it.

The deviation of the normal temperature caused by the current is given by formula (34a):

$$\theta = -2.13 \times 10^{10}\, c e^{-fz}$$

If we introduce the value of c of (36) used in the above computations we obtain

$$\theta = 12500^{\circ}\, e^{-fz}$$

This result is entirely unacceptable. It indicates again the result we already arrived at that the supposed speed of the current of maximum 10 cm per year is such that the temperature deviations are no longer small with regard to the original temperature distribution and that thus the basis of our deductions disappears; the current must destroy the original gradient and it thus must lead to a stopping of the current.

The actual distribution of the temperature must, therefore, be quite different from the above formula and so we have to follow another line of investigation for obtaining an estimate. The same must be the case for getting an idea of the vertical movements of the surface which are no doubt strongly dependent on the temperature and for the gravity anomaly which is a function of both.

As long as we have no exact solution for the problem of a halfturn convection we can not do more than make a rough guess adapted as far as possible to the circumstances. We might attempt this by assuming the temperature distribution in the axis of the sinking and rising column as given in fig. 14a, b. The original distribution as given by formula 26a is given by fig. 12, p. 47. For the descending column we shall suppose a temperature equal to that of the upper horizontal current. For this temperature we shall choose the temperature at a depth of the maximum speed u which, according to formulas (34b) and (34e), is the same as the depth of the maximum value of τ_{45}; we found this to be $z' = 63.4$ km and introducing this in 26a we obtain the temperature $\theta = 481^\circ + 700^\circ$. We shall assume this temperature to continue over the depth which the current has reached; we shall denote this depth by z_c and we shall afterwards put $z_c = 500$ km. This last value chosen in connection with the depth of the current as represented in fig. 13 is no doubt very uncertain; we may except it to depend also on the heat-conduction. We have indicated this temperature-distribution in fig. 14a where the deviation from the normal temperature of (26a) is given bij the hatched area.

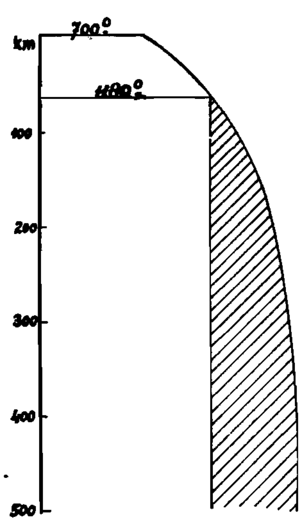

Fig. 14a. Cooling in sinking column of convection-current.

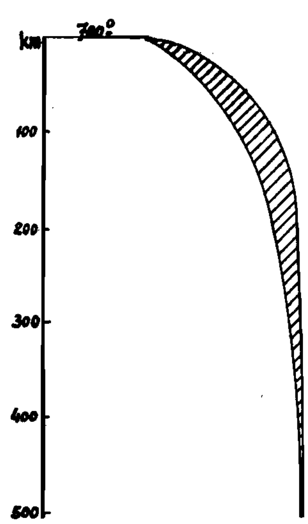

Fig. 14b. Heating in rising column of convection-current.

This area is given by

$$V = -\int_{z'}^{z_c} (605 - 1086\, e^{-fz})\, dz \tag{42a}$$

which by introducing $z' = 63.4$ and $z_c = 500$ km becomes

$$V = -\left[605\,z - \frac{1086}{f}\,e^{-fz}\right]_{z'}^{z_c} = -\ 200.000 \text{ degree, km.} \tag{42b}$$

It is clear that the lower square ending of the deviation area can not be more than a rough approximation as, moreover, is the whole supposed distribution. The heat-conduction must no doubt considerably affect it. For the rising column we shall assume the temperature given by fig. 14b. If no cooling from the surface had occurred, this temperature would have been equal at the surface to the normal temperature at a depth of 500°, i.e. 1775°. As this cooling has only been going on since a relatively short time we shall represent the curve by the formula

$$\theta = 1086^\circ(1 - e^{-2fz}) + 700^\circ \tag{43a}$$

which is represented in fig. 14b. We have again indicated the deviation from the normal temperature by the hatched area and this area is given by

$$V' = \int_0^{z_c} 1086(e^{-fz} - e^{-2fz})\,dz \tag{43b}$$

which for a large value of z_c, e.g. 500 km, becomes

$$V' = -\frac{1086}{f}\left[e^{-fz} - \tfrac{1}{2}\,e^{-2fz}\right]_0^{z_c} = 57800 \text{ degree, km} \tag{43c}$$

The maximum value of the temperature deviation (43b) is found at a depth given by

$$e^{-fz} = \tfrac{1}{2}$$

i.e. for

$$z = 75 \text{ km.} \tag{44}$$

Examining the figures 14a and 14b and the results for V and V' we arrive at the remarkable conclusion that the temperature deviations bringing about the current are asymmetrical and that the total cooling in the sinking current is greater than the heating in the rising one. We may leave it undecided how far the current has proceeded, i.e. how far the sinking current has already entered the lower horizontal stretch of its course and the rising one the upper horizontal part; this picture is of course only a rough description of the phenomenon as in reality the vertical and horizontal parts are neither straight nor separated by an acute corner.

Our result about the distribution of the temperature deviation sheds new light on the distribution of the earthquake foci. It is quite clear that the excess of weight of the sinking column caused by the lower temperature must cause extra vertical compression and, there fore, a critical area at the foot of this column. It is obvious that thus the area *CF* in fig. 13 is subject to stronger shear-stresses than the area DF of that figure. In the same way the effect of the higher temperature in the upper part of the rising column must give greater values of τ_{45} in the area *A* than in the area *B* of that figure. We thus arrive at the interesting conclusion that the location of the deep and intermediate foci support the idea of a half turn convection against the supposition of a steady current because it is only according to the first that a supposition about the temperature deviation as given by fig. 14 is at all acceptable; for a steady current in the conditions dealt with before, the temperature deviations in the rising and sinking currents must be exactly anti-symmetrical. In accepting this explanation, however, we must recognize that it makes it more difficult to account for the deep foci north of Java; the absence of basins in this area indicates that in case a convection-current is present there, it can not have proceeded far enough for causing a temperature distribution comparable to fig. 14a. For this area we should, therefore, have to recur to the explanation given on page 53.

Before continuing our subject we have to examine another consideration. It is clear that when neglecting the heat-conduction towards or from the surrounding layers the above procedure must lead to a zero integral of the temperature changes over the whole current-system. This seems contradictory to the above conclusion that the decrease of the temperature in the sinking column is larger than the increase in the rising column. It is, however, possible to reconcile both view-points by realizing in the first place that the sinking column may have a smaller cross-section than the rising one and that thus the volume-integral of the changes of temperature of both columns may differ less than would correspond to the temperature difference indicated by fig. 14. In the second place the upper horizontal part of the current contributes likewise to the integral of the temperature-increase. And lastly we have to take into account that a considerable loss of heat must no doubt take place by the heat-conduction towards the crust at the surface of the subcrustal layer where the flow brings matter of higher temperature into contact with the crust. This last effect would explain a negative value of the temperature integral over the whole current-system.

We can now try to use the change of dimensions of the sinking and rising columns caused by their change of temperature for deriving the vertical movements above these columns. If we accept again a value of 2×10^{-5} for the volumetric temperature coefficient α, the linear coefficient is $\frac{1}{3}\alpha$ and the direct shortening of the sinking column is, according to (42b) 4/3 km. In the same way (43c) gives a linear expansion of the rising column of 0.3853 km. As, however, the hydrostatic equilibrium in the Earth is disturbed because of the changes of density, we may expect some adjustment which, if complete, would bring about changes of level at the surface corresponding to the full volumetric temperature coefficient, i.e. -4 km above the sinking and 1.156 km above the rising column.

This, however, is a still too simple view as there is no hydrostatic equilibrium in an area where a current is going on. For deriving the effect of the current on the vertical movements at the surface we should have to know the equations for this current and we do not dispose of them. In these conditions we shall make a rough estimate of it by applying the equations derived above for a steady current. By dividing (34d) by ϱg and by putting $z = 0$ we find the movements at the surface above the sinking and rising columns; we thus obtain

$$t = \pm 6 \frac{\eta f c}{\varrho g} \tag{45a}$$

If we follow the above method of determining the temperature expansion of the whole column and by assuming hydrostatic equilibrium we obtain

$$t' = \alpha \int_{o}^{\infty} \theta \, dz = 8 \, \frac{\eta f c}{\varrho g} \, . \tag{45b}$$

We thus come to the conclusion that because of the presence of the current the surface shows three quarters of this computed movement.

Hitherto we have neglected the fact that the surface is covered by water. The result is that t must be 3.27/2.242 = 1.458 times greater to give the same mass-defect as a dry topographic basin would bring along and, therefore, the same normal stress in Z direction in the current-system. We thus come to a vertical movement.

$$t = 1.458 \times 0.75 \;\; t' = 1.094 \;\; t' \tag{46}$$

In the absence of a solution for our case of half-turn convection we shall venture to use the same formula for this case and so, in taking again a value for α of 2×10^{-5}, we obtain for the sinking at the surface above the sinking column

$$t_s = -1.094 \; \alpha V = -4380 \text{ m} \tag{47}$$

We see that this value approaches the depth of the Banda basin and the other basins of the same type in Indonesia and so this gives a somewhat better foundation to our rough estimates.

We shall not apply our formula to the surface above the rising column as this surface as a whole, at least in the Banda Sea area, does not seem to show any rising. Taken over its entire breadth it appears even to have sunk away, although several of the islands have shown rising in recent times. As we discussed already in § 4 of this chapter the writer is inclined to attribute this rising to a beginning of isostatic adjustment of the belt of negative anomalies and an explanation of this phenomenon could perhaps be found in the presence of the convection-current which by its drag must diminish the horizontal compression of the crust in the belt. Another point which may thus be made clear is the irregular topography in the length axis of the belt which shows elevations of 3000 m in Timor and depressions of more than 1000 m depth west of Babar. We can well understand that this loosening in the belt leading to vertical movements must act irregularly. This can likewise explain the rather irregular and variable cross-section of the topography of the belt and of the adjoining troughs.

Returning to our problem we can state that the adjustment may be expected not to affect the mean elevation of the belt as the rising must be accompanied by a corresponding sinking on both sides. This mean elevation over the total breadth of some 340 km of the belt over the rising current is mostly more than 1000 m below sea-level and as it shows sediments deposited in shallow seas in periods not too long ago we are thus inclined to assume sinking in the most recent period.

It does not seem difficult to give an explanation of this sinking instead of the rising of 1156 m we could expect in the axis according to the value of V′ given by formula 43c. The descending current under the basin must by conduction have led to cooling in a wider area and perhaps also the deeper horizontal part of the current may have contributed to such a cooling. Having to account for a sinking over the rising current of more than 2000 m we might suppose that the cooling has penetrated in this column to such a degree that the temperature diminished half as much as in the sinking current. This would lead to a distribution in the sense of the X axis of the quantity V of formula (42b) which could be approximately represented by

$$V = \int_{z'}^{z_c} \theta \, dz = -150000 - 50000 \cos fx \tag{48}$$

giving the value of — 200000 of (42b) in the axis of the sinking column and of — 100000 in that of the rising one. We shall neglect an eventual similar heat-transport from the rising to the sinking column because it must be so much smaller.

Besides the spreading of the cooling in a horizontal sense it will no doubt also penetrate in deeper layers; we shall presently come back to this point. The cooling effect of our half-turn convection-current is thus made clear; we see how the lower temperature brought down by the sinking column must reduce the temperature in the adjoining areas in the Earth while the higher temperature brought to the surface by the rising current looses much of its extra heat through the Earth's surface. This last effect thus means an increase of the heat-loss of the Earth and so we find how the well-known cooling effect of convection-currents is working. This cooling effect would, of course, likewise be present in the case of steady convection.

We can now attempt to derive the gravity anomalies which we must expect to be brought about by the convection-current. Above the sinking column it must consist of two parts, one caused by the presence of the basin which can not be isostatically compensated because it is brought about by the subcrustal current and one caused by the excess of mass corresponding to the lower temperatures in this descending current.

Above the centre of the basin where the sea-depth brought about by the current was found to be 4380 m, the corresponding anomaly A_t is

$$-\frac{0.1370}{1.458} \times 4380 = -411 \text{ mgal}^{1)}.$$

The anomaly $A\theta$ brought about by the temperature distribution as given by the formulas (42a) and (48), i.e. by

$$\theta = -454 + 814\, e^{-fz} - 151 \cos fx + 272\, e^{-fz} \cos fx \tag{49}$$

is

$$A_\theta = -0.1370\, \alpha \int_{z'}^{z_c} \left[-454 + 814\, e^{-fz} - 151\, e^{-fz} \cos fx + 272\, e^{-2fz} \cos fx \right]. \tag{50a}$$

For $\alpha = 2 \times 10^{-5}$, $z' = 63.4$ km and $z_c = 500$ km the result for the anomaly in the axis of the sinking column, i.e. for $x = 0$ is

$$A_\theta = +424 \text{ mgal} \tag{50b}$$

We see that the two parts of the anomaly nearly neutralize each other and that the total value is

$$A = -411 + 424 = +13 \text{ mgal}. \tag{51}$$

[1]) The factor 0.1370 is given by $2\pi k^2 \varrho = 3\, g\varrho/2\, R\varrho_m$ where $\varrho = 3.27$ and ϱ_m = mean density of the Earth = 5.52.

This result is very uncertain. It depends on so many doubtful estimates that it may easily be different. So is a small change of the assumption about the cooling in the rising column, as a consequence of the cooling in the descending one, sufficient for changing the sign of (51). We can not say much more than affirming that the resulting anomaly is probably small.

For the rising column the computation of the anomaly is still more uncertain as it depends among other points on the distribution in vertical sense of the above-mentioned cooling and we do not know much about it. It could well be that it differed considerably from the distribution of the cooling in the sinking column as given by fig. 14a and this distribution itself is only a rough estimate. We have, therefore, to refrain from any estimate of the anomaly above the rising current. For our purpose of interpreting the anomalies in Indonesia this is no loss because the anomalies above the rising current would anyhow be drowned in the belt of great negative anomalies coinciding with it. The result of our reductions is that it is unlikely that the assumption of convection-currents can give an explanation of the fields of positive anomalies over the deep basins of the archipelago. We might have expected a different result, as also the writer has formerly done [1]), because the excess of mass in a vertical column below the basin is more than the mass-deficiency of the basin itself [2]) but the depth at which these excesses of mass occur is so large that their gravity effect at the surface is not or only very slightly exceeding the deficiency of the basin.

So the final result of our long discussion of the problem of convection-currents is that the assumption of such currents below the basins dealt with in this § is acceptable because it can explain the sinking of the basins following with a large time-lag after the period of great folding in the tectonic belt and also because it can account for the deep and intermediate earthquake-centres but that it can not directly explain the fields of positive anomalies over these basins. It can, however, give an indirect explanation of them and this is a third important asset for our hypothesis.

This indirect explanation is that the cooling in deeper layers caused by the convection brings them about. We shall finish our discussions by examining this hypothesis.

We can distinguish two cases. In the first case the cooling is not causing stresses exceeding the strength-limit of the layers concerned. Assuming that the extent of the layers is large with regard to the depth and that the cooling penetrates from above we shall suppose the temperature deviation to be defined by

$$\theta = \vartheta_0 \, e^{-m(z-z_0)} \qquad (52)$$

where z_0 is the depth of the surface of the layer considered.

As we assume that the strength-limit of the layer is not exceeded there is no adjustment in vertical position with regard to areas outside the one examined and so the sinking of the surface is given by the linear thermal expansion $^1/_3\ \alpha$ and the density by the volumetric thermal expansion α. We thus obtain the following formula for the sinking of the surface t, the corresponding gravity anomaly A_t, the gravity anomaly caused by the temperature deviation A_θ and the sum A of both anomalies.

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1) Vening Meinesz, Umbgrove, Kuenen 1934, p. 54 e.s.

2) According to the result found for steady convection on page 59 the mass-excess for the type of current dealt with there is 4/3 times the deficiency of the basin.

$$t = \frac{a}{3}\,\theta_0 \int_{z_0}^{\infty} e^{-m(z-z_0)} = \frac{\alpha\,\theta_0}{3\,m} \tag{53a}$$

$$A_t = -0.343\,\frac{g}{R}\,\frac{\varrho}{\varrho_m}\,a\,\frac{\theta_0}{m} \tag{53b)¹)}$$

$$A_\theta = +\,1.5\,\frac{g}{R}\,\frac{\varrho}{\varrho_m}\,a\,\frac{\theta_0}{m} \tag{53c}$$

$$A = +\,1.157\,\frac{g}{R}\,\frac{\varrho}{\varrho_m}\,a\,\frac{\theta_0}{m}\,. \tag{53d}$$

As is seems possible that such a layer of temperature deviations could be very old, in that case possibly distributed in a somewhat different way, it is not necessary that the sinking at the surface would be stil present; in that case the anomaly measured at the Earth's surface is given by 53c. Assuming a value of θ of 100° formula 53d gives an anomaly of + 23 mgal and formula 53c one of + 30 mgal. A cooling of this amount in the deeper layers of the convection area does not appear exaggerated and so we see that the positive anomalies in the Indonesian Archipelago can thus be accounted for in a satisfactory manner.

If the horizontal dimension of the temperature deviation is not large with regard to the depth z_0 of the layer it is clear that the anomalies are correspondently smaller, especially towards the borders of the field. We shall not go into this problem and derive formulas for it here; it leads to more complicated deductions.

If the cooling is bringing about greater stresses we have to expect currents. In case the excess above the strength-limit is small these currents would no doubt be extremely slow and so for long periods the case would not differ much from the previous one. On the long run however, we must expect convection-currents to set in on a much greater scale than the currents hitherto dealt with and these currents would bring the cooling still further downwards in the Earth. If we assume that the positive anomalies in the eastern half of the archipelago would be caused by the cooling brought about by the convection supposed below the basins of this § it seems likely that the stresses will at least on the long run exceed the strength-limit and that thus a much greater type of current is started. It seems possible that this current would continue up to a depth of 2900 km, i.e. through the whole mantle and that this type of large convection-current by the drag exerted on the Earth's crust would be the cause of a great tectonic revolution. Having found the time needed to start the smaller current-type to be of the order of 20.000.000 years it appears certainly possible that the greater current would require periods from 100.000.000 — 200.000.000 years and thus the periodicity of the great cycles would come into being. This explanation has already been given by Griggs in his paper of 1939.

We shall in the following paragraph study again the different fields of positive anomalies in the archipelago and make use of the above conception of areas of temperature deviations in the Earth. It appears possible to the writer that many of the larger fields of anomalies over the Earth's surface can be attributed to such phenomena.

Before leaving our subject we may draw attention to the fact that our hypothesis of convection-currents has made clear why the mean level of the Earth's surface in the eastern

1) For a basin filled by sea-water.

part of Indonesia has been lowered in the last few millions of years. This may be explained by the cooling brought about by the convection-current in the deeper layers. This possibility to account for the sinking of the mean surface-level represents a fourth valuable support for our hypothesis; it is difficult to find another explanation.

It is possible that the half-turn type of convection studied in this paragraph and advocated for the Earth brings about non reversible changes in the matter concerned. The rising matter could e.g. loose gaseous constituents developing because of the decrease of pressure. It is clear, however, that such processes would on the long run bring about a certain layering in the Earth which would prevent further repetitions of the convection-process.

Another possibility worth mentioning is that the sinking current gradually carries downwards, partly or entirely, a lower layer of the rigid crust which by the sinking down of the basin has assumed a position below the normal limit of rigidity. This would bring about that part of the depth of the basin might be isostatically compensated in a more or less normal way and this part would no doubt remain present when, after the current is stopped, the temperatures of the area below the basin gradually resume their normal values. The further part of the basin as far as it has not been filled by sediments might be expected to disappear.

In many cases part at least of these basins must persist in later geological periods, certainly those parts that have been filled by sediments. We no doubt find evidence of this in the great Hungarian basin, possibly also in the basin of Paris and in other cases.

§ 6. Final discussion of the positive anomalies in Indonesia.

In this paragraph we shall make use of the results arrived at for making a final attempt at an interpretation of the fields of positive anomalies in the archipelago. We shall first discuss the general field of positive anomalies over nearly the whole of Indonesia on the inside of the belt of negative anomalies.

Examining the three anomaly-maps and the gravity-profiles of the archipelago we see that this field extends over the whole Java Sea, over part of Sumatra and over the whole eastern half of the archipelago with the exception of the two tectonic belts. It is possible that it continues over Borneo and further to the north over the entire breadth of the archipelago. In vol. II of this publication the writer has pointed out p. 40 e.s. that lateral compression of the Earth's crust must lead to a field of positive anomalies because of the Earth's curvature.

A simple computation gave the following formulas for their value for one-sided pressure

$$A = 6.6 \times 10^{-5}\ Td \text{ mgal} \tag{54a}$$

for all-sided pressure

$$A = 13.2 \times 10^{-5}\ Td \text{ mgal} \tag{54b}$$

where T is the thickness of the rigid crust in km and d the pressure in kg/cm². If we assume a value of T of 35 km and of d of 3000 kg/cm² we find for the two cases 7 mgal resp. 14 mgal. Supposing the main compression to be linear (see page 30 e.s.) but a secondary pressure effect at right angles to it to be also likely we arrive at an estimate of + 9 mgal.

We see that the anomaly is much larger. If we use the values for local compensation its mean value is of the order of + 30 mgal and for regional compensation it has in the Java Sea about the same value but it is larger in the eastern half of the archipelago. Accepting 9 mgal to be caused by the crustal compression we thus find that a value of the order of 20 mgal has yet to be explained in another way. The conclusions arrived at in the end of the preceding paragraph show that this would be possible by assuming temperature deviations in the Earth of less than 100° and this does not seem exaggerated.

The question, however, remains whether such a temperature deviation could be accepted there. The writer thinks that this question can be answered in the affirmative. We know that the geosyncline in Indonesia is a very old one. In his paper on "The geological history of the East Indies" [1]) and in the 2nd edition of "The Pulse of the Earth" [2]) UMBGROVE mentions e.g. a folding period in the upper cretaceous in Sumatra and probably also in Java, i.e. some 70.000.000 years ago and it is likely, that stil older folding has taken place.

We may assume that in these periods convection-currents have brought about cooling in deep layers and those parts of the temperature deviations which do not give stresses above the strength-limit will remain present during very long periods. These deviations may no doubt slowly spread but a spreading in a vertical sense will not affect the excess of mass in a vertical column and the anomaly at the surface. The period needed for making it disappear by horizontal spreading must be very large, probably at least several hundreds of millions of years and so we may expect that such a cooling of deep layers in the Earth must at least remain present until a following folding period occurs. The writer, therefore, thinks that an explanation for the field of positive anomalies in the western half of the archipelago by assuming lower temperatures than normal in deep layers of the Earth is a plausible one although no proof can be given that it is the true explanation. Still, other explanations for fields of such great extent are difficult to find and so it seems worth while to keep in mind.

It is clear that the local irregularities in this anomaly-field can easily be accounted for by local differences in density in the crust and so this does not present a problem. The writer shall not attempt a study here of these local effects.

For the eastern half of the archipelago we suppose convection-currents to be still going on and so the assumption of lower temperatures than normal in lower layers seems indicated here. There is no need to assume these deviations to be inside the limit prescribed by the strength of the layer and so we have no difficulty in explaining a higher mean value of the positive anomalies in this area.

We shall now examine more in detail the different features of this field. Beginning by the belt of stronger positive anomalies in the southern Banda Sea we find the highest values and the greatest extent here for regional isostatic reduction and the corresponding maps show it to continue for that case towards the west and towards the north-northwest in the Gulf of Bone, i.e. also in areas where the sea-depth is smaller. In Vol. II of this publication (1934) the writer advocated the idea that for the Banda basin and for other similar basins this excess of gravity is due to the effect of the sinking current of a con-

1) Umbgrove 1938, p. 25.
2) Umbgrove 1947, p. 183 e.s.

vection-system but as is has been explained in the preceding paragraph, the deeper study of these currents leads to the conclusion [1]) that it is quite uncertain whether the sinking current will show an excess of gravity; if present it is likely to be small. This explanation, therefore, seems doubtful.

In 1940 the writer [2]) advanced another hypothesis for explaining the fields of stronger positive anomalies over the deep basins in the archipelago, viz. the supposition that these anomalies are caused by a wave-formation in the Earth's crust. This hypothesis, however, although it gives interesting possibilities for an explanation of many different facts implies other difficulties. As the writer already remarked in the paper mentioned above (p. 293) we have to assume a very high compressive stress in the crust and it seems questionable whether such stresses are now occurring while the rising in the tectonic belt indicates smaller compression. In the second place it is difficult to see why the upward waves of this wave-system of the crust would more or less systematically coincide with the deep basins. The writer, therefore, gradually came to the conclusion that notwithstanding its many favourable points this explanation for the positive anomalies over the deep basins can not be maintained. We shall afterwards come back to it for accounting for other features for which it seems to remain appropriate.

Having to discard these two possibilities it appears difficult to find another explanation for the strong and rather extensive positive fields than the one given above, viz. by the cooling of deeper layers. The smaller excesses shown by the map for local compensation are more easy to account for. Examining this map we find that the areas of anomalies larger than + 50 mgal over the three extensive deep basins, i.e. the Banda basin, the basin south of the Soela Islands and for the Celebes basin are all of them situated near the belts of strong negative anomalies and so we can probably explain them in the way as mentioned on page 35 e.s., i.e. as the effect of the uplift of the crust by the deficiencies of mass in the negative belt. This conclusion is strongly supported by the gravity profiles 11—14 which we shall afterwards examine more in detail (§ 10).

The difficulty implied in this explanation is that the maps of regional isostatic anomalies, especially that for $R = 174.3$ km. give a so much more regular picture for the main feature, the belt of negative anomalies, than the map for local isostatic reduction that we can hardly escape the conclusion that the first is nearer to the truth. This conclusion seems to lead us towards the regional isostatic anomaly-maps but a more thorough study makes it clear that this is not under all condition necessary. It seems possible, in particular, that some of the topographic features may be locally compensated without seriously affecting the simple picture given by the regional anomaly-map for the negative belt and for other areas. With reference to the anomalies over the deep basins we find that they are mainly affected by the way in which the surrounding inner arc is compensated; if we assume its compensation to be local, the anomalies over the basins approach the values given by the map for local compensation even if the conpensation of the other parts of the archipelago is regional.

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1) In his important study on "Thermal Convection in the Interior of the Earth" (M.N.R.A.S. Geophys. supplem. 3, 1936) Pekeris already proved that for steady convection in a sphere the anomalies above the sinking current must be expected to be negative.

2) Vening Meinesz, 1940.

The conclusion that the compensation of the inner arc appears to be of the local type is clearly corroborated by the profiles nos. 13—17 around the Banda basin; they show the curve for local compensation to be regular over the area of this arc while the curves for regional compensation show a deficiency above it.

Examining the bathymetric map of the East Indies of the Snellius expedition[1]) we see that according to the submarine topography the inner arc seems to continue from Banda towards the Toekang Besi Islands and from there towards the S.E. arm of Celebes. This supposition finds support from the gravity anomaly map for regional compensation; the low values of the anomalies over the inner arc appear to continue in the same way. As it was mentioned above for the inner arc the map of local isostatic anomalies shows no clear connection of low values along this track and so here likewise the topography along this connecting line appears to be at least partly compensated in the local way. This is also confirmed by the gravity profiles n^{os} 10—13.

The suspected connection differs somewhat from the usual supposition made by geologists, as e.g. by UMBGROVE on page 24 of his above-mentioned paper on the geological history of the East Indies. Usually a connection is supposed from the Toekang Besi Islands towards the outer arc in Ceram. Examining the map of local anomalies we see that in this map no clear decision between the two suppositions can be made and so we can not say that the evidence for the first assumption is strong. Still the writer feels that the indications of the submarine topography as well as the similarity of the gravimetric evidence with that of the inner arc for all three maps and for the gravity profiles nos. 10—13 provide indications in favor of the first supposition.

The conclusion to be drawn seems to be that the inner arc follows an older structural line with locally compensated topography and that it coincides with this line up to the Banda Islands. Up to that point the arc is volcanic and we saw already on page 54 of the preceding § that if we accept the hypothesis of a convection-system in this area the current causes strong shear-stresses here in the crust which might perhaps help to explain the volcanic activity in the arc. Past the Banda Islands there is an indication that the older structural line marked by locally compensated topography continues towards the Toekang Besi Islands but the inner arc which coincides more or less with the edge of the sinking part of the convection-current appears not to continue in this direction; there are no volcanoes here and the presence of deep earthquake foci in the Toekang Besi Islands points to the sinking current continuing northwards under this island-group. According to the topography of this area we might suppose that the sinking current continues the entire way up to the basin south of the Soela Islands; it seems possible that this whole area of sinking shows two areas of maximum speed of the current coinciding with the two deepest parts separated by an area between the Toekang Besi Islands and the islands of Boeroe and Ceram where the speed is less and the sea-depth likewise. This conclusion however can not be considered as more than a speculation on slight indications; it seems certain, however, that the two basins are not separated by one or two arcs and so it is logical to suppose that the sinking currents of the convection-systems over both areas are connected.

The two patches of large positive anomalies on both sides of the southeast arm of Celebes as shown by the map of local anomalies give us the impression of being connected with the phenomena in this arm. As we do not know the gravity over that area and as the

1) Vening Meinesz, Umbgrove, Kuenen, 1934.

knowledge of the geology is insufficient we can not yet say much about it. The low values of the anomalies at Kolakka and Boeton, however, seem to indicate a belt of negative anomalies over this arm which would probably be the continuation of the belt we may suspect in the east arm. Because of the direction of the southeast arm which is more or less parallel to the direction of the pressure working in the crust in the whole archipelago we might expect an asymmetric gravity profile over this arm similar to that of the profiles west of Sumatra and east of the Philippines where one part of the crust more or less seems to override the other. The absence of any data over this arm, however, does not allow us any certainty. We may also think of the possibility that the phenomena in this arm are affected by the disturbing influence we must assume to have been caused by the crustal block of Halmaheira; this seems in former periods to have exerted considerable westward pressure and perhaps this is still the case. It does not seem unlikely anyhow that the positive anomalies to both sides of the arm can be attributed to the uplift of these areas by the buoyancy of the crust in the arm caused by light masses there.

The different high positive anomalies around the triangular area of great negative anomalies in the Molucca Sea are clearly brought about by the uplift of the crust by the deficiency of mass below this area. As the negative anomalies seem to continue in the east arm of Celebes where the geology shows great folding in the same period of tertiary f 2 in which the other islands in the main tectonic belt have been subject to it, we may probably attribute the positive anomaly in the Gulf of Tomini to this same cause.

Near the Talaud Islands the patch of positive anomalies to the west of the negative belt becomes broader while at the east side of this belt the values diminish; the profiles over this belt become asymetric. We shall come back to this area in § 12 when discussing the gravity profiles in detail; we may probably interpret this asymmetry to an overriding of the western crustal block over the eastern one and also to the thinning of the sialic layer at the edge of the Asiatic continent which in this area probably coincides more or less with the belt.

The patches of stronger positive anomalies to the east of the island of Halmaheira seem to belong to another tectonic system of which the axis appears to run towards the great Marianas arc. The gravity values available do not allow any conclusions; for this purpose an extensive survey over the whole area of this arc and to both sides of it would be needed. We have already mentioned our surmise that the crust in this area has exerted considerable pressure on the areas to the west and southwest of it.

The high positive values in the Celebes Sea to the north of the northern arm of Celebes which appear to continue in Strait Makassar between Celebes and Borneo constitute a problem. We can hardly interpret them as the effect of crustal uplift by the main tectonic arc which is supposed to continue through the east arm and the southeast arm of Celebes for in the first place the distance to that arc seems too large and in the second place the high value in the Gulf of Tomini which we have already explained in this way appears to be separated by lesser values from this area. The excesses of gravity in this area may probably be explained in the same way as those in the Banda Sea, i.e. by a cooling of the deeper layers because of the convection which we might here assume as a consequence of the great crustal root we must suppose to be present below the Molucca Sea.

The fact that in the northern half of Strait Makassar the largest anomalies are found in the western belt of it may perhaps be explained by the negative anomalies we may expect on the adjoining strip of Borneo because of the presence here of an idio-geosyncline — as Umbgrove has called them — similar to that in the south arm of Celebes, in the north of Java and in the east of Sumatra (Umbgrove 1938, fig. 18, page 51); these idio-geosynclines are usually characterized by deficiencies of gravity as we see e.g. in North Java and south of Madoera. The higher values on the maps of regional anomalies in the area to the west of the south arm may perhaps be connected with the idio-geosyncline in this arm although the distance to it seems rather large.

As the greater depths in Strait Makassar seem also to have a rather recent origin (Umbgrove, page 60) in the same way as the great basins already discussed, we must suppose here likewise the presence of a convection-current, but as the depths do not attain more than 2000—2500 m we must assume it to reach to lesser depths than the currents below the great basins. This is in harmony with the fact that the horizontal dimensions too are not so large; if we may assume the rising current below the axis of western Celebes, the distance L between the two axis is of the order of 170 km, i.e. half the distance we found for the southern Banda Sea area. If according to the solution given for steady convection in the preceding § we should assume the depth to be proportional to the horizontal dimensions we can understand that the integral of $\theta\, dz$ of the temperature deviation over the descending column is slightly less than half the value for the Banda Sea and the sea-depth must be in the same proportion less. This is in good harmony with the facts.

We may probable surmise a similar origin for the Gulf of Bone and the Gulf of Tomini, resp. between the south and southeast arms and the north and east arms of Celebes, perhaps also for the basin of the Weda Bay southeast of Halmaheira. Whether there is a systematic cause for the fact that the depths of all these basins is about the same, i.e. 1900—2500 m, while the same is true for the three big basins supposed to be caused by convection (depth sligthly over 5000 m) is an interesting problem which the writer has not yet attacked. It might be that for the distribution in depth of the downward temperature gradient in this area of the archipelago during the present period in connection with the physical constants of the plastic layer below the crust there are two maxima of probability for the depth dimension of the convection-current if some other cause leads to the overcoming of the strength of the layer. The apparent synchronism of the originating of all the basins seems to point to the idea that, once started in one of the areas, the formation of the current propagates itself over the whole unstable area and also from the big basins towards the areas of the narrower basins dealt with here. In the cases of the Gulf of Tomini and the Celebes Sea we come to the conclusion that the rising current for both systems must coincide, i.e. under the east arm of Celebes, and this points certainly to two separate probability maxima.

According to the smaller values of the gravity anomalies along a belt which curves southward from South Celebes towards Bali and East Java there seems reason to suppose that the idio-geosynclines of South Celebes and of North Java are connected along this curve. The small strip of slightly larger positive anomalies north of Bali and Lombok as shown by the map No. 3 of regional anomalies may well be supposed to be brought about by this belt. In the bathymetric map the syncline between Madoera and East Java seems also to continue in this belt as a syncline gradually deepening towards the east. It then widens in the Flores deep but the northwestern border of this deep continues to follow the curve mentioned.

As it has already been put forward in 1934 in vol. II of this publication there seems reason to suppose that at least in the Java area, the idio-geosyncline is a second downward crustal wave accompanying the main wave in the tectonic zone; in this last zone the crust gave way to the compression by a kind of downbuckling while the crust in the idio-geosyncline is sufficiently stronger not to break likewise. The bending in this zone thus leads to some folding without, however, producing the great deformations of the main belt.

Between the two zones we have the upward wave which runs over South Java and which in the present period is clearly marked in all the anomaly maps by a belt of positive anomalies. We see that this anomaly-belt curves also northwards east of Java and continues to accompany the idio-synclinal belt as it has been supposed to run towards South Celebes. The main crustal downward wave, the tectonic belt, has also a tendency east of Java to a northwards curve but then the complicated area around Soemba intervenes and the axis of the belt is shifted southwards towards Rotti and Timor. In a previous publication [1]) the writer already advanced a suggestion for an explanation of this abnormal course; it might be caused by a zone of crustal weakness surrounding the Australian continent. This could make it clear that the belt along which the crust gives way shifts towards this zone of weakness.

In connection with the hypothesis about the continuation of the idio-synclinal zone from Java towards South Celebes it seems worth while to note that in § 2 page 34 e.s. of this chapter we have supposed a division of the archipelago into two great crustal blocks separated by a major shear zone over S.E. Celebes and the Mangkalihat Peninsula of Borneo. The idio-synclinal zone, which in the pleistocene has everywhere undergone folding, would thus be entirely confined to the western block and the supposed curve would well adapt itself to the shape of this block. This would lead to the hypothesis that in the present period this western block is under compression while in the eastern blocks the compression is disturbed because of the great systems of convection-currents which would especially diminish the compression in the tectonic belts below which the currents are supposed to rise. As it has already been remarked this could give a satisfactory explanation of the fact that in this eastern half of the archipelago there is nearly everywhere evidence of some loosening of the tectonic belt from the adjoining crust and in consequence of this, of a beginning of the readjustment of the isostatic balance by the rising of the belt. It is true we have supposed that in the present period a convection-current is likewise going on in the Java area, rising below the tectonic belt south of Java and sinking below the Java Sea and so we might expect some readjustment of that part of the belt also, but we have assumed that this current has only very recently started and so we could well understand that such a readjustment would not yet have proceeded far.

This brings our study of the gravity anomaly maps to a close. In the next §§ we shall examine the 22 gravity-profiles and this will give us an opportunity for some further discussions about the problems hitherto dealt with.

§ 7. Discussion of the gravity profiles.

In this § we shall make a more detailed study of the gravity profiles in the archipelago. In doing so we shall give more attention to the deformation phenomena of the Earth's crust

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1) F. A. Vening Meinesz, 1940.

than we have hitherto done. Before our discussion of the profiles we shall, therefore, first consider these problems from a general standpoint.

For the developing of the formula for the behaviour of the Earth's crust as a whole under the effects of horizontal compression, of vertical forces and of discontinuities in tilt and in position with regard to a horizontal plane the writer may refer to an earlier paper[1]) We shall here repeat the main formula.

We begin by introducing a fundamental quantity l of the dimension of a length which plays a great part in these formulas [2]). It is given by

$$l = \sqrt[4]{\frac{m^2 E T^3}{12\,(m^2 - 1)\,\varrho g}} \tag{55}$$

where

E = modulus of elasticity of the Earth's crust
m = coefficient of Poisson
T = thickness of the crust, taken as a rigid plate.

For our present problem of the deformations of the crust in the archipelago we shall assume that the crust's surface is covered by sea-water and this involves the introduction of a value for the density ϱ equal to the crust's mean density diminished by the density of sea-water. We shall thus assume $\varrho_1 = 2.83 - 1.03 = 1.8$ and we shall give this value and the corresponding value of l the index 1.

Introducing the values $E = 1.000.000$ kg/cm² and $m = 4.1$ derived from Gutenberg's data in "The constitution of the Earth's crust" (1939) and putting $T = 30$ km we obtain

$$l_1 = 60 \text{ km} \tag{56}$$

For the problem of the degree of regionality of the isostatic reaction of the crust we have to introduce $\varrho = 0.6$ and for the above values of E and m this gives

$$l = 80 \text{ km} \tag{57}$$

This value for the crust in general is acceptable; it corresponds to a radius of regional compensation of 232.4 km. In the following chapter we shall e.g. find it confirmed for the oceanic crust under several volcanic islands.

We shall further introduce the buckling limit of the crust D_0, i.e. the compressive force required to produce buckling of the crust if it acts as one layer. It is given by

$$D_0 = 2\,\varrho_1 g l_1^2 \tag{58}$$

from which we obtain for the above values of ϱ_1, and l_1,

$$D_0 = 1.3 \times 10^{11} \text{ kg per cm of the third dimension.} \tag{59}$$

which would correspond to a compressive stress of 43000 kg/cm². The crust will, however, under large compression probably not act as one layer and this would considerably reduce this limit. In case it splits up in layers of 2000 m thickness, the buckling-stress would be 2900 kg/cm². Another cause of reduction may probably be found in a more or less plastic behavior of the deeper layers which may be expected because of their higher temperature.

1) F. A. Vening Meinesz, 1940.

2) See also the quantity l introduced in formula (1), p. 12.

If we denote the compressive force working in the crust by D and if we introduce an angle β given by

$$\frac{D}{D_0} = \cos 2\beta \tag{60}$$

the equation for the vertical displacement y of the crust assumes the shape

$$l_1^4 \frac{d^4y}{dx^4} + 2\cos 2\beta\, l_1^2 \frac{d^2y}{dx^2} + y = 0 \tag{61}$$

where x is the coordinate in horizontal sense. The angle β varies from 45° for $D = 0$ to 0° for $D = D_0$ but if D has no extreme value which certainly does not appear to be the case in the eastern half of the archipelago, it will in general not deviate much from 45°.

The general solution of (61) is

$$y = Ae^{-ax} \cos (bx + \varphi) + A'e^{ax} \cos (bx + \varphi') \tag{62a}$$

where A, A', φ and φ' are integration constants and

$$a = \frac{\sin\beta}{l_1} \qquad b = \frac{\cos\beta}{l_1} \tag{62b}$$

When D reaches the buckling-limit D_0 we have $\beta = a = 0$ and so (62) represents in that case a series of waves of the same amplitude; they do not die out with increasing distance from the forces causing the deformations. For smaller values of D β gets positive values and the same is true for a. The values of β and a increase when D decreases and for $D = 0$ a has become equal to b, i.e. $1/l_1\sqrt{2}$. For an infinite plate the constants must obviously be chosen in such a way that the waves die out to both sides with the distance from the forces causing the deformation. For our problems in the archipelago these forces are concentrated in a narrow zone, the tectonic belt, and so the problem is simple. If we assume this belt to have no width and if we choose the origin of the coordinate x coinciding with it, the formula (62) falls apart in two parts, one for positive values of x and one for negative x. For the first A' is zero and for the second A or, if we choose x positive to both sides, (62) reduces in both cases to

$$y = A\, e^{-ax} \cos (bx + \varphi) \tag{62a}$$

The half wave length L is given by

$$L = \frac{\pi}{b} = \pi\, l_1 \sec\beta \tag{63}$$

and for small values of D

$$L = \pi\, l_1 \sqrt{2} = 4.45\, l_1 = 267 \text{ km} \tag{64}$$

According to what we found the waves die out quicker for increasing x if D is smaller. For $D = 0$ the amplitudes of consecutive half-waves have a ratio equal to

$$e^{-\pi} = 0.0432. \tag{65}$$

We thus see that the amplitude of the second half-wave must already be very small.

Besides a possible general compression by a force D we can have four ways in which the crust is affected in the tectonic belt (see fig. 15 abcd). In the first place we have an upward force working on it because of the buoyancy of the mass-deficiency in this belt (fig. 15a). In the second place we can have an angle different from 180° between the crustal parts on both sides of the belt (fig. 15b and 15b′). In the third place we can have a fault-plane through the belt and, as a consequence of this, a different elevation of the crust's surface on both sides (fig. 15c). And in the last place we can have a momentum of force working on the crust in this belt; this last case will e.g. accompany the third if a certain compression D is present (fig. 15d). We can derive the integration constants A and φ for both sides of the crust from these conditions.

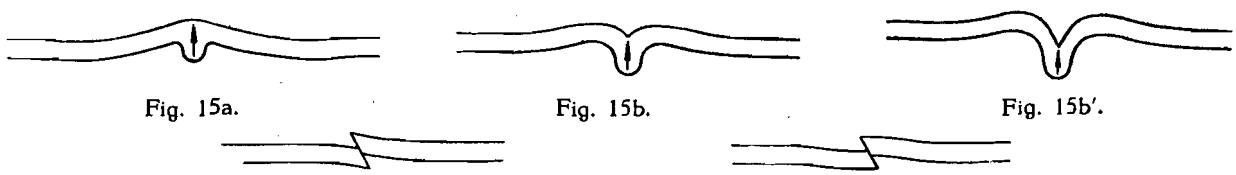

Fig. 15a. Fig. 15b. Fig. 15b′.

Fig. 15c Fig 15d.

Fig. 15. Different types of crustal deformation.

We shall now take up the study of the profiles and consecutively examine different groups.

§ 8 The profiles nos. 1, 2, 3 and 4 on the westcoast of Sumatra.

From the smaller values of the negative anomalies in the tectonic belt west of Sumatra combined with the asymmetric character of the gravity profiles we have already drawn the conclusion that the relative movement of the crustal blocks on both sides of the belt has its main component parallel to the belt and only a small one at right angles to it. From the general situation we concluded that the first component occurs in such a way that the Sumatra block moves to the southeast with regard to the oceanic block. The small component at right angles to the belt causes an overriding of the first over the second block with the result that the ocean-floor is somewhat pressed down. The result of it can be seen in the trough at the foot of the steep slope to the west of the islands of the belt combined with the adjoining upward wave which is found further seawards.

The above assumption about the phenomena occurring in the belt are in good harmony with the general relative movements of the crustal blocks in the archipelago as they seem to follow from the gravity field.

Examining the configuration of the sea-floor and the gravity-profile we see that we have a combination of the cases of fig. 15d and fig. 15b, i.e. an overriding with lateral compression and a slight downbending where the root has formed which has only one third or one fourth of the dimensions here of those south of Java and further to the east. The resulting curve of the crust has probably the shape given by fig. 16a.

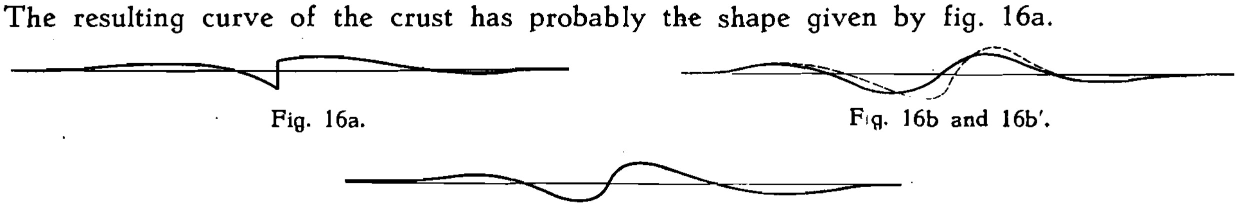

Fig. 16a. Fig. 16b and 16b′.

Fig. 16c

Fig. 16. Anomaly-profiles to be expected west of Sumatra.

We see that the seaward part agrees well with the depth-curve of our profiles west of the islands. For the anomalies we have no doubt to choose a regional compensation because of the compression the crust is subject to. We shall take the curve for $R = 116.2$ km because it gives the best agreement between the four profiles. We must see whether these curves can be explained by the following three effects which must cause the gravity to differ from the regional isostatic equilibrium. In the first place the part of the topography brought about by the crustal deformation caused by the lateral compression is not isostatically belanced and so the effect of its regional isostatic compensation has been erroneously added to the anomalies; it must still be present in the curve. It is represented by the full line of fig. 16b.

In the second place the effect of the deficiency of mass caused by the presence of the root must show itself. Added to fig. 16b we get the broken curve of fig. 16b′.

In the third place we may assume this coast to be a continental coast and we shall see in chapter IV that in general the topography of the shelf is locally compensated. However, of the total slope in our case a height of about 1000 m must be caused by the overriding as given in fig. 16a and so about 4000 m remains. In the curve, therefore, there must be present the differential effect of local minus regional compensation of this slope which has been dealt with in chapter I, § 4 (see p. 19). Added to the broken line of fig. 16b′ we thus obtain fig. 16c.

We see that the curves for regional compensation for R = 116.2 km, i.e. the dash-dot curves of profiles nos. 2, 3 and 4, are remarkably similar to this resulting curve and so this seems a reasonable proof for our suppositions. For profile no. 1 this curve differs somewhat but this can well be accounted for. The continental slope is more irregular here and distributed over a much larger area. The result must be to make the differential curve between the local and the regional anomalies more irregular and to lessen its values. The total curve must, therefore, be nearer to the broken curve of fig. 16b′ and this is indeed the case.

Resuming we may say that the four profiles west of Sumatra are in good agreement with our supposition of an overriding of the Sumatra block over the oceanic block and the formation of a slight root. The topography over the oceanic part is likewise in harmony with it.

All the profiles could be continued through Sumatra and over the Java Sea. The part in Sumatra has been measured in detail by the Batavian Oil Cy and the results have been isostatically reduced by means of the provisional regional reduction system developed by the writer in 1930[1]); its results are near to those given by the more recent tables for $R = 116.2$ km and so the curve indicated by dots has been drawn in the prolongation of this last one.

We shall not discuss here these detailed curves which must be investigated in connection with all the geological data of the island. We can only make the general remark that they show the extensive field of positive anomalies over the eastern part which has been discussed in the preceding §. In profileno. 4 it is already present over the whole cross-section of Sumatra while over the others it begins further towards the east. In profile no. 1 there is evidence of a syncline marked by smaller anomalies near Cape Diamantpunt.

1) See Bulletin géodésique no. 29, 1931.

the N.E. cape of Sumatra. The profiles nos. 2, 3 and perhaps also no. 4 possibly also indicate a wave-formation of the crust of which the syncline in no. 1 forms part but a more detailed study of the geology would be necessary to check this supposition. The small component of the compression in the sense of these profiles which we have supposed seems hardly sufficient for explaining such a formation. We may, however, point out that the idio-geosyncline over nearly the whole eastern half of the island appears to be similar to that in the northern half of Java and for this last geosyncline we may reasonably accept it to be a second crustal wave inside the main one of the tectonic belt.

§ 9. The profiles nos. 5, 6, 7, 8 and 9 south of Java and the Small Soenda Islands.

These profiles all have the same character which clearly differs from the previous ones. They are separated from them by the curve of the anomaly-belt south of Strait Sunda between Sumatra and Java but the change of direction is less abrupt than that shown by the axis of these islands.

The negative anomalies in this part of the belt are much larger than in the other. They are bordered on both sides by belts of positive anomalies of which the one over the south coast of Java shows the largest values; this last belt seems to continue towards Bima but it would be desirable to check this by gravity determinations between the profiles nos. 8 and 9. North of this belt we find again a belt of negative anomalies or at least of smaller anomalies which coincides with the idio-geosyncline over the northern part of Java; they are much smaller than those of the main negative belt. Further north the anomalies merge in the positive field over the Java Sea.

We do not know much about the gravity-anomalies south of the weaker positive belt adjoining the main tectonic belt on the south side. Only one profile, viz. no. 8, continues over this area; it shows a gradual transition towards negative anomalies which are not very large and which occur over a fairly wide area. In chapter IV we shall shortly come back to these anomalies when discussing the gravity-field near the west-coast of Australia.

The cross-section of all these profiles over the main negative belt is more symmetrical than for the previous ones. It seems indicated to suppose here the down-bulging of the crust mentioned in the beginning of this chapter and in earlier papers. It seems likewise indicated to assume that the different belts of anomalies on both sides are further upward and downward waves of the Earth's crust which, especially on the north-side, seem clearly developed. The idio-geosyncline over N. Java would thus be a second downward wave of the crust which did not reach the breaking and down-bulging stage; this appears simple to understand because once the buckling occurs in the main tectonic belt it would be impossible that at the same time it would take place elsewhere in a stronger part of the crust. It would of course be possible that at a certain moment the concentration of crustal material in the tectonic belt became such that its strength increased above the strength-limit of the crust in the second belt and that then the tectonic activity would shift towards this second belt, but this does not seem to have taken place in the Java area; the earthquake-centers in the main belt appear to indicate that the main deformation is still going on there.

Examining the direction of this part of the belt in connection with the sense of the compression supposed in the crust over the whole western part of the archipelago we are inclined towards the conclusion that besides the main compression-component at right angles to the belt there is probably also a smaller component parallel to the belt. Whether this is true and whether the crustal deformation in the main tectonic belt is accompanied by shear in its length direction can not be decided.

Returning to the above-mentioned wave-formation of the crust an investigation shows that the two parts of the crust directly adjoining the deformed part in the main tectonic belt can not be horizontal. If this were the case this part of the crust would have risen because of the buoyancy of the light root formed below the crust, and so we should now have an upward wave over this belt. It would then be impossible to have also the two upward waves on both sides which are now present. They are too far away to form part of the central wave itself and they are too near to be separate upward waves to both sides; there is no evidence and no room for downward waves between them and the main belt. We thus are led to assume that the crust on both sides of the main belt is tilted downwards towards this belt and that we thus have here the case of deformation represented by fig. 15b or 15b′; in fact the distance to the positive belts points to fig. 15b′.

We may likewise conclude that the crust in this whole western part of the archipelago is still subject to considerable compression. This is in harmony with the fact that the idio-geosynclines in the north of Java, the east of Sumatra and the east of Borneo have shown fairly strong folding in a very recent period, viz. in the plio-pleistocene (Umbgrove, 1938, p. 51). We must no doubt see this folding at least in N. Java as the effect of a narrowing of the crustal wave by compression without its leading to a breaking of the crust.

The supposition that the crustal blocks to both sides of the main anomaly belt have a downward tilt towards this belt in the way as represented by fig. 15b′ is further confirmed by the topography of the sea-floor south of the belt: we find a trough adjoining the ridge over the belt and in some profiles also an upward wave south of the trough.

The second wave over North Java is not present in fig. 15b′; this figure has been drawn for the assumption that no compressive force is working in the crust. The situation as it is can probably be explained by assuming that during the last great folding period in tertiary f 2 the compressive force was great enough for causing more than one wave. In fact if the crust had been perfectly regular at the time when the force was large enough for causing down-buckling in the main belt, we saw on page 71 that a great number of waves ought to have formed to both sides of this belt. This perfect regularity of the crust is no doubt exceptional and so we can well understand that in many cases the crust on both sides of the belt has been strong enough for not allowing any other wave to come into being besides that in the main belt itself. Apparently in the Java area a second wave originated, but if nothing had occurred this second wave ought to have disappeared when the compressive force diminished again. Sedimentation, however, must have come between and it must have preserved this wave throughout the whole interval of time since elapsed. The fact, therefore, that it is still present is no proof that the compression in the crust has remained as strong as it was in the period of great folding; it is difficult to make an estimate of its actual size in the present period. The smaller anomalies over the second wave as they are found over North Java, over Strait Madoera and over Strait Soenda are no doubt partly caused by the lesser density of the sediments filling the syncline.

For the cross-section of the gravity anomalies over the main belt we shall probably have to prefer the curve for regional compensation because the compression working in the crust is likely to prevent local isostatic adjustment. The anomalies given by this curve must again consist of the same three parts as for the previous profiles, the isostatic compensation of the mass-deviations represented by the deformation of the crust here given by fig. 15b′, the effect of the great mass-deficiency of the crustal root under the tectonic belt and the difference of the local and regional compensation of the continental coast topography which we must expect to be present here and which is likely to be locally compensated. This continental border as defined by the sudden thinning or disappearing of the upper sialic layers probably coincides with the steep slope near the southcoast of Java.

In fig. 17 we have represented the first part of the anomalies by a dotted line, the combination of the first and second part by the dashed line and the sum of all three by the drawn line. We see that it is in good harmony with the regional curves of our profiles. The only point to be remarked is that the coastal slope seems to be located slightly further seawards than what appears to correspond to the effect of the continental border or, in other words, that the main thinning of the upper sialic layers appears to occur somewhere below the southern half of Java

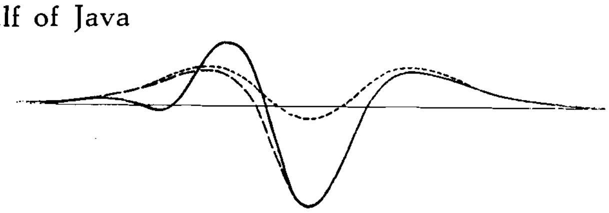

Fig. 17. Anomaly-profiles to be expected south of Java.

The gravity-profiles nos. 6 and 7 could be continued through Java by means of the results of gravity determinations made by the Batavian Oil Cy. The anomalies have been isostatically reduced by means of the HAYFORD-BOWIE tables and in connection with this the curves have been indicated by dots. For not changing again at the north-coast of Java the anomalies given for the Java Sea are also the HAYFORD-BOWIE ones. In behalf of our discussion we may mention that very roughly speaking the HAYFORD-BOWIE anomalies, though derived by local isostatic reduction, may be compared to the regional anomalies for a radius R of 116.2 km or 174.3 km; their depth of compensation is much larger and this more or less compensates the effect of the local reduction.

We shall not discuss these anomalies in detail. The main feature is the downward wave shown by these curves over the north of Java. We have already seen that it may be expected to be caused by two effects, the light sediments in the idio-geosyncline and the continental part of the difference-curve of local minus regional compensation of the continental border. It is difficult to make an exact separation of these two effects.

Profile no. 9 shows a peculiarity which merits some further attention. We see that the positive wave of the main negative belt is double here. It seems plausible to interpret this as an indication that the continental border effect and the effect of the upward crustal wave adjoining the tectonic belt on the north side no longer coincide here as they seem to do for the other four profiles. It is difficult, however, to say which of the two is which. Perhaps we may suppose that the continental border follows here the south coast of Soembawa and that thus the southern one of the waves in the gravity-profile corresponds to the continental border. The northern wave, which has its maximum near Bima and Soembawa could thus be interpreted as the effect of the upward crustal wave and this appears to be in reasonable harmony with its distance to the main negative belt as compared with that distance in the other profiles.

Profile no. 5 may be considered as a more or less intermediate type between the previous group of profiles west of Sumatra and those discussed here although it seems nearer to the latter group. This character is not surprising in view of the position of this profile over the curve in the belt between the two groups.

Our assumption that the crustal deformation over and near the main tectonic belt in the Java-Soembawa area has the character represented by fig. 15b′ brings along that in case the crust is subject to a compressive force D the belt must sink; if it is of the type of fig. 15b it would remain stable. For a further study of these vertical movements the writer may refer to his paper on "The Earth's crust deformation in the East Indies" [1]).

§ 10. The profiles nos. 10, 11, 12, 13 and 14 over the belt in the eastern part of the archipelago.

For this whole area the question whether a continental border of the asiatic continent is present where the upper sialic layers disappear or become suddenly thinner is difficult to answer. The geological data seem to indicate that in general the deep basins have been recently formed (UMBGROVE 1938, p. 55 e.s.), and this would probably mean that we have to consider this area as continental. The gravity results do not seem to contradict this statement; they do not give any evidence of a sudden thinning somewhere of the sialic layers.

It seems possible to the writer, however, that we have to make an exception for the Sawoe Sea which could perhaps be considered as a continuation of the Indian Ocean; its depth is the same as for the border of this ocean between Java and the tectonic belt. Its flat bottom and its breadth seem to point in this direction. The continental border of Asia would thus seem to follow the southcoast of the inner arc. Because of the depth which is smaller than the normal ocean-depth, it would correspond to a somewhat smaller thinning of the sialic layers. Our supposition is in harmony with the suggestion on page 69 that the bend of the main tectonic belt near Soemba and Timor is caused by its rejoining the margin of the Australian continent. Perhaps we have also to include Strait Wettar in this area; it has about the same depth and its bottom appears likewise to be flat.

We shall begin by discussing the profiles nos. 10 and 11 over this area. As we have found in the preceding § that in the whole south-eastern part of the archipelago the local isostatic compensation seems to be prevailing for many of the topographic features e.g. for the inner arc and as we found one possible cause at least for this in the presence of convection-currents under the crust which by their drag on the crust must in several areas diminish the compression, we shall also give attention here to the curves for local reduction. As it is obvious, howover, that in the area of the main tectonic belt the local isostatic balance is far from being attained, although there has been a recent rising which must have achieved a small part of this adjustment, it is probable that for this area the regional compensation is still nearer the truth.

Examining profile no. 11 over Timor, the Solor Islands and the Toekang Besi Islands, we see that this last ridge, as we noticed it already on page 66, appears to be locally compensated and this conclusion is corroborated by the station of Boeton of profile no 10; in both profiles the curve for local compensation is not affected by the presence of the ridge.

The anomaly-curves of no. 11 over the area of the Sawoe Sea and the inner and outer arc are complicated. It is a broad area of negative anomalies with a cross-dimension

[1]) Vening Meinesz, 1940.

of about 350 km. i.e. considerably more than the half wave-length of the crust of 267 km we derived for an unbroken wave (p. 71). This seems to indicate a combination of two separate effects and the shape of the curves appears to point the same way.

It is simple to find a plausible meaning for this conclusion. We have already mentioned that probably the inner arc is locally compensated and for the south-coast of the arc this coincides with the hypothesis that the Asiatic border continues along this coast; this would likewise imply local compensation. If we now examine the curve for regional anomalies which for the main tectonic belt is probably the better one, the local compensation of the arc of the Solor Islands must cause a belt of negative values over the area of these islands and this explains the northern part of the negative anomalies mentioned.

Subtracting this effect from the curve of our profile, the negative anomalies reduce to one single negative belt of a breadth of some 260 km. This is more than the cross-dimension of the belt south of Java but we find already a beginning of broadening of the belt in profile n° 9 and it is also present in profile n° 12 over N.E. Timor, although not quite in the same degree. This points to a broader subcrustal root caused by the compression of the crust and this seems in harmony with the greater breadth of the ridge over Timor.

We may perhaps find two causes for a larger root here than south of Java. In the first place the belt has a direction about normal to the supposed sense of compression in the crust and so the entire force is active in causing shortening of the crust while south of Java it is only a component of the force. In the second place the Australian continent is showing a bulge facing this part of the belt and so we might well suppose the crust to have been thicker here than south of Java because of the presence of a sialic surface layer of greater thickness.

The geological and geomorphological evidence indicates recent rising in the plio-pleistocene of many islands of the outer as well as the inner arc in the eastern half of the archipelago but the figures for Timor are the largest of all; UMBGROVE gives values for Timor varying from 600 m to 1300 m (UMBGROVE 1938, fig. 21, p. 59). In connection with the fairly steep slopes of this island on both sides we may assume that this has probably occurred by flexure of the crust combined with systems of faults. This is no doubt due to the strong tendency towards isostatic adjustment caused by the buoyancy of the crustal root and of the other mass-deficiencies which the crust's deformation has brought about. We may perhaps consider this local rising as being only possible because of the decrease of compression in the crust brought about in this area by the drag on the lower boundary of the crust by the convection-current which rises under the belt and flows off horizontally. It is possible that the Timor trough to the southeast of Timor has originated at the same time as the rising because this part of the crust must originally have been lifted above its equilibrium position by the buoyancy of the belt but must have sunk back when the Timor block detached itself sufficiently for rising. Perhaps the same phenomenon has also occurred on the northwest side but the topography of the sea-floor on that side does not show much evidence in this sense. We might perhaps make the following tentative speculation about this absence of a trough here. If this side has always been submerged there can not have been any erosion attacking the uplifted area during the lifted stage and when, therefore, the release came the crust's surface must have sunk back to its original level position. The possibility can not however be entirely excluded, although the negative anomalies do not appear to point this way, that the whole Sawoe Sea had originally a continental character and has sunk down like the trough to the south of Timor.

The rising of Timor must have reduced the crustal root at the lower boundary of the crust. If we should assume that originally the belt had the same position as it now has south of Java, i.e. that the ridge had a depth of about 1500 m we find the total cross-section of the rise to be from 200-300 km^2 while according to formula 15b on page 29 the cross-section of the root still present is about 1400 km^2.

This leads to the conclusion that the rising has only diminished the anomalies by one seventh part of their original values. This is only a rough estimate because we do not know the initial stage but it gives us an idea about the smallness of the readjustment of the equilibrium. According to Umbgrove's figures the recent rising varies from 600 m to 1300 m and this would only represent a decrease of the root of about 50 km^2, i.e. less than one twentieth of the total cross-section.

We may notice that after subtracting the left part of the negative anomalies in our profile the remaining cross-section resembles the cross-section of the negative belt over N.E. Timor as given by profile no. 12. We see that both cross-sections are slightly asymmetric; the left part of the curve has a smaller slope and therefore a greater breadth than the right one. We can remark a similar asymmetry in profile no. 9 but here the sides are interchanged; the steeper slope is on the left here. Continuing our examination we see the same asymmetry as no. 9 in all the ensuing profiles up to no. 17 while no. 5 shows it likewise and, in a slighter degree, also no. 7 and, still less, nos. 6 and 8. The effect seems too systematic for being accidental and so the question arises about its meaning.

Considering the way it occurs we may notice that it seems to be correlated with the curvature of the belt; the smaller slope is always found on the outside of the curve and the asymmetry appears to be more marked when the curvature is greater.

The explanation of this remarkable feature may perhaps be found in a combined effect of the curvature of the belt and the curvature of the Earth. In Vol. II of this publication, p. 129 and on p. 33 of this chapter, the writer has drawn attention to the fact that for a straight belt the curvature of the Earth implies compression of the down-bulging root in the sense of the axis of the belt, i.e. at right angles to its cross-section. For a curved part of the belt the problem of the stress in this sense is more complicated. As the writer pointed out in Vol. II, p. 125, the crust in moving towards a curved part of the tectonic belt must be subject to stresses at right angles to the movement. The part moving towards it from the inside of the curve undergoes tensile stress which must diminish the normal pressure and for the part coming from the outside the pressure is increased. The supposition of this effect is based on the assumption that the downbulging phenomenon of a curved belt of the crust must give a tendency to the parts of the crust moving towards it to deviate from a parallel movement and to approach a movement along radii of the curve. A consequence of these stresses must be to favor the formation of volcanoes on the inside of the curve but to prevent any such formations on the outside. This result is in harmony with the distribution of the volcanoes in the archipelago and also elsewhere in the orogenic areas of the Earth; they generally occur on the concave side of the main tectonic belt. In the area we are now considering e.g., we find an interruption of the row of volcanoes of the inner arc in the area facing Timor and this is the only part of the tectonic belt where the curvature is reversed, viz. convex towards the north.

Combining this with the first-mentioned effect we see that the downward movement in the tectonic belt of the crustal part coming from the inside of the curve must require less energy than that of the part coming from the outside because the last part is already subject to compression before it moves downwards while the first is under tension or, at least, under diminished stress. It is clear that under these conditions the deformation must assume an asymmetric shape which we may expect to be like fig. 18.

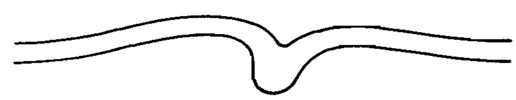

Fig. 18. Supposed deformation of the crust in curved parts of the belt (schematic).

A further reason to expect such an asymmetry may perhaps be found in the fact that possible surface-folds will probably develop towards the outside of the curve and not towards the inside because the first direction offers more room in a sense at right angles to the cross-section. This must likewise bring about a broadening of the outside wing of the crustal depression and, therefore, of the anomaly-curve. The supposed asymmetry is also clearly shown by the Alps, where the northern wing of the mountain-formation is likewise much broader than the southern one.

The hypothesis developed here may also give an explanation of the fact that in all orogenic areas the deep troughs occur on the outside of the arcs. It is related to the same asymmetry which we have dealt with here.

Another point meriting our attention is that the crustal deformation mentioned here seems somewhat of a transition between a symmetric down-bulging of the crust and an over-riding of one crustal block over the other.

Our discussion of profile no. 10 can be short. We see that it does not give much hold on the way of compensation of the inner arc, here represented by the island of Flores. For the ridge over Boeton, which is the prolongation of S.E. Celebes, local compensation seems indicated.

The main tectonic belt is weak in this profile; the negative anomalies are relatively small and the ridge is low. We find an explanation of this in the gravity maps where we see that this profile has been observed over an interruption of the main belt at the place where its axis is shifted towards the margin of the Australian continent. The curve of local anomalies north of the island of Flores shows the positive values with a mean of about 40 mgal which we have already discussed in § 6.

The profiles nos. 12 and 13 continue northwards over the whole eastern part of the archipelago. We shall discuss them together, proceeding from south to north. The cross-section over the main tectonic belt shows the common feature. No. 12 crosses N.E.-Timor and is asymmetric in the way we have already discussed. No. 13 crosses the belt over the small island of Loeang south of Damar where it begins to curve in the normal way, i.e. concave towards the north and the cross-section of the negative anomalies corresponds to this situation; the south wing of the curve is slightly broader here than the north wing. The data for the inner arc point again towards local compensation at least in profile no. 13. From profile no. 12 no conclusion about this question can be drawn but the results do not contradict it.

The whole area between the inner arc and the Soela Islands shows again in both profiles the normal positive values of the anomalies discussed in § 6 but there are a few ridges crossing this area from ENE to WSW and it is interesting to investigate whether the gravity results give an indication about how they fit together. BROUWER in „Geology of the Netherlands East Indies", 1925, p. 58 connects the Banda Islands with the volcano of Goenoeng Api, while Umbgrove suspects an old geosyncline connection in the cretaceous and in older periods from Boeroe towards Boeton and S.E. Celebes (Umbgrove, 1938, triassic, p. 10, mesozoic history p.p. 24 and 25). As we have already mentioned in § 6 when discussing the maps the gravity indications as given by our maps and profiles seem to point to a connection of the Banda Islands towards Boeton and S.E. Celebes via the Lucipara Islands and the Toekang Besi group. In profile no. 13 we see that the Lucipara Islands are locally compensated in the same way, therefore, as the inner arc and the Toekang Besi Islands, and profile no. 12 shows a downward bend of the anomaly-curves east of the Toekang Besi Islands which seems to indicate a connection. Further to the north in this last profile there is no indication of any connection towards these last islands which could point towards Boeroe and the maps also seem to indicate (see station no. 284) that the gravity features connected with the area of Boeroe stop southwest of this island. In profile no. 13 we see that the gravity result of station no. 283 close to this island points to local isostatic compensation of the topography there.

We can in two ways reconcile these results with Umbgrove's indications about an old geosyncline-connection between Boeroe and Boeton. In the first place it is possible that all gravity indications of these old features have disappeared in the long time interval since elapsed and in the second place we can think of a connection en échelon between these geosynclines in such a way that the arc through Boeroe stops and that the crustal deformation is taken over by a parallel arc to the south running over the Lucipara Islands towards Boeton.

Before leaving this area we may remark that there is no gravity evidence at all of any continental border east of Timor and the geological evidence also points to an unbroken continental area. If this is true we must conclude that the curved shape of the tectonic belt east of Timor is not caused by the shape of the Australian continent as it has often been surmised.

We shall now discuss the part of the two profiles over the area of great negative anomalies in the Molucca Sea which belongs to the second tectonic belt of the archipelago. The total cross-section of the negative anomalies is here about three times as large as for the southern belt hitherto examined. Taking the cross-section of profile no. 12 which is the smallest of the two, we find when applying the rough formula 15 b of page 29 that the subcrustal root must have a cross-section of about 3000 km^2.

The morphology of the area is interesting. There is no clear evidence in the topography of the floor of the Molucca Sea that the area has already risen and so there does not seem to have been much isostatic adjustment yet although the mass deficiency is unusually large. This points to compression in the crust. The deep earthquake foci in the Celebes Sea to the north of the north-arm of Celebes appear to indicate convection-currents here which we must expect to have their rising column under the Molucca Sea area; the centres at a depth of 100—200 km in the northern part of this sea seem to confirm this supposition. Accepting it we must obviously surmise that the drag in the crust caused by this current has not yet led to much isostatic readjustment.

The deformation of the crust must be more complicated here than in the southern belt as the shape of the compressed areas is so irregular. We have two main areas of deformation, a northern one which we shall examine in § 12 and the triangular one of the Molucca Sea probably continuing under the eastarm of Celebes which is crossed by our two profiles. It is difficult to understand the cause of this irregular shape and still more difficult, therefore, to get an idea of the mechanism of this deformation. It seems likely that the main belt of shortening of the crust is the one continuing towards E. Celebes but that a second one is branching off towards the south and joins the southern belt in the island of Ceram. As the map shows, the negative anomalies over this last belt between the islands of Obi and Ceram are not large and so the corresponding shortening of the crust can not be large either.

The picture we thus obtain points to the main compressional stress in the crust having the normal direction for the archipelago, viz. N.N.W.-S.S.E. There seems, however, to be a second stress more or less at right angles to the first which appears to be exerted by the crustal block of Halmaheira. It does not seem unlikely that this force is connected with the great tectonic phenomena of the Marianas arc which in the area to the east of Halmaheira appears to curve round towards New Guinea. As long as we do not know more about this last arc we can not obtain a clearer view of what is going on in the crust under the Molucca Sea. We can only say that the phenomenon seems very complicated and that the mechanics of this crustal deformation will no doubt be difficult to unravel. The writer shall not make any further attempt here in that direction. He wants only to make the following two short remarks.

In the first place it is likely that at least part of the curve shown by the northern arm of Celebes is caused by the great crustal deformation in the Molucca Sea. Dividing the figure of 3000 km^2 we obtained for the cross-section of the crustal root in that area by the thickness of the crust of 30 km we obtain a rough estimate of the shortening of the crust of the order of 100 km. Profile no. 13 gives a still greater figure as the cross-section of the negative anomalies is larger there. It makes the impression that the shortening in the eastarm of Celebes is much less but we shall of course have to await further gravity data before a more exact statement can be made. We can now only say that it appears likely that the crustal shortening in E. Celebes will be some 100 km smaller than in the centre of the Molucca Sea and applying this figure to the shape of the northarm of Celebes we see that originally it probably has been straighter. If in older periods similar phenemema have been going on here of which the crustal roots have already disappeared, this would increase the effect on this arm.

In the second place we may notice that the curious morphology of the Soela Islands is also a slight indication of two directions of compression being active in this area of the crust. The east-west direction of the two main islands is no doubt connected with the great crustal deformation going on under the Molucca Sea but it is probable that the N.N.W.-S.S.E. direction of the small island of Soela Sanana is related to the weaker crustal phenomenon in the belt between Obi and Ceram.

In the absence of a better insight in the crustal deformation below the Molucca

Sea a more detailed discussion of our two gravity profiles is not possible and the same must be said of the topography in these profiles.

Profile no. 14 crosses the main tectonic belt over the Tanimbar Islands. As the anomaly-maps show the belt has a strong curve here and it is remarkable to see that the asymmetry of the curve of negative anomalies in our profile is likewise stronger than for the other profiles; it is in the right sense as the broader wing is found again towards the outside of the curve.

The profile shows again local isostatic compensation for the inner arc which in this eastern part of the belt is reduced to a low ridge and a series of volcanoes on this ridge: the profile crosses the arc near the volcanic island of Seroea. The curve for local compensation combined with T = 30 km is unaffected by the ridge while the others show a deviation. The same seems to be true for the ridge to the south of Ambon and so this elevation is probably also locally compensated.

In the whole area over the Banda Sea the local anomaly-curve shows again the field of positieve anomalies discussed in § 6 with a mean value here of 40—50 mgal.

Near Ambon and to the north of it we see a cross-section of a belt of moderate negative anomalies which, according to the maps, is the continuation of the negative belt we may suppose under the island of Ceram. We already mentioned this belt when discussing profile no 13 which just crosses its outer edge and we remarked already that it does not seem to continue towards the southwest. In profile no. 14 this belt does not show local isostatic balance as in no. 13 but for local compensation the anomalies are small.

The continuation of our profile crosses the edge of the belt of high positive anomalies south of the Soela Islands which we have already formerly interpreted as the uplifting effect of the great crustal root and mass-deficiency below the Molucca Sea. The profiles ends on the edge of the triangle of large negative anomalies in that area.

§ 11. Profiles nos. 15, 16 and 17 over the eastern curve of the main belt.

All these profiles cross a strongly curved part of the tectonic belt and so we may expect asymmetry of the cross-section of the negative anomalies. This is corroborated by the anomaly-curves; they all show a broader and less steep wing on the outside of the curve. The profiles also confirm the local isostatic compensation of the inner arc which consists here of a row of volcanoes on a low ridge; in all these profiles the anomaly-curve for local compensation is undisturbed over this arc.

The anomaly-curves however, merit a further study, in the first place because of a few special features and in the second place because of the fact that the main belt changes here so much its direction with regard to the supposed direction of the compressive force.

In the first place we see an exceptional deep basin here between the outer and the inner arc, the Weber deep. It is remarkable because of its great depth which reaches to 7440 m and of its flat bottom which slightly slopes upwards in the eastern half of the basin. The eastern slope of the basin is very steep, especially west of the Kai Islands and the western one is also steep though slightly less.

In the second place the topography on the outside of the outer arc shows a remarkable tendency to deviate from the axis of the belt itself. The trough on the outside of the Tanimbar Islands continues in the same direction but becomes deeper and broader between the Kai Islands and the Aroe Islands and stops near the coast of New Guinea; this ending has not been sounded in detail. In the Kai Islands we see the two directions separately expressed; the western group follows the main tectonic arc while the island of Great Kai and a bank to the east of it show clearly the direction towards New Guinea.

A similar deviation of the surface topography is found in the northern part of the arc. The axis of Ceram seems to continue in a ridge branching out from the curved tectonic belt; it runs in a east-southeast direction towards the southcoast of New Guinea.

We thus see that the topography seems to point to two directions in this area making approximately a right angle, one continuing the main southern tectonic belt and the second apparently representing a prolongation of the axis of New Guinea towards the west.

The tectonic belt as shown by the negative anomalies seems to avoid the right angle by curving from one direction towards the other. Profile no. 15, moreover, gives an indication of the second direction towards New Guinea besides the main belt; the curve for local compensation as well as that for moderate regionality ($R = 116.2$ km) shows a second wave to the east of the principal one and the curve for largest regionality of the compensation ($R = 232.4$ km) shows a widening on that side. We see this clearly also on map no. 3 of the regional anomalies for $R = 174{,}3$ km.

It is difficult to say what the meaning is of this abnormal behavior of the crust in this area. We may perhaps think of two old directions present here as remnants of older tectonic periods, one continuing the southern tectonic belt and one continuing in the axis of New Guinea, which no doubt are both much older than the last period of great folding in tertiary f 2. In that case the more recent tectonic deformation appears to have brought about a continuous buckling zone linking one with the other via the rounded curve of the present arc. We may also consider the possibility that the two deviating directions are contemporaneous with the curved arc; in that case they are no doubt brought about by the complicated mechanics of the crustal reaction to a curved buckling zone which might imply secondary tendencies towards continuation along a tangent of the curve. It seems possible that a similar phenomenon occurs in the West Indian arc where the geology of Trinidad appears to give indications of an axis continuing towards the Atlantic.

Examining the depth-profile of no. 15 we may perhaps explain the two troughs on both sides of the main tectonic belt over the Kai Islands by a subsidence caused by the rising of this belt in the way explained on page 36 e.s. The eastern trough appears to occur at a somewhat greater distance from the belt than normal but we may probably attribute this to the diverging direction just mentioned. The western trough is the Weber Deep of which we have already mentioned the great depth. To explain it we could perhaps assume that about half of its depth is caused by the descending column of the convection-current which has brought about the Banda basin.. We may assume that this current decreases in this area from west to east and thus brings about a sea-floor gradually sloping upwards in this same sense. Adding to this downwarp the sinking caused by the rising of the crustal block of the Kai Islands we would obtain a depth profile agreeing to what is actually present. The fact that the convection-current comes nearer here to the main tectonic belt than in the whole part hitherto dealt with, could well be explained by the curve of the belt which must involve an abnormal distribution. In case we have an axially symmetric convection-current with a descending current in the centre and acircular rising current around, it is likely that we may roughly assume equal areas for both currents and this would imply a dividing curve between both areas which is nearer to the axis of the rising current than to that of the descending one (see fig. 19).

The great depth of the Weber deep and the slight upward slope of its floor from west to east could thus be explained by the overlapping effects of the descending convection-current and of the reaction to the rising of the main tectonic belt. This explains its being confined to the curved part of this belt and its having its maximum depth in the middle of the curve. The steep slopes on both sides may be attributed to the second of the two effects.

The effect of the different direction of the main tectonic belt with regard to that of the main compressive force in the archipelago is clearly discernible in our profiles. In Profile no. 15 the belt makes still a considerable angle with this direction and so the component of the force at right angles to the belt is not much less than the total force. The cross-section of the curve of negative anomalies is correspondently large and so this is in good agreement with our hypothesis. In profile no. 16, however, the angle is small, i.e. of the order of

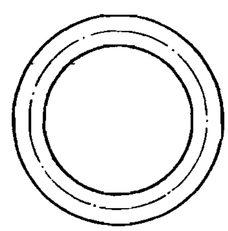

Fig. 19. Areas of rising and sinking currents for circular convection.

only a few degrees and so we might expect here a small cross-section of the curve of negative anomalies in the same ratio to the normal cross-section as the ratio of the component of the foree at right angles to the belt to the force itself. This is obviously not quite the case but the cross-section is decidedly smaller than in no. 15. This last conclusion may also be drawn from the anomaly-maps which show clearly that the negative belt becomes narrower and less intensive in the part where it turns towards the north-northwest. The curve for local anomalies of profile no. 16, especially, shows only weak negative anomalies and it has an asymmetric character of the type deduced for the profiles west of Sumatra. It is questionable, however, whether we may adopt this curve because an overriding of the eastern block over the western one seems to imply compression and regional compensation. We may conclude that the exact interpretation of the gravity profiles of no. 16 is difficult but that there seems to be some indication of a slight compression at right angles to the belt which does not quite seem to agree with the direction of compression adopted for the whole archipelago. Possibly this could be caused by the New Guinea block which, further to the north, appears to have exerted, as we saw, a considerable westward force on the crustal block of the Molucca Sea.

Profile no. 17 via Banda and Sorrong is simpler to interpret. Besides the local compensation of the inner arc in the Banda area it shows clear evidence of a belt of negative anomalies near the east end of Ceram. This belt is rather narrow and does not show anomalies of quite the same intensity as in the main southern tectonic belt but it is more pronounced than in profile no. 16. We must, therefore, conclude that the crust has been compressed in this area and this leads to the result that here also the New Guinea block must have been responsible for it.

From these different data it is not yet possible to conclude about the relative movement of the Halmaheira-New Guinea block with regard to the blocks to the west; for this purpose we need more gravity results in these areas. Roughly speaking we may probably surmise that this relative movement has had a considerable westward component in the Halmaheira area which gets weaker towards the south.

§ 12. Profiles nos. 18, 19 and 20 over the Mindanao Trough area.

The first two profiles are indicated on the anomaly-map no. 1, the third is further to the north; it crosses the Mindanao Trough north of the island of Mindanao.

Profile no. 18 over the island of Siao and over Tobelo shows large negative anomalies over a broad belt. It is possible that the values in the middle of the downward curve have been under-estimated. The sea-depth in this part of the profile does not show great irregularities except a narrow steep trough, the Sangihe trough, east of Siao of about 3000 m depth. Over the negative belt the profile shows a fairly regular depth; in the western part it is about 1300 m and it slopes down to a broad depression of some 2500 m depth in the east. We do not, therefore, get the impression of recent strong rising of the belt but perhaps we may assume that the western part of the belt has risen somewhat and that as a consequence of this the above-mentioned narrow Sangihe trough has been sinking down in a similar way as it has been explained for the southern tectonic belt.

Examining the gravity maps we see that this profile crosses the southern part of an area of large negative anomalies. In connection with the absence of strong rising of the belt it is probable that the isostatic compensation is of the regional type and that for our interpretation we have to prefer the maps and profiles for regional compensation. Studying the map we see that part of this negative belt-like area may no doubt be explained by the direction of compression we assumed for the whole archipelago; in this area the belt still makes a considerable angle with this direction which implies that the component at right angles to the belt is more than half the total value while towards the north the angle quickly diminishes. This is in good agreement with the decrease of the negative anomalies in that direction.

The southern end of this negative area, however, can not be explained in this way. We may remark that if we study an anomaly-profile over stations nos 336 and 274, i.e. just south of Tobelo, we find also here a strong decrease of the anomalies of some 200 mgal towards the belt but this belt of smaller anomalies is narrower than in the area to the north of it and the whole gravity profile is shifted some 100 mgal in the positive sense.

Examining these peculiar features in the gravity-map no. 3 we get the impression that they must be due to an effect of the Halmaheira block to which we have already attributed the abnormal gravity values in the Molucca sea. It seems rather likely that the strong effects exerted by this block are related to the great Marianas arc curving back here towards the New Guinea tectonic area or at least joining it here. For further investigations we must await an extensive geophysical and geological exploration of this whole area.

It seems no doubt possible that part of the negative area crossed by our profiles nos. 18 and 19 has also been affected by these phenomena to the east of it but as long as no more is known about it we can not give a decisive answer to this question. This makes it also difficult to interpret the eastern part of the anomaly-curves of profile no. 18 where we see a widening of the negative belt and fairly large positive anomalies to the east of it, especially in the curve of regional anomalies. It is possible that this is caused by a continental border to the east of station no. 261 which must be expected to be locally compensated and which in the curve of regional anomalies must cause a positive wave to the east of the border and a negative one to the west.

If we may admit this explanation it would be a result of great importance as it would make it likely that the sialic layers over the basin to the east of the line Morotai-Mindanao would be much thinner than to the west of this line. It would point in the direction of Umbgrove's views as exposed in the 2nd edition of "the Pulse of the Earth" which we shall shortly consider in the next §. We must, however, realize that the above-mentioned features of the eastern part of profile no. 18 can also be caused by some effect proceeding from the crust to the east of Halmaheira.

Profile no. 19 shows great negative anomalies over the tectonic belt which has here a north-south direction. The angle of the relative movement of the crustal blocks on both sides with regard to this N.S. direction can not, therefore, be too small.

The profile of the sea-floor over the central area on both sides of the tectonic belt is irregular. The belt itself has probably risen here, for in the Talaud Archipelago it is now partly above sea-level and to both sides of the belt we have troughs with steep sides which could at least partly have been brought about as a reaction to this rising. The lesser lateral compression here may perhaps be explained by the drag exerted on the crust by the convection-current we may here suppose in connection with the deep basin of the Celebes Sea and the deep foci in that basin.

The trough to the west of the Talaud Islands has a depth of some 3500 m which is of the same order of magnitude as the depth of the troughs on both sides of the southern main belt east of the island of Timor, where the elevation of the belt itself is comparable to that of the area of the Talaud Islands. The trough to the east belongs to the Mindanao Trough which has a depth here of 8800 m. This is the same relative deepening of about 3500 m with regard to the normal sea-floor here. It makes the impression, therefore, that we can explain this part of the trough without assuming an overriding of the crust over the sea-floor as we have assumed west of Sumatra. This appears to be in harmony with the direction of the trough in this area which seems about parallel to the suspected direction of the relative movement of the two crustal blocks. As we mentioned, however, the large crustal root as indicated by the strong negative anomalies points to compression during the folding-period and so the situation is no doubt more complicated.

Our profile seems to give evidence of a continental border effect which appears to show itself in an upward wave of the regional anomaly-curve to the east of the steep slope; the negative wave to the west of the slope disappears in the cross-section of the negative anomalies. This evidence supports our conclusion arrived at in our discussion of the preceding profile about the presence of a continental border there, but because of the suspected complication mentioned above, the evidence is uncertain.

We may finish our discussion of this profile by remarking that the negative cross-section of the anomaly curves of profile no. 19 is slightly asymmetric. This is in harmony with the slight curve of the belt in this area.

We have lastly to discuss profile no. 20 through Strait Surigao to the north of Mindanao; it crosses the deepest part of the Mindanao Trough. The topographic profile is simple; it shows the trough with a steep western slope of nearly 10000 m height and a convex eastern slope leading to the normal ocean depth in this area of some 5700 m. The anomaly-curves give an interesting result; we see that the curve for regional compensation shows a simple picture of positive anomalies over the basin rising to a higher value in Strait Surigao. This transition is smooth without showing any effect of the deep trough. It must be conceded, however, that the number of gravity-stations in this profile is small and so we can not be too sure that the anomaly-field is really as regular as the curve seems to show.

Two difficulties, moreover, remain to be solved. In the first place we must expect that the curve of regional anomalies shows a continental border effect and it does not seem to contain anything of the kind. In the second place the shape of the eastern slope of the trough appears to suggest an overriding of the crust on this side by the continental block, which, because of the somewhat different direction from that of the supposed relative movement could well be explained and this would correspond to an anomaly curve like the full-drawn one in fig. 16b page 72 (continental block to the right in this drawing).

Examining these two effects we notice that in special circumstances they can more or less neutralize each other and the question, therefore, arises whether this is the case in profile no. 20. A more detailed survey may perhaps shed some light on this question; as it is we can not answer it. Our profile, therefore, does not add any evidence about the presence of a continental border here, but such a supposition is not contradictory to it.

As far as we can see our profile suggests a relative movement of the crustal blocks on both sides of the east-coast of the Philippines which is nearly parallel to this coast. This result agrees exactly with the general direction assumed for the whole of Indonesia and as the blocks here are different from the blocks separated e.g. by the southern tectonic belt south of Java while the direction of the relative movement coincides we get the impression that this direction is based on a more general cause. As we have remarked already on page 32, this may perhaps be found in the dominating shear-direction in this part of the Earth's crust which, according to the writer's hypothesis represented in fig. 9, is coinciding with it; such a general direction of the fault-zones in the Earth's crust may well bring about relative movements of the different blocks parallel to it.

The assumption of a major shear-movement along the east-coast of the Philippines seems in good agreement with the fault-zones in the islands of this archipelago which are in general parallel to this coast. As far as the writer knows the relative movement during earthquakes occurs everywhere in such a way that the western block moves south with regard to the eastern one.

§ 13. Profiles nos. 21 and 22 over the Yap and Nero deeps (near the islands of Yap and Guam).

We shall not enter deeply into a discussion of these two profiles, in the first place because the data are hardly sufficient for justifying such a discussion and in the second place because they do not belong to the Indonesian Archipelago which is the subject of this chapter.

Both profiles coincide in one particularity which differs from the profiles hitherto studied, viz. the coincidence of the belt of negative anomalies with the trough. In the Indonesian profiles the trough is everywhere besides the axis of the belt of negative anomalies. In the 2nd edition of "The Pulse of the Earth" pp. 173 and 174 UMBGROVE gives an explanation of this different behavior. He argues that probably in the areas of Guam and Yap the crust is only covered by a thin sialic layer and is mostly submerged; if such a crust buckles downwards, the downward movement is only imperfectly hidden by the incompetent sialic concentration of this thin surface-layer while in Indonesia the much thicker surface layer is at least partly above sea-level and gives more sediments which are squeezed out and folded together in such a way that above the downbulged root a ridge is formed. It is an interesting explanation which has already been suggested by Hess [1]) for explaining the same difference between the northern part of the Caribbean arc where, north of Puerto Rico, the belt of negative anomalies is shifted towards the trough, while in the southern area this belt is accompanied by a ridge rising above sea-level in the islands of Barbados, Tobago and Trinidad. In the last case and in that of the Indonesian Archipelago we get a double arc while in the other case only the inner arc develops which has usually a volcanic character. Umbgrove's hypothesis for the Marianas arc near Guam and Yap is supported by the indications given by our discussion of the profiles nos. 18 and 19 about a thinning of the sialic layer east of the line Halmaheira-Philippines.

The writer may add that the question whether during the down-bulging sufficient material is squeezed out for forming a ridge above this belt may also depend on the direction of the relative movement of the crustal blocks on both sides with regard to that of the belt. If this angle is small the compression is likewise small and so the tendency towards a ridge-formation must be less. We may in that case have an overriding of one block over the other which will probably lead to the development of a trough. A more thorough gravimetric survey of the whole area of the Marianas arc will be needed before a more satisfactory interpretation of the profiles over Guam and Yap can be attempted.

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1) Hess, 1939.

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CHAPTER III.

Volcanic Islands.

The gravity material of this publication contains many data on and near oceanic islands and so this enables us to make a new investigation about these islands and about the problem of the apparent excess of gravity found on many of them. The writer has already published a first paper [1]) on this subject in 1941 about the two areas where the available material is largest, i.e. for the Hawaiian Archipelago and for Madeira. For a great part the following is a repetition, partly literally, of this study; it is supplemented by some further data not mentioned there or since obtained. We shall afterwards deal with other islands for which data have been got, viz. St. Vincent, Bermudas, the Canary Islands, St. Miguel, Fayal, Mauritius and Tristan da Cunha.

§ 1. Hawaiian Archipelago and Madeira.

For the Hawaiian Archipelago we dispose of fifteen gravity stations of the U.S. Coast and Geodetic Survey on the islands numbered 1—15, i.e. six on Hawaii, six on Oahu and three on the other islands and further of a profile of sea-stations from ENE to WSW (see profile no. 75) observed during the crossing of the Pacific of Hr. Ms. Submarine K XIII in 1926 and indicated by the numbers 110—115 in the list of this publication.

For the Madeira area we have two profiles of sea-stations at about right angles to each other, in the directions W—E and N—S, observed o/b Hr. Ms. O 13 in 1932 (Nos. 466—472) and o/b Hr. Ms. K 18 in 1934 (Nos. 505—508, see profile no. 59), supplemented by two land-stations Nos. 469a and 469b, observed by the author during his stay on the island during the last expedition.

For both areas we can, therefore, compare the gravity on the islands with that in the neighbourhood at sea. We have put the whole material together in two special tables in this §; they contain the anomalies for a crustal thickness T of 30 km. Those for $T = 20$ km have been omitted and also those for $R = 29.05$ km. The stations show great differences of elevation, ranging for the Hawaiian Archipelago from 3981 m above sea-level to 5430 m below it and for the Madeira group from 1530 m above to 4430 m below. This is evidently favourable for the drawing of conclusions about the location of the isostatic compensation.

The areas are similar in this regard that the islands in both are generally assumed to be of a purely volcanic origin. In both also they rise from a deep ocean-bottom without a transition of lesser depths, which are e.g. present near the Azores and other islands on the Mid-Atlantic ridge. These points are important for the interpretation of the gravity

1) Vening Meinesz, 1941, p. 2.

anomalies; they make it improbable that the areas have recently been subject to folding or overthrusting of the crustal layers. From a geophysical standpoint the two areas differ. The Hawaiian Archipelago is situated in the middle of the Pacific east of the andesite line where most geophysicists, on the base of the seismic evidence, suppose no sialic layer to be present or at most only a thin one, while Madeira is in the east Atlantic where generally a sialic layer of at least ten kilometers thickness is assumed.

As we may expect in connection with the strong irregularity of the topography, the table shows very large free-air anomalies; in the Hawaiian area we see even values of + 698 mgal and + 662 mgal and in the second area a value of + 376 mgal. In the next column of the table, in the top-values of each set of three, we find the anomalies for local isostatic reduction taken from the list of this publication for $T = 30$ km; the stations of the U.S. Coast and Geodetic Survey have been reduced in the same way. We see that, though the reduction has reduced the anomalies, they still remain large; four of the six anomalies on the island of Hawaii are about + 250 mgal and many of the other anomalies show likewise high values. So we have typical instances here of the high positive anomalies that have so often been found on oceanic islands. For both areas the anomalies in the stations over the deep sea in the neighbourhood are small.

For explaining the positive anomalies on the islands we might in the first place think of the possibility that the volcanic topography is recent and for a great part not isostatically compensated because the equilibrium has not yet had time enough for being readjusted. The writer thinks, however, that this assumption of non-compensation of a great part of the topography is out of the question for the areas under consideration because the tendency towards adjustment of the equilibrium must imply a sinking of the islands at a fairly large speed and no such sinking is going on. We shall suppose that we may apply the formula for the rate of readjustment which the writer derived some years ago from the evidence in Scandinavia [1]). If A is the anomaly, dA its rate of disappearance per century and L the diameter of the area in thousands of kilometers, he found

$$dA = 3\tfrac{1}{2} \times 10^{-3} \; AL \text{ per century.}$$

Introducing for the island of Hawaii a diameter of 100 km and a value of A of 250 mgal, we find dA to be 0.09 mgal per century. This corresponds to a subsidence of about one meter in that time. There is, however, no evidence of such a subsidence of Hawaii nor of the other islands. The three western islands, e.g., where gravity measurements have been made and where likewise large positive anomalies have been found, viz. East Island, Nihoa and Necker, are surrounded by extensive shoals of depths of resp. about 10 m, 40 m and 25 m. As e.g. set forth by Harold S. Palmer in his publications on the smaller islands of the Hawaiian group [2]) the general opinion is that these submarine terraces are the surfaces of truncated volcanoes of which the top parts have been taken away by the action of the waves. Mr. Palmer also mentions benches along the shores of several islands caused by the relative lowering of sea-level. Both features clearly point to no strong downward movement having occurred in recent times. For Oahu there is indeed evidence of a subsidence of the island but on the other hand the area round Honolulu has doubtless

1) F. A. Vening Meinesz, 1937, p. 662.
2) Palmer, 1927.

risen in the last period and WENTWORTH and PALMER[1]) mention recent eustatic benches some 12 feet above sea-level for all the islands. So in general the evidence is certainly not in favour of a subsidence of the topography.

For Madeira we have to introduce somewhat smaller figures for the diameter of the island and for the mean of the three anomalies on the island, viz. 50 km and 130 mgal. This leads to an estimate of the subsidence incase of non-compensation of about 25 cm per century. This is still a rather large amount and, as far as the writer knows, there is no evidence that such a movement has taken place; the geology on the contrary points to a rising of the island.

Ruling out the possibility of the volcanic topography being entirely or for the greatest part uncompensated, we come to another possible line of explaining the high positive anomalies. The isostatic reduction has been based as usual on the adoption of a density of 2.67 for the topography, and the volcanic rock constituting the islands may well be supposed to have a greater density. In the way described below, the writer has made an estimate of the results we should have obtained if we had adopted a density of 2.937 resp. of 3.07, i.e. ten resp. fifteen percent more than the above value, for all the matter above the mean depth of the sea-floor which has been estimated at 5000 m. For each station the results of this estimate have been given in the tables of this § below the results of the normal reduction. The last column indicates the density corresponding to the results of that line. Examining these results, we see at once that the introduction of the larger figures for the density indeed diminishes the anomalies, but that the decrease is small with regard to their total value. So it appears out of the question to make the anomalies disappear in this way; for this purpose we should require densities far above those possible for volcanic rock. So this effect explains a part of the anomalies but only a small part, and we shall have to continue our investigation of their cause. We first, however, shall indicate the way in which the estimate of the effect of higher values for the rock-densities has been made.

These figures have been obtained by subtracting from the anomalies ten resp. fifteen percent of the combined effects of the topography and the compensation for the lettered Hayford-zones A to O, i.e. up to a distance of 166.7 km from the station, and further the combined effects of the attraction of a cylindrical mass of this same radius round the station, of a density of 0.267 resp. 0.400, reaching from sea-level down to a depth of 5000 m, and of the isostatic compensation of this cylindrical mass. For sea-stations where the depth is smaller than 5000 m, a density of the cylinder up to that depth was adopted, of 0.1642 resp. 0.2463 and between that depth and 5000 m of 0.267 resp. 0.400. For sea-stations over greather depth the cylinder was extended to this last depth and its density was taken at 0.1642 resp. 0.2463.

We may explain this procedure in the following way. By subtracting from the free-air anomalies 1.10 resp. 1.15 times the normal effects of the topography and the compensation for the lettered zones, we find the anomalies that would be brought about if inside a radius of 166.7 km the topography above sea-level — supposed to have this greater density — had been taken away and if the sea had been filled up with mass of a density of 1.10 $\times$ 1.642 resp. 1.15 $\times$ 1.642, thus giving rise to a total density there of these values combined with the density 1.028 of sea-water. In the sea-areas we thus should get a density of

1) Wentworth and Palmer, 1925.

2.67 + 0.1642 resp. 2.67 + 0.2463 reaching down to the sea-bottom. We further assumed a density of 2.67 + 0.267 resp. 2.67 + 0.400 for the landparts, reaching from sea-level up to 5000 m depth, and for sea-parts of a lesser depth than 5000 m, reaching from that depth up to 5000 m. The effect of all these masses in excess of the normal density of 2.67 has to be removed and likewise that of their isostatic compensation. For each station these masses are included inside a radius of 166.7 km around it; ;the effect of heavier masses outside this radius is neglected. We shall further simplify the removal of these effects by assuming for each station that the sea-depth is constant inside this radius; for a land-station this implies neglecting eventual sea-areas inside this same limit. We thus arrive at the procedure as mentioned above. The combined effects of the attraction of the cylindrical mass round the station and of its isostatic compensation — for the supposition of local isostatic equilibrium — is given in the first column of the table below for land-stations and for sea-stations for different depths.

Returning to our main discussion we have to take up again the problem of the cause of the positive anomalies. Obviously not much else is left than to suppose that the assumption about the distribution of the isostatic compensation is erroneous. Notwithstanding the consequences being contrary to conceptions admitted by many geologists and geophysicists, it seems indicated to see whether the supposition of a regional distribution of the isostatic compensation can give a better result. By examining the columns of the tables of this § for larger values of the radius of distribution R we find this at once to be true; the high values of the positive anomalies for the landstations disappear. The same result follows from the profiles Nos. 75 and 59 over Honolulu and Madeira; they clearly show that the anomaly-curve becomes smoother for regional reduction and great radius of regionality.

In the same way as it has been done for the column for local compensation, values have also been derived for higher densities of the topography; they are listed in the second and third lines for each station. For computing them the compensation of the cylinder, the attraction of which had to be subtracted, was assumed to have the same regional character as that of the isostatic anomalies to which the correction was applied. According to this, the following figures for the combined effects of the cylinder and of its compensation have been subtracted. We thus obtain the tables of the next pages.

Attraction in mgal by the mass-cylinder and its compensation.

Depth in m	Density topografy	$R=0$	29.05 km	58.1 km	116.2 km	174.3 km	232.4 km
0 m	2.937	7.2	7.4	7.6	8.0	10.7	17.8
(landstation)	3.07	10.8	11.1	11.4	12.0	16.0	26.8
1000	2.937	6.4	6.5	6.7	7.2	9.6	16.3
	3.07	9.7	9.9	10.1	10.7	14.4	24 4
2000	2.937	5.8	5.9	6.1	6.4	8.7	14 8
	3.07	8.7	8.9	9.1	9.7	13.0	22.2
3000	2.937	5.2	5.3	5.5	5.8	7.9	13.5
	3.07	7.8	8.0	8.2	8.7	11.8	20.2
4000	2.937	4 8	4.9	5.0	5.3	7.2	12.2
	3.07	7.1	7.3	7.5	8.0	10.8	18.3
5000	2.937	4.4	4.5	4.6	4.9	6.6	11.0
	3.07	6.6	6.8	7.0	7.4	9.9	16.5
6500	2.937	4.9	5.0	5 2	5.6	7.7	13.6
	3.07	7.4	7.6	7.8	8.4	11.5	20.4

Gravity in the Hawaiian Archipelago
(anomalies in milligal)

Station Latitude N Longitude W	Elevation meter	free-air anom.	local isost. $T=30$	regional isostatic anom. $T=30$ kilometers				local isost. $T=80$	dens. topog.
				$R=58.1$	116.2	174.3	232.4		
2 Mauna Kea, Hawaii,	+3981	+662	+249	+225	+171	+119	+81	+97	2.67
19 48.9			+205	+177	+127	+60	+15		2.937
155 28.8			+182	+154	+105	+30	−18		3.07
3 Kalaieha, Hawaii,	+2030	+495	+267	+240	+181	+130	+91	+106	2.67
19 42.2			+241	+211	+146	+88	+43		2.937
155 27.9			+228	+196	+129	+68	+19		3.07
4 Kawaihae, Hawaii,	+2	+164	+99	+86	+49	+9	−26	−23	2.67
20 02.1			+90	+75	+34	−11	−53		2.937
155 49.4			+85	+69	+27	−21	−66		3.07
5 Kilauea, Hawaii,	+1211	+428	+248	+225	+169	+117	+85	+103	2.67
19 25.4			+227	+201	+139	+82	+43		2.937
155 15.7			+216	+189	+124	+64	+22		3.07
6 Mauna Loa, Hawaii,	+3970	+698	+270	+241	+182	+129	+92	+111	2.67
19 29.8			+224	+192	+127	+67	+24		2.937
155 34.8			+200	+167	+100	+36	−10		3.07
7 Hilo, Hawaii,	+5	+249	+152	+135	+92	+50	+21	+32	2.67
19 44.0			+139	+121	+73	+25	−10		2.937
155 03 1			+133	+113	+63	+13	−25		3.07
1 Honolulu, Oahu,	+6	+224	+115	+97	+59	+31	+11	+12	2.67
21 18.1			+100	+80	+38	+6	−19		2.937
157 51.8			+93	+72	+28	−6	−34		3.07
8 Niu, Oahu,	+2	+221	+117	+103	+68	+37	+14	+18	2.67
21 17.1			+103	+88	+48	+13	−15		2.937
157 44.1			+96	+80	+39	+1	−30		3.07
12 Kahuku, Oahu,	+2	+215	+83	+62	+34	+12	−2	−4	2.67
21 42.4			+66	+43	+12	−13	−33		2.937
157 58.5			+58	+34	+1	−26	−48		3.07
13 Kaaawa, Oahu,	+1	+236	+123	+103	+68	+40	+22	+25	2.67
21 32.4			+108	+86	+47	+15	−8		2.937
157 50.6			+100	+78	+37	+3	−23		3.07
14 Wahiawa, Oahu,	+264	+252	+114	+93	+54	+26	+9	+12	2.67
21 29.6			+97	+73	+30	−1	−24		2.937
158 02.0			+88	+63	+19	−15	−41		3.07
15 Waianae, Oahu,	+3	+298	+179	+161	+127	+101	+84	+85	2.67
21 26.0			+164	+144	+106	+76	+54		2.937
158 10.9			+156	+135	+95	+63	+39		3.07

Gravity in the Hawaiian Archipelago
(anomalies in milligal) (Continued)

Station Latitude N Longitude W	Elevation meter	free -air anom.	local isost. $T=30$	regional isostatic anom. $T=30$ kilometers				local isost. $T=80$	dens. topog.
				$R=58.1$	116.2	174.3	232.4		
9 East Island,	+ 2	+315	+166	+139	+105	+82	+69	+74	2.67
23. 47.0			+148	+118	+ 81	+54	+36		2.937
166. 12.5			+139	+108	+ 68	+40	+20		3.07
10 Nihoa,	+ 15	+275	+118	+ 94	+ 60	+39	+26	+33	2.67
23 03.5			+ 99	+ 72	+ 34	+10	− 7		2.937
161 55.4			+ 90	+ 61	+ 22	− 4	−24		3.07
11 Necker,	+ 30	+295	+142	+118	+ 83	+61	+46	+51	2.67
23 34.7			+123	+ 97	+ 58	+33	+13		2.937
164 42.4			+114	+ 86	+ 45	+19	− 3		3.07
110 Voyage Hr. Ms. K 13,	−4510	+ 3	− 8	− 11	− 13	−10	− 3	− 8	2.67
22 13			− 10	− 12	− 15	−11	− 5		2.937
155 24			− 10	− 13	− 16	−12	− 7		3.07
111 Voyage Hr. Ms. K 13,	−5430	− 96	− 65	− 48	− 25	− 7	+ 2	−24	2.67
21 45			− 62	− 44	− 18	+ 1	+ 9		2.937
156 13			− 61	− 42	− 15	+ 5	+12		3.07
112 Voyage Hr. Ms. K 13,	− 510	+165	+ 86	+ 74	+ 44	+13	−12	−12	2.67
21 09.0			+ 76	+ 63	+ 30	− 5	−36		2.937
157 28.0			+ 71	+ 57	+ 22	−15	−49		3.07
113 Voyage Hr. Ms. K 13,	− 6	+213	+103	+ 87	+ 51	+22	+ 1	+ 5	2.67
21 18.4 (Honolulu)			+ 90	+ 71	+ 31	− 2	−29		2.937
157 52.0			+ 83	+ 63	+ 22	−14	−44		3.07
114 Voyage Hr. Ms. K 13,	−4290	− 18	− 5	+ 3	+ 19	+29	+31	+ 6	2.67
20 48			− 4	+ 6	+ 22	+33	+33		2.937
158 36			− 4	+ 6	+ 23	+35	+34		3.07
115 Voyage Hr. Ms. K 13,	−4590	+ 14	+ 13	+ 14	+ 15	+19	+23	+15	2.67
20 29			+ 14	+ 15	+ 16	+20	+23		2.937
160 30			+ 13	+ 14	+ 16	+20	+23		3.07

Gravity over the Madeira area
(anomalies in milligal)

Station Latitude N Longitude W	Elevation meter	free air anom.	local. isost. $T=30$	regional isostatic anom. $T=30$ kilometers				dens. topog.
				$R=58.1$	116.2	174.3	232.4	
466 Voyage Hr.Ms. O 13,	−5040	− 6	+ 4	+ 5	+ 6	+ 9	+ 13	2.67
33°22′			+ 3	+ 4	+ 5	+ 9	+ 13	2.937
20°16′			+ 3	+ 5	+ 6	+ 9	+ 13	3.07
467 Voyage Hr.Ms. O 13,	−4000	+ 47	+ 44	+ 42	+ 40	+ 38	+ 37	2.67
33°04′			+ 41	+ 39	+ 37	+ 34	+ 32	2.937
19°06′			+ 41	+ 39	+ 36	+ 33	+ 30	3.07
468 Voyage Hr.Ms. O 13,	−3250	+ 80	+ 76	+ 75	+ 66	+ 56	+ 47	2.67
32 48			+ 73	+ 72	+ 62	+ 50	+ 38	2.937
17 56			+ 72	+ 71	+ 61	+ 48	+ 35	3.07
469 Harbour Funchal,		+230	+104	+ 83	+ 48	+ 24	+ 10	2.67
32 37.79			+ 87	+ 62	+ 25	− 3	− 22	2.937
16 54.96			+ 78	+ 53	+ 13	− 16	− 38	3.07
469a Monte, Madeira,	+ 510	+334	+175	+150	+115	+ 91	+ 76	2.67
32 39.8			+154	+127	+ 87	+ 60	+ 39	2.937
16 54.25			+144	+116	+ 74	+ 45	+ 21	3.07
469b Pico d'Arriero, Mad.,	+ 1530	+376	+111	+ 88	+ 53	+ 30	+ 14	2.67
32 43.1			+ 80	+ 54	+ 16	− 11	− 32	2.937
16 54.8			+ 65	+ 38	− 3	− 31	− 55	3.07
470 Voyage Hr.Ms. O 13,	−4070	− 5	+ 20	+ 26	+ 26	+ 20	+ 14	2.67
32 50			+ 20	+ 27	+ 28	+ 20	+ 11	2.937
15 54			+ 20	+ 27	+ 28	+ 21	+ 10	3.07
471 Voyage Hr.Ms. O 13,	−4220	0	+ 14	+ 17	+ 21	+ 26	+ 30	2.67
33 04			+ 13	+ 16	+ 20	+ 25	+ 28	2 937
14 51			+ 13	+ 16	+ 21	+ 25	+ 27	3.07
472 Voyage Hr.Ms. O 13,	−4520	− 43	− 18	− 13	− 17	− 17	− 14	2 67
33 20			− 18	− 13	− 17	− 18	− 15	2.937
13 50			− 18	− 12	− 17	− 18	− 16	3.07
505 Voyage Hr.Ms. K 18,	−4260	− 5	+ 9	+ 13	+ 11	+ 8	+ 6	2.67
34 26			+ 8	+ 13	+ 11	+ 7	+ 3	2.937
17 25			+ 8	+ 13	+ 11	+ 7	+ 2	3 07
506 Voyage Hr.Ms. K 18,	−3705	+ 13	+ 16	+ 19	+ 19	+ 14	+ 6	2.67
33 16			+ 14	+ 17	+ 17	+ 11	+ 1	2.937
17 26			+ 14	+ 17	+ 17	+ 10	− 1	3.07
507 Voyage Hr.Ms. K 18,	−4370	− 13	− 4	− 1	+ 3	+ 7	+ 9	2.67
31 49			− 4	− 2	+ 2	+ 6	+ 8	2.937
16 45			− 4	− 2	+ 2	+ 6	+ 8	3.07
508 Voyage Hr.Ms. K 18,	−4430	− 19	− 9	− 7	− 7	− 3	+ 1	2.67
30 56			− 10	− 8	− 7	− 4	− 1	2.937
16 42			− 10	− 8	− 7	− 4	− 2	3.07

Examining the tables we see that for the higher densities the anomalies for greater radii of regionality of the compensation are still further reduced. In general we find the smallest anomalies for $R = 232.4$ km and a density of 2.937 or for $R = 174.3$ km and a density of 3.07. The anomalies have not quite disappeared; values are left of the order of 20, 30 and even, occasionally, of 50 mgal. This is not surprising as it would be unlikely that a general system of reduction could make them disappear entirely. The remaining anomalies may be caused by local irregularities of density or by faulting as this affects the deformation of the crust and, therefore, the way in which the isostatic equilibrium is readjusted. We know both causes to be present on the islands. A further cause may be the presence of partly empty magma-reservoirs. We shall not investigate these local anomalies and their meaning; a more detailed knowledge of the geology and morphology than the writer has, would be required for this purpose.

In general we shall adopt that reduction to be nearest the truth which gives the smallest value of the mean of the anomalies for each group. The following table of these mean values confirms our above-mentioned conclusions about radii of regionality of 174.3 or 232.4 km.

Mean values Land- and Sea-stations.

Radius R density	0 km		58.1 km		116.2 km		174.3 km		232.4 km		Number of stations
	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	
Hawaii	+188	+174	+163	+148	+108	+ 91	+ 52	+ 32	+ 10	− 13	6
Oahu	+106	+ 98	+ 86	+ 77	+ 47	+ 36	+ 16	+ 3	− 4	− 17	6
Deep sea	− 16	− 16	− 9	− 9	+ 1	+ 2	+ 11	+ 12	+ 15	+ 16	4
Madeira	+107	+ 96	+ 81	+ 69	+ 43	+ 28	+ 15	− 1	− 5	− 24	3
Deep sea	+ 14	+ 14	+ 16	+ 17	+ 16	+ 16	+ 14	+ 14	+ 12	+ 11	10

Before drawing further conclusions from this result, we have to consider whether there are no other suppositions about the isostatic compensation which reduce the anomalies in the same way. We find this to be the case; we get a similar effect by assuming the compensation to be local but very deep. The last anomaly column of the table for the Hawaiian Archipelago shows the anomalies obtained by adopting the Heiskanen-Airy method of reduction for a normal thickness of the crust of 80 km and we see that the anomalies are about as small as those obtained by means of the regional reduction according to the largest degree of regionality. There is no doubt that by applying the assumptions for a larger density of the topography, we should get values as satisfactory as those given by the regional reduction. The writer, however, thinks that there is no reason to attach any importance to this result. A local compensation at this depth of 80 km would imply a rigid crust of the Earth up to that depth, because otherwise the presence of mass-anomalies at that depth would mean a disturbance of equilibrium in a plastic layer which not only would disappear but which could never adjust the equilibrium of the surface irregularity which it is supposed to compensate. So we should have to assume rigidity up to that depth and this is contrary to all the present evidence. We should then, moreover, not be able to explain the presence of local compensation. In this regard we may recall the general opinion already mentioned, that in the areas under discussion no great crustal folding has taken place and so we can eliminate the possibility that the crust has been down-folded there and has formed a deep-seated root of crustal matter.

Discarding this supposition of very deep local compensation which, as far as the writer can see, is the only other one able to explain the high anomalies on the islands, we are brought back to our former conclusion that the isostatic compensation of these island-masses must be distributed over large areas i.e. up to distances of 170—240 km from the stations. This result means an earth-crust bending downwards over this great breadth under the weight of the islands. A confirmation of this conclusion may perhaps be found in the troughs to the NW and SE of the main islands of the Hawaii group; the dimensions of the troughs are at least in good agreement with the above mentioned diameter of the crustal bending.

Our result is remarkable as it implies a rigid Earth's crust of a fairly large thickness; applying formula 1, p. 12, we find a thickness of 25 to 45 km. This would exclude any possibility of continental migrations as have been supposed by WEGENER and many others. This conclusion is of course only valid for the present time; it may have been different in former geological periods. Still it is an important result which is certainly not favourable for theories based on such migrations.

A second conclusion is that the crust in the oceans must have a smaller density than the plastic subcrustal layer. If this were not the case no compensating mass would be brought along by the downbending of the crust and no hydrostatic equilibrium would, therefore, come into being. So the fact that volcanic islands do not show any evidence of sinking leads to the conclusion that somehow a jump of the density must be present somewhere in or below the rigid crust. For the Mid-Pacific around Hawaii this conclusion is remarkable because it is usually considered as a proved fact that there is no sialic layer present there. So, if this is true, the simatic layer must itself show a discontinuity in density or, possibly, a gradual density increase; this last case would also give rise to compensating masses if bending takes place.

The conclusion that the crust under the Pacific is rigid, although it probably has no sialic layer, implies that the boundary between rigid and plastic properties is not defined by the boundary between the sialic and simatic layers. It thus seems likely that the transition is at least as much determined by temperature as by differences in constitution. It may be remarked that the views expressed here are similar to those expressed by DALY, e.g. in "Architecture of the Earth, 1938, p. 189 e.s. on other grounds.

§ 2. St. Vincent (Cape Verdi Is), Bermudas, Canary Is, St. Miguel, Fayal, Mauritius.

We shall now deal with the other volcanic islands for which gravity data have been obtained.

A. St. Vincent (Cape Verde Is).

We here dispose of four stations on the island, nos. 524, 524a, 524b and 524c, and stations to both sides of the island over deep sea of which we take two on each side, viz. nos. 522, 523 and nos. 525, 526. Profile 67 shows clearly the same result as found for the Hawaiian Archipelago and for Madeira; the differences of the anomalies become smallest if we take the greatest radius of regionality for the isostatic reduction.

The following table shows this result in figures. We have again added the values adopted by the anomalies if we introduce the higher densities of 2.937 and 3.07; this has been done in the same approximative way as has been described in the previous §.

Gravity over the St. Vincent area
(anomalies in milligal)

Station Latitude N Longitude W	Elevation meter	free air anom.	local. isost. $T = 30$	regional isostatic anom. $T = 30$ kilometers $R = 58.1$	116.2	174.3	232.4	dens. topog.
522 Voyage Hr.Ms. K 18,	−3925	− 1	+ 1	+ 2	+ 1	+ 2	+ 3	2.67
18°52′			− 1	0	0	− 1	− 1	2.937
23°58′			− 2	0	0	− 1	− 3	3 07
523 Voyage Hr.Ms. K 18,	−3280	+ 20	+ 28	+ 33	+ 33	+ 25	+ 15	2.67
17 22			+ 26	+ 32	+ 32	+ 22	+ 9	2.937
24 47			+ 26	+ 32	+ 32	+ 21	+ 7	3.07
524 Bay of Mindello,	− 2	+257	+133	+112	+ 78	+ 58	+ 46	2.67
16 53.34			+116	+ 93	+ 55	+ 30	+ 14	2.937
24 59.88			+108	+ 84	+ 44	+ 18	− 1	3.07
524a Mindello,	+ 5	+284	+160	+141	+105	+ 93	+ 72	2.67
16 53.04			+143	+122	+ 83	+ 67	+ 40	2.937
24 59.77			+135	+113	+ 72	+ 55	+ 25	3.07
524b Above Mindello,	+ 220	+307	+156	+136	+103	+ 92	+ 71	2 67
16 53.00			+136	+114	+ 78	+ 64	+ 37	2.937
24 57.89			+127	+104	+ 66	+ 51	+ 20	3.07
524c Sao Pedro	+ 10	+266	+136	+118	+ 85	+ 74	+ 53	2 67
16 49.70			+118	+ 98	+ 62	+ 50	+ 21	2.937
25 04.75			+110	+ 89	+ 51	+ 38	+ 6	3 07
525 Voyage Hr.Ms. K 18,	−4255	− 39	− 22	− 16	− 11	− 11	− 15	2.67
16 28			− 22	− 16	− 10	− 11	− 15	2.937
25 46			− 22	− 15	− 9	− 10	− 16	3.07
526 Voyage Hr.Ms. K 18,	−4810	+ 12	+ 17	+ 17	+ 17	+ 20	+ 22	2.67
15 39			+ 16	+ 16	+ 17	+ 19	+ 21	2.937
27 16			+ 16	+ 16	+ 17	+ 19	+ 21	3.07

Mean values Land- and Sea-stations.

Radius R density	0 km		58.1 km		116.2 km		174.3 km		232.4 km		Number of stations
	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	
St. Vincent	+128	+120	+107	+ 98	+ 70	+ 58	+ 53	+ 40	+ 28	+ 12	4
Deep Sea	+ 5	+ 4	+ 8	+ 8	+ 10	+ 10	+ 7	+ 7	+ 4	+ 2	4

We find here the smallest difference of the means of the two groups of stations for $R = 232.4$ km and a density of 3.07. So the eight available stations give a full confirmation of the result found for Hawai and Madeira.

B. Bermudas.

For the Bermudas profile no. 65 shows again the same result. The following table gives the figures. Only one station, viz. Hamilton, has been observed in the island-group. As the Bermudas are usually considered to be situated on top of an old truncated volcano, the result can be included in the investigation of volcanic islands dealt with in this chapter.

Gravity over the Bermudas area
(anomalies in milligal)

Station Latitude N Longitude W	Elevation meter	free-air anom.	local. isost $T=30$	regional isostatic anom. $T=30$ kilometers $R=58.1$	116.2	174.3	232.4	dens. topog.
764 Voyage Hr.Ms. O 16,	−4645	+ 1	0	− 1	− 3	− 2	− 1	2.67
32° 02′			− 2	− 3	− 4	− 4	− 3	2.937
62° 06′			− 2	− 3	− 4	− 4	− 4	3.07
765 Voyage Hr.Ms. O 16,	−4515	+ 6	+ 11	+ 16	+ 21	+ 18	+ 11	2.67
32° 05′			+ 11	+ 16	+ 21	+ 17	+ 10	2.937
63° 55′			+ 11	+ 16	+ 22	+ 18	+ 10	3.07
766 Hamilton	− 2	+332	+169	+143	+101	+ 75	+ 59	2.67
32° 17′.47			+149	+120	+ 75	+ 45	+ 24	2.937
64° 46′.82			+139	+109	+ 61	+ 30	+ 7	3.07
767 Voyage Hr.Ms. O 16,	−4805	− 24	− 13	− 6	− 1	− 4	− 10	2.67
32° 46′			− 12	− 5	+ 1	− 4	− 10	2.937
65° 27′			− 12	− 4	+ 2	− 3	− 9	3.07
768 Voyage Hr.Ms. O 16,	−5240	− 45	− 41	− 41	− 42	− 39	− 36	2.67
33° 33′			− 41	− 41	− 42	− 39	− 36	2.937
67° 31′			− 41	− 41	− 42	− 39	− 36	3.07

Mean values Land- and Sea-stations.

Radius R	0 km		58.1 km		116.2 km		174.3 km		232.4 km		Number of stations
density	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	
Hamilton	+149	+139	+120	+109	+ 75	+ 61	+ 45	+ 30	+ 24	+ 7	1
Deep sea	− 11	− 11	− 8	− 8	− 6	− 6	− 7	− 7	− 10	− 10	4

The result is identical to the previous one; the anomalies are smallest for $R = 232.4$ km and for a density of 3.07.

C. Canary Islands.

The distribution of the gravity stations in and near the Canary Islands is not especially favourable for the study of our problem. Still we shall include them in our investigation. We shall find the figures in agreement with our general result.

Gravity over the Canary Islands area
(anomalies in milligal)

Station Latitude N Longitude W	Elevation meter	free -air anom.	local. isost. $T = 30$	regional isostatic anom. $T = 30$ kilometers				dens. topog.
				$R = 58.1$	116.2	174.3	232.4	
51 Voyage Hr.Ms. K 13,	−4610	− 20	− 14	− 13	− 11	− 7	− 4	2.67
29° 20′			− 15	− 14	− 12	− 8	− 6	2.937
19° 15′			− 16	− 14	− 12	− 8	− 6	3.07
52 Voyage Hr.Ms. K 13,	−3630	− 38	− 7	0	+ 6	+ 5	+ 3	2.67
28° 40′			− 6	+ 1	+ 7	+ 5	+ 4	2.937
15° 53′			− 6	+ 1	+ 8	+ 5	+ 6	3.07
53 Las Palmas,	− 2	+194	+ 89	+ 76	+ 61	+ 54	+ 51	2.67
28° 09′.3			+ 73	+ 59	+ 41	+ 33	+ 23	2.937
15° 25′.2			+ 65	+ 51	+ 32	+ 22	+ 10	3.07
54 Voyage Hr.Ms. K 13,	−3730	+ 13	+ 22	+ 26	+ 30	+ 35	+ 37	2.67
27° 13′			+ 20	+ 24	+ 29	+ 33	+ 33	2.937
17° 48′			+ 20	+ 24	+ 29	+ 33	+ 32	3.07
55 Voyage Hr.Ms. K 13,	−4780	+ 3	+ 11	+ 16	+ 25	+ 25	+ 24	2.67
26° 33′			+ 11	+ 16	+ 27	+ 26	+ 24	2.937
21° 37′			+ 11	+ 16	+ 27	+ 27	+ 24	3.07
508 Voyage Hr.Mr. K 18,	−4430	− 19	− 9	− 7	− 7	− 3	+ 1	2.67
30° 56′			− 10	− 8	− 7	− 4	− 1	2.937
16° 42′			− 10	− 8	− 7	− 4	− 2	3.07
509 Voyage Hr.Ms. K 18,	−3775	− 13	− 12	− 12	− 14	− 13	− 10	2.67
30° 01′			− 15	− 15	− 17	− 16	− 15	2.937
16° 34′			− 15	− 15	− 18	− 18	− 17	3.07
510 Voyage Hr.Ms. K 18,	−3760	− 45	− 26	− 21	− 13	− 6	− 6	2.67
29° 09′			− 28	− 23	− 13	− 6	− 8	2.937
16° 19′			− 28	− 23	− 12	− 5	− 9	3.07
511 Voyage Hr.Ms. K 18,	−2525	+ 51	+ 73	+ 72	+ 54	+ 39	+ 31	2.67
28° 06′			+ 71	+ 70	+ 50	+ 33	+ 21	2.937
16° 00′			+ 71	+ 70	+ 48	+ 31	+ 16	3.07
512 Voyage Hr.Ms. K 18,	−3150	− 45	− 19	− 12	− 4	+ 4	+ 11	2.67
27° 20′			− 19	− 13	− 3	+ 4	+ 8	2.937
15° 37′			− 19	− 12	− 3	+ 5	+ 7	3.07

Mean values Land- and Sea-stations.

Radius *R* density	0 km		58.1 km		116.2 km		174.3 km		232.4 km		Number of stations
	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	
Las Palmas + n° 510	+ 72	+ 68	+ 64	+ 61	+ 46	+ 40	+ 33	+ 26	+ 22	+ 13	2
Deep sea	− 8	− 8	− 4	− 4	+ 1	+ 1	+ 4	+ 4	+ 5	+ 4	8

Again we find the smallest difference of the mean values for R = 232.4 km and a density of 3.07. Station no. 510 has been combined with the landstation of Las Palmas, although the sea-depth is rather large, because it is situated in the centre of the island group.

D. **Azores.**

A great many stations have been occupied in the area of the Azores. They include two port-stations, viz. Horta on the island of Fayal and Punta Delgada on the island of St. Miguel. No other data are available on these islands nor on the other islands of the Azores. The material is, therefore, not especially favourable for the investigation of this chapter, also because most of the stations near the above ports show smaller depths than in the open Atlantic which makes it doubtful whether they can be classified as pure ocean-stations. The Azores, in fact, are located in the area of the Mid-Atlantic Ridge and we do not yet know what character this ridge has. The system followed in this chapter for computing the anomalies on the assumption that the density above a depth of 5000 m is 2.937 resp. 3.07 has also been applied here and it is of course doubtful whether this is right for the Mid-Atlantic Rise which is often supposed to have a sialic constitution. We shall, therefore, have to consider the results of the following study with some reserve. From the gravity profiles nos. 61 and 63 for Horta (Fayal) and nos. 60 and 63 for Punta Delgada (St. Miguel) we may conclude at once that these stations do not show the high values for the gravity anomalies found on all the other volcanic islands. We see also that, as a consequence of this, the regional isostatic reduction with a large radius of distribution of the compensation has not the same success as elsewhere and so we may conclude that we can not consider these islands as superimposed loads on an unbroken Earth's crust. In chapter V we shall find the same result for other elevations in the North Atlantic where gravity survey has been carried out, as e.g. the Josephine Bank, the Gorringe Bank, etc. As in the Azores we find that for some profiles regional reduction seems the best and for others local reduction while for some cases conclusions seem impossible. Probably we have to assume that all these areas are intersected by fault-planes and that the volcanic loads caused by eruptions along these planes bring about a complicated system of bending and local giving way of the crustal blocks between these planes.

The result for the stations in the Azores near Fayal and St. Miguel or in profiles over these islands is given in the following table.

Gravity over the Azores
(anomalies in milligal)

Station Latitude N Longitude W	Elevation meter	free -air anom.	local. isost. $T=30$	regional isostatic anom. $T=30$ kilometers R = 58.1	116.2	174.3	232.4	dens. topog.
738 Voyage Hr.Ms. O 16,	− 2845	+ 37	+ 41	+ 43	+ 45	+ 46	+ 46	2.67
40° 21′			+ 38	+ 40	+ 43	+ 43	+ 40	2.937
26° 28′			+ 37	+ 39	+ 42	+ 42	+ 37	3.07
739 Voyage Hr.Ms. O 16,	− 1560	+ 40	+ 18	+ 15	+ 13	+ 11	+ 7	2.67
39° 36′			+ 11	+ 9	+ 7	+ 2	− 6	2.937
27° 06′			+ 9	+ 6	+ 3	− 2	− 13	3.07
740 Voyage Hr.Ms. O 16,	− 1880	+ 17	+ 41	+ 44	+ 39	+ 30	+ 20	2.67
38° 47′.6			+ 40	+ 42	+ 37	+ 25	+ 11	2.937
27° 36′.3			+ 40	+ 42	+ 36	+ 23	+ 6	3.07
741 Voyage Hr.Ms. O 16,	− 1305	+ 62	+ 60	+ 58	+ 49	+ 39	+ 30	2.67
38° 41′.6			+ 55	+ 53	+ 43	+ 31	+ 16	2.937
27° 40′.1			+ 53	+ 51	+ 40	+ 27	+ 10	3.07
47 Horta (Fayal),	− 2	+107	+ 24	+ 15	+ 5	− 4	− 12	2.67
38° 31′.77			+ 14	+ 4	− 7	− 18	− 33	2.937
28° 37′.47			+ 8	− 3	− 15	− 27	− 45	3.07
742 Voyage Hr.Ms. O 16,	− 990	+ 65	+ 43	+ 40	+ 33	+ 23	+ 12	2.67
38° 05′			+ 36	+ 33	+ 25	+ 13	− 4	2.937
29° 05′			+ 33	+ 29	+ 21	+ 8	− 12	3.07
743 Voyage Hr.Ms. O 16,	− 380	+ 99	+ 34	+ 27	+ 20	+ 12	+ 3	2.67
37° 55′			+ 22	+ 14	+ 8	− 3	− 18	2.937
29° 14′			+ 17	+ 9	+ 1	− 11	− 29	3.07
798 Voyage Hr.Ms. O 16,	− 3648	+ 14	+ 24	+ 26	+ 28	+ 33	+ 37	2.67
39° 41′			+ 22	+ 24	+ 26	+ 31	+ 33	2.937
33° 52′			+ 22	+ 24	+ 26	+ 31	+ 31	3.07
799 Voyage Hr.Ms. O 16,	− 2129	+ 47	+ 33	+ 31	+ 22	+ 15	+ 11	2.67
39° 22′			+ 29	+ 26	+ 16	+ 7	− 2	2.937
32° 35′			+ 27	+ 23	+ 13	+ 4	− 8	3.07
800 Voyage Hr.Ms. O 16,	− 1630	+ 44	+ 33	+ 33	+ 28	+ 23	+ 15	2.67
39° 16′.0			+ 29	+ 29	+ 23	+ 15	+ 2	2.937
31° 17′.9			+ 27	+ 27	+ 20	+ 11	− 4	3.07
800′ Voyage Hr.Ms. O 16.	− 1613	+ 58	+ 48	+ 49	+ 44	+ 38	+ 30	2.67
39° 16′.8			+ 44	+ 44	+ 38	+ 31	+ 18	2.937
31° 20′.7			+ 42	+ 42	+ 36	+ 28	+ 12	3.07
745 Voyage Hr.Ms. O 16,	− 1480	+ 57	+ 43	+ 42	+ 40	+ 38	+ 34	2.67
38° 58′			+ 37	+ 36	+ 33	+ 29	+ 20	2.937
30° 37′			+ 35	+ 33	+ 31	+ 26	+ 14	3.07
744 Voyage Hr.Ms. O 16,	− 1145	+ 86	+ 58	+ 55	+ 51	+ 47	+ 43	2.67
38° 52′			+ 51	+ 48	+ 42	+ 37	+ 27	2.937
30° 29′			+ 47	+ 45	+ 39	+ 33	+ 19	3.07

Gravity over the Azores (continued)
(anomalies in milligal)

Station Latitude N Longitude W	Elevation meter	free -air anom.	local. isost. $T = 30$	regional isostatic anom. $T = 30$ kilometers				dens. topog.
				$R = 58.1$	116.2	174.3	232.4	
801 Voyage Hr.Ms. O 16,	− 2114	+ 71	+ 89	+ 93	+ 94	+ 92	+ 86	2.67
38° 39′			+ 88	+ 91	+ 93	+ 88	+ 77	2.937
29° 34′			+ 87	+ 91	+ 93	+ 87	+ 73	3.07
802 Voyage Hr.Ms. O 16,	− 1341	+ 53	+ 35	+ 31	+ 22	+ 17	+ 11	2.67
38° 13′			+ 29	+ 25	+ 15	+ 8	− 3	2.937
27° 51′			+ 26	+ 22	+ 12	+ 3	− 10	3.07
803 Voyage Hr.Ms. O 16,	− 1750	+ 49	+ 51	+ 53	+ 50	+ 44	+ 34	2.67
38° 03′			+ 47	+ 49	+ 47	+ 38	+ 22	2.937
26° 49′			+ 46	+ 48	+ 45	+ 35	+ 17	3.07
803′ Voyage Hr.Ms. O 16,	− 1506	+ 55	+ 51	+ 52	+ 50	+ 43	+ 33	2.67
38° 03′			+ 46	+ 48	+ 45	+ 37	+ 21	2.937
26° 46′			+ 44	+ 47	+ 43	+ 34	+ 16	3.07
437 P. Delgada (St. Miguel),	− 2	+149	+ 54	+ 42	+ 24	+ 9	− 4	2.67
37° 43′.93			+ 43	+ 29	+ 9	− 8	− 27	2.937
25° 40′.60			+ 37	+ 17	0	− 18	− 40	3.07
804 Voyage Hr.Ms. O 16,	− 1816	+ 57	+ 26	+ 20	+ 10	+ 4	− 3	2.67
37° 28′			+ 19	+ 14	+ 2	− 5	− 17	2.937
24° 17′			+ 16	+ 10	− 1	− 10	− 23	3 07
805 Voyage Hr.Ms. O 16,	− 3863	+ 56	+ 52	+ 50	+ 50	+ 52	+ 55	2.67
37° 06′			+ 49	+ 48	+ 48	+ 49	+ 50	2.937
22° 41′			+ 48	+ 47	+ 47	+ 47	+ 48	3.07
435 Voyage Hr.Ms. O 13,	− 3900	+ 36	+ 45	+ 47	+ 51	+ 55	+ 59	2 67
39° 07′			+ 43	+ 46	+ 49	+ 54	+ 56	2.937
23° 50′			+ 43	+ 46	+ 49	+ 53	+ 55	3.07
436 Voyage Hr.Ms. O 13,	− 3480	− 6	+ 11	+ 16	+ 22	+ 26	+ 24	2.67
38° 21′			+ 11	+ 16	+ 23	+ 26	+ 22	2.937
24° 32′			+ 11	+ 17	+ 23	+ 26	+ 20	3 07
438 Voyage Hr.Ms. O 13,	− 2440	+ 11	+ 15	+ 15	+ 13	+ 7	− 1	2.67
37° 16′			+ 25	+ 29	+ 28	+ 20	+ 7	2.937
26° 06′			+ 25	+ 29	+ 28	+ 19	+ 3	3.07
48 Voyage Hr.Ms. K 13,	− 3610	+ 26	+ 36	+ 37	+ 43	+ 52	+ 58	2.67
36° 23′			+ 37	+ 43	+ 52	+ 61	+ 64	2.937
26° 43′			+ 37	+ 43	+ 53	+ 62	+ 63	3.07
834 Voyage Hr.Ms. O 12,	− 3105	+ 54	+ 57	+ 58	+ 61	+ 67	+ 71	2.67
36° 27′			+ 55	+ 56	+ 59	+ 65	+ 66	2.937
28° 23′			+ 54	+ 55	+ 58	+ 63	+ 63	3.07
439 Voyage Hr.Ms. O 13,	− 3530	+ 25	+ 32	+ 35	+ 35	+ 39	+ 44	2 67
35° 58′			+ 31	+ 32	+ 38	+ 44	+ 45	2.937
27° 20′			+ 30	+ 32	+ 37	+ 44	+ 43	3.07

In deriving mean values from these tables we shall distinguish the stations over depths from 1000 m — 2100 m which may be considered as stations on the Mid-Atlantic Rise, from the stations over greater depth. We shall further combine the anomalies of Horta with those of the two neighbouring stations 742 and 743 over small depth. Lastly we shall also take means for the anomalies corresponding to the normal density of 2.67; as we mentioned above we are not sure what part of the topography is volcanic and whether, therefore, an increase of the density is justified for the entire topography above 5000 m depth.

Mean values for different groups of stations.

Radius R density	0 km			58.1 km			116.2 km			174.3 km			232.4 km			Number of stations
	2.67	2.937	3.07	2.67	2.937	3.07	2.67	2.937	3 07	2.67	2.937	3.07	2.67	2.937	3.07	
Horta, 742, 743	+34	+24	+19	+27	+17	+12	+19	+12	+ 2	+10	− 3	−10	+ 1	−18	−29	3
Punta Delgada	+54	+43	+37	+42	+29	+17	+24	+ 9	0	+ 9	− 8	−18	− 4	−27	−40	1
depth 1000-2500	+43	+39	+37	+42	+39	+37	+38	+34	+31	+32	+26	+23	+25	+14	+ 8	14
depth > 2500	+37	+37	+35	+38	+38	+38	+42	+42	+42	+47	+47	+46	+50	+47	+45	8

Examining these results we see that for the higher densites of 2.937 or 3.07 the differences of the anomalies according to local compensation are smallest. For the normal density of 2.67 we find that for Punta Delgada regional reduction with a radius of 58.1 km is better fitting; for Horta local compensation remains the best solution. In both cases the mean value for the stations at the intermediate depths of 1000-2500 m falls wel into line with the mean for larger depth.

According to our conclusions the Azores appear to form an exception on the general results for volcanic islands. We mentioned already that perhaps an explanation of this may be found in the presence of numerous faultplanes in this part of the Earth's crust.

E. Mauritius.

For the island of Mauritius we dispose of inly one station on the island, situated in

Gravity over the Mauritius area
(anomalies in milligal)

Station Latitude S Longitude W	Elevation meter	free -air anom.	local. isost. $T=30$	regional isostatic anom. $T=30$ kilometers				dens. topog.
				$R=58.1$	116.2	174.3	232.4	
688 Port Louis	− 2	+269	+156	+137	+106	+ 83	+ 67	2.67
20° 09'.50 S			+140	+119	+ 85	+ 59	+ 37	2.937
57° 29'.88 E			+133	+111	+ 75	+ 47	+ 23	3.07
689 Voyage of Hr.Ms. K 18	−2860	+ 7	+ 7	+ 10	− 2	− 14	− 25	2 67
20° 39' S			+ 4	+ 9	− 4	− 20	− 34	2.937
57° 15' E			+ 4	+ 8	− 6	− 22	− 38	3.07
690 Voyage of Hr.Ms. K 18	−4425	+ 10	+ 36	+ 46	+ 51	+ 51	+ 48	2.67
21° 31' S			+ 38	+ 49	+ 54	+ 54	+ 49	2.937
57° 30' E			+ 39	+ 50	+ 56	+ 55	+ 49	3.07
691 Voyage of Hr.Ms. K 18	− 4910	+ 5	+ 19	+ 22	+ 25	+ 31	+ 38	2.67
22° 28' S			+ 20	+ 23	+ 27	+ 33	+ 38	2.937
57° 44' E			+ 20	+ 24	+ 27	+ 34	+ 39	3.07
692 Voyage of Hr.Ms. K 18	− 4905	+ 3	+ 8	+ 11	+ 10	+ 13	+ 16	2.67
23° 46' S			+ 8	+ 11	+ 10	+ 13	+ 16	2.937
58° 04' E			+ 8	+ 12	+ 11	+ 14	+ 16	3.07

the harbour of Port Louis, and of a profile of stations which were observed when leaving the island (see profile no. 54 a short discussion of which is given on p. 127). As this profile is situated at a great distance from Port Louis, the material is not favourable for our purpose; the number of stations is also small. So our result does not carry much weight.

Mean values Land- and Sea-stations.

Radius R density	0 km		58.1 km		116.2 km		174.3 km		232.4 km		Number of stations
	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	2.937	3.07	
Port Louis	+140	+133	+119	+111	+ 85	+ 75	+ 59	+ 47	+ 37	+ 23	1
Sea-stations	+ 18	+ 18	+ 23	+ 24	+ 22	+ 22	+ 20	+ 20	+ 17	+ 16	4

We see that again the difference of the land- and sea-stations becomes smallest for the largest radius of regionality and for the density of 3.07. So, as far as our material allows a conclusion, Mauritius shows the normal result for volcanic islands as discussed for the Hawaiian Archipelago and for Madeira.

F. Tristan da Cunha.

For the island of Tristan da Cunha our gravity data are too incomplete to draw any sure conclusion. We only dispose of one station near the island at a depth of 1415 m (see profile no. 47) and of two stations over deep sea in the neighbourhood. From the results for the normal density of 2.67, given here as extracted from the great table of this publication it seems to follow that local isostatic reduction most reduces the differences of the anomalies [1]).

No.	Latitude	Longitude	depth	free air	T = 30 km				
					R = 0	58.1	116.2	174.3	232.4 km
630	36°38′ S	12°10′ W	3890 m	− 5	+ 16	+ 18	+ 16	+ 12	+ 8
631	36°59′.7 S	12°16′.0 W	1415 m	+ 86	0	− 14	− 25	− 35	− 41
632	36°36′ S	11°43′ W	3820 m	+ 2	+ 8	+ 9	+ 14	+ 17	+ 16

The gravity material does not seem large enough for guaranteeing that Tristan da Cunha is indeed an exception on the general rule.

§ 3. Summary.

For the Hawaiian Archipelago, for Madeira, for St. Vincent (Cape Verde Is), for the Bermudas, for the Canary Islands and for Mauritius the gravity data point to regional isostatic compensation distributed over a large area, viz. up to a radius of 170-240 km. This makes it probable that a rigid crust is present in those areas of a thickness of 25-45 km. For the Azores, and perhaps also for Tristan da Cunha local isostatic compensation seems to prevail: for the Azores this may perhaps be explained by the presence of fault-planes in the crust.

1) See also the discussion on p. 122 of the depth and gravity profile no 47 over Tristan da Cunha.

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CHAPTER IV.

Gravity over the Continental Margins and over the Romanche Trough, the Bromley Plateau, the Walvis Ridge, the Madagascar Ridge, etc.

§ 1. General discussion.

During the different gravity expeditions at sea all opportunities were used for observing gravity profiles over the margins of the continents. The stations were chosen as far as possible in lines at rights angles to the coastline. At the landside some of the profiles end in a station over small depth, some in a harbourstation occupied during the stay in port of the submarine, and some profiles running up to the ports have been continued inland from the port by means of Holweck-Lejay observations.

In total the writer obtained 28 coastal profiles, viz. three at the end of the English Channel, one near Lisbon, four at the coast of W. Africa, four at the coast of S. Africa, two at the eastcoast of N. America near the Chesapeake Bay, four at the westcoast of America between Panama and San Francisco of which one is incomplete, six at the eastcoast of S. America, two at the west-coast of Australia, one at the south-coast of Ceylon and an incomplete one near Socotra. The gravity results and the topography of these profiles as well as a few profiles over features in the Atlantic and Indian Ocean are given by the profiles Nos. 23-57. They contain the anomalies for $T = 30$ km and $R = 0$, 116.2 km or 232.4 km, and for $T = 20$ km and $R = 0$.

Most of these profiles seem to indicate local compensation of the shelf-topography although in several cases the profiles show complications suggesting other effects. By taking the mean of the results we may hope to get a general impression. We shall do this by determining the difference for each profile of the anomaly of the station at the oceanic side of the shelf minus the anomaly at that on the continental side and we shall take the mean of those differences. In many cases where the anomalies of the stations bordering the shelf are not representative, the mean of more than one station at that side was taken. Leaving aside the two incomplete profiles we thus find for the mean differences the values given by table I.

We must lay stress on the fact that the stations in the profiles on both sides of the shelf have been chosen more or less arbitrarily and that the above differences can not, therefore, be taken as more than roughly representative for the profiles. They nevertheless may give a certain hold on the problem. The figures for the depths contained in the two last columns refer to the same stations as the anomaly-figures. Examining these results we see that for most of the coasts the indications point to local or nearly local isostatic compensation. Assuming local isostatic compensation we have to combine this with $T = 20$ km for the West African coast, with $T = 30$ km for the Southcoast of Ceylon and the Westcoast of Australia with T a little over 30 km for the Westcoast of the U.S. and Mexico and for the end of the English Channel and with T slightly greater for the E. coast of South

TABLE I.

Differences of gravity in mgal of ocean minus continental station.

Profiles preceded by number	$T = 30$ km						$T = 20$ km						Depth Ocean -side m	Depth Coast -side m
	$R=0$	29.05	58.1	116.2	174.3	232.4	0	29.05	58 1	116.2	174.3	232.4		
3 End of Channel	− 6	− 3	+ 1	+13	+30	+49	−30	−26	−20	− 2	+17	+39	4267	123
1 Lisbon	−31	−25	−14	+18	+48	+74	−66	−59	−44	− 1	+36	+68	4948	5
4 W. Africa	+15	+17	+20	+30	+38	+48	0	+ 2	+ 7	+22	+33	+44	3746	426
2 E. Coast USA	−21	−18	−16	−10	0	+12	−34	−32	−28	−19	− 8	+ 6	4735	45
3 W. Coast America	− 6	0	+ 9	+29	+45	+57	−34	−28	−12	+17	+38	+54	4000	334
6 E.Coast S.America	− 7	− 5	− 5	+ 1	+12	+24	−19	−18	−18	−11	+ 1	+22	4000	328
4 S. Africa	−12	−11	− 9	0	+10	+22	−28	−26	−24	−12	+ 1	+16	3923	198
1 Ceylon	− 1	+ 7	+25	+48	+63	+74	−45	−29	+ 3	+39	+58	+71	4000	100
2. W. Australia	+ 2	+ 5	+ 6	+12	+24	+40	−14	−14	−12	− 3	+11	+31	5041	−48
26 All profiles	− 5	− 2	+ 1	+12	+25	+38	−24	−21	−15	+ 1	+16	+33	4340	230

America. We have still further to increase T for the Southcoast of South Africa, for the Westcoast of Portugal near Lisbon and for the Eastcoast of the U.S. If we admit some degree of regionality of the compensation the corresponding values of T are correspondently smaller. The same is true if we have to suppose abnormally light sediments on the oceanic side which would explain a certtain deficiency of gravity there. We shall presently examine the profiles for these different coasts more in detail to see whether these first conclusions can be maintained. The figures for the mean of all the profiles in the last line of our table confirm our conclusion that in general local compensation combined with a value of T of about 30 km seems to prevail.

This conclusion of local isostatic compensation might have been expected. The cause of the difference in level of the continents and the ocean-floors is generally attributed to a great difference in the thickness of the upper sialic layers. As it is well known the seismic results for the Pacific, giving a higher speed for the surface-layer there than for the granites and sediments of the continental surfaces, is usually interpreted in this sense that these layers are entirely absent in the Pacific or that they are only present in a very thin layer. GUTENBERG and RICHTER [1]) have given a second argument in favor of this conclusion by pointing out that the longitudinal waves reflected in the central Pacific area and in part of the Arctic basin have smaller amplitudes than those reflected in the continents and in the other oceans and they have shown that the angle of incidence must be larger — and, therefore, the energy of the reflected wave smaller — when no surface layer is present.

It seems hardly doubtful that the conclusion about the absence of granite in the

1) Gutenberg, B. and Richter, F. C., 1935.

central Pacific may be extended to the other oceans in this way that we may assume the granite layer to be thinner here than in the continents; the seismic results as well as the geological findings on the islands in the Atlantic concur in making it probable that it is not entirely absent here; in the deep basins, however, it may well be absent too. The mean depth of the basins in this ocean as well as in the S. Atlantic and in the Indian Ocean is in general somewhat smaller than that of the Central Pacific and this likewise points to a thin layer of granite in the greater part of these oceans.

If we assume the cause of the difference in level between the continents and the ocean-floors to be the difference in thickness of the granite layer and perhaps also of deeper sialic layers we must expect the thinning of these layers to be roughly speaking concentrated in the same narrow zone where the depth is increasing, i.e. below the slope of the coastal shelf. This means, therefore, local compensation of this coastal topography, at least in its general lines. We may neglect here the effects of sedimentation which may have changed the topographic profile of this slope; we shall presently come back to this point and to the important seismic work of EWING, BULLARD, BROWNE, a.o. shedding light on it.

Local compensation of the coastal shelf topography may also be expected because of the fact that regional compensation supposes surface topography originated after a rigid crust had been formed as e.g. volcanoes and volcanic islands, erosion of narrow valleys or canyons, etc.; if the dimensions of such surface topography do not exceed a certain limit, we can imagine the strength of the crust to be sufficient to bear it without shearing. It is, however, difficult to see how the great difference in level of the crust's surface between the continents and the oceans could have come into being on top of an unbroken rigid crust. We may thus conclude that the above-mentioned gravity results are generally speaking in harmony with our conceptions obtained otherwise.

We shall now proceed to a more detailed examination of the coastal gravity profiles and at the same time of some profiles over a few other topographic features in the ocean.

§ 2. Three profiles at the end of the English Channel. (Nos. 23, 24 and 25).

Profile No. 23 points to local compensation combined with $T = 30$ km. The smaller value of the gravity in stations Nos. 426 and 427 may well be explained by the presence of loose sedimentary material at the edge of the shelf and in the slope. This would be in harmony with the seismic results obtained by BULLARD in 1939[1]) and, according to a personal communication by B. C. BROWNE after his recent expedition in the area west and south of England and Ireland, also during this last expedition.

If the profile consists partly of light material this means a deficiency of mass with regard to the computed reductions for topography and a surplus of mass with regard to the reductions for isostatic compensation. For isostatic reduction the total result is a curve of the type of fig. 20. This is in fair agreement with the profile. It seems rather probable that we have still further to correct for the fact that for the sedimented masses regional isostatic

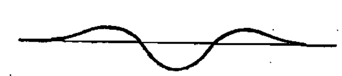

Fig. 20. Supposed anomalies over a mass-deficiency.

1) Bullard 1940 and 1941, also e.g. fig. 62 on p. 103 of: Umbgrove, The Pulse of the Earth, 2nd. ed., 1947.

compensation is more likely than local compensation and this would mean a correction-curve of the type of fig. 21 which added tothe curve of fig. 20 has the effect of slightly

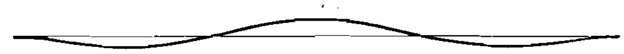

Fig. 21. Correction of fig. 20 for regional instead of local compensation.

strengthening the positive parts and of adding two weak negative waves at their outer sides as represented in fig. 22. We cannot distinguish whether this is in better harmony

Fig. 22. Fig. 20 and 21 combined.

with the profile; for such a refinement of interpretation we should have to know the exact size and shape of the mass-deficiency.

Profile No. 24 likewise points to local compensation or a compensation of moderate regionality and, in the same way as the former profile, combined with a deficiency of mass caused by light sedimentary masses. In this profile this deficiency seems to be situated below station No. 489 and perhaps also for a part below station No. 488 in case we have to adopt moderately regional compensation. This is again where we have to expect these light masses.

Station No. 491 shows a fairly large negative anomaly which disappears as profile No. 59 shows at a larger distance from the shelf. It is obviously caused by some rather local mass-deficiency which may either be an unknown depression of the ocean-floor near the station or a deficiency of density below it.

Profile No. 25 may be explained by accepting local compensation combined with $T = 30$ km; in this case there would only be a slight indication of some small sedimentary masses under the stations Nos. 485 and 486 but the deviation in the anomaly curve is small and so this can not amount to much. If, however, we should admit a compensation of moderate regionality, which would correspond to the point-dot curve, we should have to assume more loose sedimentary matter. This would have to be situated under station No. 486 and to taper off seawards. Such a distribution could easily be explained and so we can not decide which interpretation is the right one. Obviously all explanations in between are likewise acceptable.

Resuming we see that the profiles at the end of the CHANNEL point to loose sedimentary matter at the edge of the shelf and in the slope. They certainly do not indicate an isostatic compensation of a strongly regional kind but we can not decide whether the compensation is local or moderately regional. For the reasons given in the introduction of this § the former must be considered more likely. The indications about a value of T of 30 km or slightly more mentioned in the introduction are confirmed.

§ 3. One profile near Lisbon (No. 26)

This profile does not indicate much else than local isostatic compensation with $T = 30$ km. Perhaps we may say that from the two curves for local compensation for $T = 20$ and 30 km we may conclude that a slightly larger value of T would probably straighten the curve slightly better. The same is true for a small degree of regionality of the compensation when keeping $T = 30$ km. In all these cases the remaining anomalies are small. They do not point to the presence of loose sedimentary material in the shelf or the slope.

§ 4. Four profiles on the Westcoast of West Africa, (Nos. 27, 28, 29 and 30).

Profile no. 27 south-east of the Canary Islands only consists of two stations at depths of 1190 m and 3150 m and so it does not give a strong hold on our problem. The difference between the two anomalies nearly disappears for local compensation and $T = 20$ km. The anomalies, however, become fairly strongly negative in that case, i.e. —30 and —36 mgal and so it is questionable whether we have to accept this as the best interpretation. It is also possible e.g. that there is regional compensation with $R = 116.2$ km and $T = 30$ km and that the negative anomaly in station 513 is brought about by loose sedimentary material in the shelf and slope. It seems doubtful, however, whether we can expect considerable masses of sediments on this desert coast where only one wadi, the Saguia el Hamra, at a distance of some 120 km from the profile debouches into the ocean.

Profile no. 28 near Villa Cisneros consists of three stations and the depth at the upper station is only 75 meters; it is, therefore, better representative for the continent than the upper station of the previous profile. We are here again led to the supposition of loose sediments in the shelf in order to account for the negative anomalies in the stations nos. 514 and 515. Although there is still less evidence of streams to provide the sediments it is not possible to take a decision about the type of isostatic compensation but local compensation with $T = 20$ or 30 km seems the most likely because of the large size of the anomaly at station no. 514 we should otherwise have to explain.

Profile no. 29 near Dakar runs up to the coast from far out in the ocean and has been continued inlands up to a little village, Sebikhotane, where Holweck-Lejay observations have been made. The profile shows a curious result independent of the type of isostatic reduction applied. The first station at sea, no. 546, about midway the continental slope, shows a positive anomaly of more than 40 mgal and this result seems to be confirmed by the difference of the anomalies in Dakar and Sebikhotane which points in the same sense. Farther out at sea in station no. 545, this positive anomaly has disappeared. We must, therefore, assume an excess of mass under the part of the ocean adjoining the coast but it does not yet seem possible to venture an explanation.

Under these circumstances it is difficult to draw a conclusion about the most probable type of isostatic compensation. It is true that the anomalies in Dakar and Sebikhotane are smallest for regional compensation but it might just as well be possible that the positive anomaly would extend over these stations. The profile does not show any evidence of light sediments near the coast.

Profile no. 30 near Konakri runs far out in the ocean but it does not contain land-stations. The most likely interpretation of this profile seems to be local isostatic compensation combined with $T = 20$ km and no loose sediments near the coast but it would certainly also be possible that we have $T = 30$ km or even more, eventually also slight regionality of the compensation, combined with a negative anomaly in station no. 552 near the coast in connection with light sedimentary material there. The presence of several rivers on this coast of which the Concoure is quite near to this profile, would make the supposition acceptable.

Resuming we see that the conclusion about local compensation combined with $T =$ 20 km drawn from the mean of these West African profiles is no doubt possible but our more detailed examination has shown it to be quite uncertain. Greater values of T are just as likely and even a moderate regionality is possible. A choice between those different possibilities can not be made.

§ 5. Two profiles on the coast of Virginia (Nos. 31 and 32).

Profile no. 31 runs from the Bermudas to the mouth of the Chesapeake Bay. The depth-slope is gradual from 2000 m. downwards. It is difficult to interpret because we may notice in profile no. 65 that the whole ocean-basin between the Bermudas and the American coast shows a fairly strong negative anomaly and the meaning of this is not clear; we shall come back to this problem in discussing the ocean-basins in § 2 of the next chapter. Because of the lack of explanation of these negative anomalies we can not say where they may be expected to begin and whether e.g. this effect is already present in station no. 772 and perhaps in no. 773.

For interpreting the state of affairs in this profile the results of the seismic observations of Ewing [1]) have great importance. He found evidence here that the tertiary surface is gradually dipping downwards from the coast to the deep sea; there seems to be no sudden drop of this surface near the continental slope. If we may accept this evidence we may expect that the shelf is built up of light sediments and that because of this deficiency of mass station no. 774 ought to show a smaller anomaly than station no. 773. This would point to the curves for moderate or perhaps even large regionality of the isostatic compensation and this would well be in harmony with Ewing's results.

Profile no. 32 starts from the shelf east of the mouth of the Chesapeake bay and runs out to the sea in a direction which gradually makes a smaller angle with the contour-lines. Excepting station no. 779 of which the positive anomalies probably point to some fairly local excess of density, we again find negative anomalies over a large ocean-stretch and we may repeat what has been said for the previous profile. Here again an interpretation of the anomalies can be given in harmony with Ewing's results. In station no. 776 the light sedimentary material of the shelf would cause a negative anomaly and so we should have to choose the curves for moderately or strongly regional isostatic compensation. This would again point towards an abnormal coast where the shelf would not mean a sudden change in the crustal layers below the sediments and thus it would confirm Ewing's result about the gradual sinking away of the tertiary surface. We may remark that this interpretation of our two profiles which involves choosing the curves or regional isostatic compensation implies a smaller amount of the negative anomalies over the oceanic basin than would correspond to the supposition of local compensation. This may perhaps be accepted as a further point in favour of our interpretation although we certainly may not lay too much weight on this point.

If our interpretation is right this coast would not have the normal type of a continental coast and the oceanic basin would rather seem to have the character of a depressed part of the continent. It is remarkable that this result appears to be in good harmony with

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1) Ewing, 1937 and 1940.

the conclusion arrived at by many geologists who think that this part of the Atlantic must have been above sealevel from at least Mesozoic up to more recent times; the reason is that the Appalachian geosyncline shows evidence of deposits from the east[1]). Umbgrove supposes the subsidence of this area, usually called Appalachia, to begin during the Triassic, i.e. after the mountain building of the Appalachian geosyncline. The question suggests itself whether the negative anomaly over the basin is connected with this subsidence. We shall come back to this question in § 2 of chapter V dealing with the ocean-basins.

§ 6. Three profiles plus an incomplete one on the westcoast of Mexico and California (nos. 33, 34, 35 and 36).

Examining these profiles we see at once that the anomaly curves are more irregular than any we have already dealt with in this chapter. This need not surprise us as this coast is bordered by high mountain-ranges of tectonic origin where earthquakes are strong and frequent. The cause of the earthquakes near profile no. 36 over San Francisco is well known; we have major faults more or less parallel to the general trend of the coast of which the San Andreas fault is best known and strong movements along this fault are still continuing; in 1906 the earthquake which destroyed San Francisco was accompanied by a relative displacement of both blocks of at least four meters, the block on the ocean-side moving tot the northwest with regard to the other. It is likely that the Sierra Nevada shows similar fault-movements and the formation of these mountain-ranges suggests the possibility that the north-eastern block somewhat overrides the south-western. The fact that the ocean bordering the Mexican coast shows troughlike depressions at the foot of the continental slope seems to point in the same sense if at least we may suppose that the shear-movement continues along this whole coast. Although these last suppositions can not at all be considered as proved we shall keep them in view as a provisional hypothesis.

In this connection the writer wishes to point out the similarity with another supposed phenomenon which we have already discussed in Chapter II, viz. the tectonic process surmised on the westcoast of Sumatra. Here also we assumed a relative movement of the two crustal blocks separated by a fault-zone under the islands west of Sumatra in such a way that the north-eastern block mainly moves parallel to the fault-zone towards the southeast but at the same time slighly overrides the southwestern block which thus is pressed downwards, the sea-floor west of the islands showing a corresponding depression.

Comparing the profiles nos. 1—4 to those we are here investigating the similarity is clear. We shall now examine these profiles more in detail. We may expect local isostatic compensation of the main part of the continental slope, caused by the abrupt disappearing of the upper sialic layer and regional compensation of the topography brought about by the pressing down of the sea-floor and the corresponding lifting up of the coast strip by the overriding of the second over the first. We may also have light sediments in the shelf and slope which ought to be accompanied by anomalies as indicated in the introductory part of this §. It is further possible that we have a slight root-formation below the crust in the zone of overriding which, if present, must show up in the gravity profiles. There does not seem

1) J. H. F. Umbgrove, The Pulse of the Earth, 2nd. Edition, 1947 pages 35, 120, etc.

to be much evidence in the present period of lateral compression of the crust in a sense at right angles to the coast as we have supposed west of Sumatra; there is e.g. no upward wave of the crust discernible in the sea-floor outside the trough-zone near the coast.

Profile no. 33 on the coast of Mexico at about 98°20′ W.L. shows the two first effects; we find here a trough at the foot of the slope. Taking the anomaly curve for local isostatic compensation for $T = 30$ km or slightly less, we can explain this curve by assuming that the trough is not locally compensated but regionally. This indicates that the trough is caused by the bending down of the crust which can be explained in the simplest way by the above supposition that the crustal block on the land side is overriding the seaward block (see fig. 15c, p. 72). We can not check in this profile whether the gravity on the land-side of the fault corresponds to this idea; it ought then to show positive anomalies gradually disappearing farther landinwards.

This profile is remarkably similar to profile no. 2 on the westcoast of Sumatra over the island of Nias; the four anomaly-curves over the ocean-part are nearly identical. The sea-bottom shows a similar trough and the topography of the continental slope is also about the same. The similarity of the anomaly-curves points to the same phenomenon occurring on both coasts and this corresponds to the fact that we arrived for both coasts at the same result, i.e. an overriding of the land-block over the sea-block.

There is no indication in this profile of light sediments although a slight amount near the edge of the shelf would not be incompatible with the gravity anomalies.

Profile no. 34 on the Mexican coast at about 103°25′ W.L. allows a similar interpretation. According to the new U.S. contour-map of the Pacific Ocean there is a silght trough at the foot of the slope. Station no. 85 is nearly over the deepest part of it. As the trough is less deep than in the previous profile we must expect that the curve of the local isostatic anomalies for $T = 30$ km will show a somewhat smaller difference between the anomalies in station no. 85 and those farther out at sea. This can not be checked as no observation is available there. The difference of the anomalies at the stations nos. 86 and 87 is larger than that between the stations nos. 83 and 84 of the former profile. This might perhaps be caused by a steeper and narrower fault-zone between the two crustal blocks but it could also be explained by light sediments in the lower half of the slope under station no. 86.

The explanation given by these interpretations of the gravity anomalies for the troughs at the foot of the continental slope of the southwest-coast of Mexico as well as those to the southwest of the islands west of Sumatra seem well consistent with the shape of these troughs, steep on the continental side and tapering away on the ocean-side, and also with their occurring at the foot of the slope.

Profile no. 35 is incomplete and so is does not give much hold on our problem. The data obtained, however, are not contrary to our line of explanation. Profile no. 36 over San Francisco is the most extensive one of the set. It runs far out at sea and it can be continued inland by means of the gravity observations in the U.S.A. The study of it leads to the conclusion that we here may have all these effects together, the local isostatic compensation of the main part of the continental slope with a value of T of some 30 km, the overriding of the seaward block by the continental block and the presence of light sedimentary material at the shelf edge, in the slope and at the foot of the slope where it hides the trough which we might expect here because of the pressing down of the sea-floor. The low value in station n° 98 may perhaps also be caused by a slight root-formation below the crust.

The main features of the anomaly-curve for local compensation and $T = 30$ km with its negative values near station no. 98 might, however, well be explained by the supposition of loose sediments only and so the question arises whether there is any reason here to assume also an overriding of the ocean-block. The slight difference of the direction of the coast here with regard to that of the two first profiles [1]) might explain that the relative movement of the two blocks is a pure slipping here along the fault-zone. The negative anomalies at a greater distance out at sea, which, according to profile no. 75 continue up to station no. 101 and the values around zero on the land-side show, however, an asymmetry which seems to give a slight indication towards some overriding. For the anomalies on the landside we may use the value at San Francisco (no. 97) represented in the profile but also those of the U.S.-coast and Geodetic Survey. These last anomalies have, however, to be reduced according to local isostatic compensation for $T = 30$ km. For our purpose we may use the values computed by Heiskanen and published in: "Die Erdkrustendicke und die Schwereanomalien in den Vereinigten Staaten". Heiskanen gives the Heiskanen-Airy values, i.e. for local isostatic compensation, for $T = 40$ km and for $T = 60$ km and by extrapolating we find approximate values for $T = 30$ km. The values thus obtained near or at the coast of California in the neighbourhood of our profile confirm the above assumption of anomalies around zero.

Our conclusion therefore may be that the gravity data of our profile combined with those on land point towards some overriding here of the continental block over the oceanic block but that the indications are not strong. The topography of the ocean-floor does not give any information here.

Concluding our study of this set of profiles we may remark that our result of a great fault-zone of the Earth's crust along this coast is corroborated by the results found in the investigation of the writer about a system of shear patterns of the Earth's crust (see fig. 9 p. 32) caused by a supposed shift of the poles over a large distance in one of the early periods of the Earth's history [2]). In fig. 10 on page 25 of this study this zone has been indicated near South America but by an error of the figure it has not been extended up to the westcoast of North America discussed in this §. In Chapter II we have already drawn attention to the corroboration for the westcoast of Sumatra which according to this figure of the major shear zones of the Earth's crust likewise belongs to this system. It is interesting to find the same behaviour of the gravity anomalies for both coasts.

As a last remark we may add that the detailed study of these profiles has confirmed the provisional estimate in the introduction of § 1 where we found local isostatic compensation of the main coastal topography of this coast with a value of T of about 30 km, although this last value can not be determined accurately because of the presence of the other effects.

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1) Because of the great distance we have to investigate this on the sphere; we find then that indeed the direction of the coast is not following a great circle.

2) F. A. Vening Meinesz. Shear patterns of the Earth's crust, Transactions Amer. Geophysical Union 28, 1, 1947, pp. 1—61.

§ 7. Profiles nos. 37 and 38 in the Mid-Atlantic between West Africa and South America.

We shall now examine a few profiles over topographic features in mid ocean.

Profile no. 37 runs eastnortheastwards from a point on the Midatlantic Ridge some four hundred miles to the northwest of St. Paul. The topography of the seafloor has been determined by means of echo-sounding. On the Mid-atlantic Ridge, which is broad and low here, it was found to be extremely irregular; it shows many peaks. The topography of these peaks as far as it could be determined makes the impression to be of volcanic origin.

The gravity profiles point towards local isostatic compensation combined with a value of T of 30 km. This conclusion, however, only refers to the topography in its broad outline; the stations are too far apart for allowing any conclusion about the isostatic compensation of the individual peaks or other features.

Profiles no. 38 and 38a are situated over the Romanche Deep which is on the equator about midway between West Africa and South America. Profile 38a gives the topographic profile as determined by echo-sounding on a greater scale then no. 38. It has been provided with a profile in black on natural scale, i.e. without exageration of the vertical dimensions; horizontal as well as vertical scale are here 1 : 1.500.000, while in the other profile of 38a the vertical scale is 1 : 150.000, i.e. tenfold exaggerated. The same is true for profile no. 38 and for all the other profiles of this § where the horizontal scale is 1 : 3.000.000 and the vertical scale 1 : 300.000. The black profile shows the extraordinary steepness of the walls of the deep especially the southern wall. The greatest depth sounded in this profile is 7600 meters.

The gravity profiles clearly point towards regional isostatic compensation of the deep but it does not seem possible to distinguish between the drawn curve which represents the largest degree of regionality and the point-dot curve which gives the anomalies for a more moderate regionality. None of the gravity profiles gives any indication of great tectonic phenomena in this area. It seems indicated, therefore, to think of a volcanic origin of this remarkable feature in the mid ocean and to interpret it as a huge caldeira. The dimension at the surface in north-south direction is, as given in this profile, 38 km and in east-west sense the map shows it to be of the order of 70 km; its shape, therefore, is oval. At the bottom the north-south dimension is 10 km. The profile over this bottom does not show great irregularity, although it is not entirely flat. Notwithstanding the unusually large dimensions compared with other caldeiras on the Earth's surface, it is not unique in this sense; the Toba-lake depression in the centre of Sumatra which has often been interpreted as a çaldeira, e.g. by R. W. van Bemmelen, has dimensions of 90 × 38 km. In our profile the curves for regional isostatic compensation show a deficiency of gravity in the centre with regard to the stations over the surrounding wall which means that there must be somewhere a further deficiency of matter than what is apparent in the shape of the topography accounted for in the reduction. It is possible that this deficiency may be explained by some unknown greater depth in the caldeira to the side of this profile but it might perhaps also be some subterranean magma-chamber which is partly empty and over which the crust has not yet crumbled together.

The effect of this unknown mass-deficiency, which obviously ought also to be compensated regionally, must be to lift the surrounding area and this might explain the positive anomalies in our profile on both sides of the deep. The fact that the gravity excess on the north side is somewhat larger than that on the south side appears to indicate that the mass-deficiency has its centre nearer to the north wall of the deep.

We may finish our study of this profile by remarking that the gravity results for station No. 566 seem to point towards local isostatic compensation for the depression of the sea-floor to the right of this station with a value of T of 30 km. This depression, therefore, does not appear to have the same character as the Romanche deep. This result appears to indicate that its cause might be a local thinning there by some unknown cause of the sialic layer which according to the moderate depth of somewhat more than 4000 m of the Atlantic in this area must still be present here.

§ 8. Six profiles on the eastcoast of South America (Nos. 39-44).

Profile No. 39 runs out from Pernambuco and can be continued over a great distance at sea. Landwards it has been supplemented by two stations, the waterreservoir at Gurjahu (No. 579a) and Victoria (No. 579b) the last being at a distance of about 45 km from Pernambuco; the observations there have been made with a Holweck-Lejay pendulum. This profile has also been provided, like profile No. 38, with a black profile giving the topography without exaggeration of the vertical dimensions. The gravity curves show fairly strong negative values under the shelf and slope and as there is no evidence at all of a fault-zone near the coast and, therefore, no reason to assume the continental block to override the oceanic block, it seems indicated to suppose the presence of great masses of loose sediments. As there are many rivers on this coast this seems acceptable. As we do not know the amount and the distribution of these sediments we can not decide their gravity effect and so we are not able to choose between the different types of isostatic compensation.

The differences of the anomalies in the three land-stations are not large enough to lead to any special conclusion; moreover, as no accurate topographic maps were available, the reduction for topography and compensation could not be determined with great precision.

Profile No. 40 near Maceio, about 200 km to the south of Pernambuco shows clear evidence again of loose sediments in the shelf and slope. It further points towards local isostatic reduction but it is again impossible to draw conclusions about T. A value of 30 km is no doubt possible.

Profile No. 41 near Belmonte about 850 km to the south of Pernambuco shows less evidence of loose sedimentary material unless we should have to assume some regionality of the isostatic compensation. As this does not seem likely and as in that case the positive anomaly at station No. 586 should have to be explained the curve for local isostatic compensation $T = 30$ km appears more probable; this curve shows a very regular shape. We may conclude that local compensation with $T = 30$ km is the most likely here and that probably no light sediments are present in the shelf or slope.

Profile No. 42 runs north northwest-south southeast over Rio de Janeiro (No. 591). It has been continued landinwards over Petropolis (No. 591a) and Entrerios (No. 591b) to Barbacena (No. 591c) at a distance of about 200km from Rio and seawards up to more than 300 km away from it. As, however, the coast is accompanied here by an extensive submarine plateau, the depth of the last station is not more than about 2300 meters. The plateau continues much further and slopes gradually towards greater depths; in this direction it is only at a distance of some 800 km from Rio that a depth of 4000 m is reached.

This behaviour of the sea-floor reminds us of the depth-profile No. 31 on the coast of Virginia and it is remarkable to see that the gravity results show a similar anomalous character as on that coast. Examining the anomaly-curves of the seaward part of our profile we find negative values and we see that the curves for regional isostatic compensation are more regular than those for local compensation. Moreover, as in profile No. 31, the regional anomaly-curve has the further advantage to show smaller negative values; at station No. 595 e.g. the anomaly for the greatest degree of regionality is —21 mgal and that for local compensation —30 mgal, both for $T = 30$ km.

These results suggest the same situation here as on the Virginia coast and so it would be interesting to make a similar seismic profile here as has been done by EWING on that coast. As mentioned above when dealing with the profiles on that coast Ewing found evidence for a smooth sloping downwards in seaward direction of the tertiary surface without any indication of a sudden breaking off of the sialic layer. The fact that the gravity curves in the Rio profile point towards regional compensation seems no doubt to suggest the same thing here and the depth-profile does so too. The origin of this anomalous type of coastal features is still uncertain; as has already been remarked for the Virginia coast the facts suggest the idea of a continental crust which because of some unknown effect has been subsiding and for the Virginia coast this idea is in good harmony with the supposition of many geologists who have reason to assume the existence there of a continental area, called Appalachia, which began to subside in the Triassic. As far as the writer knows no similar hypothesis has yet been made for this submarine plateau on the Brasilian coast but the above facts seem to point to a similar situation. We come back to these areas in Chapter V. The anomalies at stations Nos. 592 and 593 may point towards the presence of loose sedimentary matter in the shelf and slope but they may also belong to the general field.

The landward part of the profile shows a clear dip of the anomaly curves for station No. 591a, Petropolis. A more detailed study of the geology would be needed for obtaining an idea of the meaning of this negative anomaly, which probably is connected with the great topographic feature in the neighbourhood, the steep slope of more than one thousand meters difference in level between the coastal plain and the bordering peaks of the plateau of Petropolis; a much denser net of gravity stations would also be necessary before a good interpretation could be given.

Profile No. 43 runs east-west at 29° southern latitude. This profile is situated over the same submarine plateau as the preceding one and it shows the same type; the slope of the sea-floor is gradual although slightly less flat and the gravity-curves point likewise towards regional isostatic compensation. For the greatest degree of regionality the furthest seaward station, No. 597, shows no negative anomaly but a slight positive value of 3 mgal. At the station No. 596 between the two profiles and on the plateau the anomaly for this type of compensation is —15 mgal.

Resuming we see that the profile shows the same particular features as the previous one but in a slightly less marked degree. There is not much indication of loose sediments in this profile. Before leaving these profiles we may again examine for a moment profile No. 39 east of Pernambuco because it seems possible that this profile is also belonging to the same type. The anomalies over the sea-part of this profile are negative and we found it impossible to decide about the character of the isostatic compensation; it is possible that this is regional. As several geologists, as e.g. Bailey Willis [1]), have supposed a subsided land-bridge here between South America and West Africa the supposition of a subsided continental area here does not seem out of the question. The topography of the sea-floor, however, does not give much indication in this sense.

Profile No. 44 from Mar del Plata to the east (latit. 37°40′ S) is clearly of another type than the preceding ones, although the sea-depth near the shelf is only about 3200 m which perhaps could give us reason to think of a similar situation. The gravity-curves are different and point to local isostatic compensation with $T = 20$ km or 30 km. The negative anomalies at station No. 607 near the edge of the shelf can well be explained by assuming the presence of loose sedimentary matter as we can expect it in the neighbourhood of the mouth of the big La Plata River. The slight positive anomaly at station No. 608 can partly or entirely be accounted for by the positive waves of fig. 22 accompanying this negative effect on both sides. The smaller value of this wave on the land-side may be caused by the tapering off towards this side of the loose sedimentary layer.

A further difference from the preceding profiles is the absence of a field of negative anomalies at somewhat greater distance out at sea: the local isostatic anomaly-curve for $T = 30$ km shows a negative value of only a few milligals at station No. 609 and a small positive value at station No. 610.

Before finishing our examination of the gravity observations on this coast we may for a moment draw attention to the station of Mar del Plata (no. 605) and the stations observed on land about 42 km to the north of it and 27 km to the south, i.e. Vivorata (no. 605a) and Miramar (no. 605b). The results show only small anomalies. For $T = 30$ km and for values of R of 0, 116.2 and 232.4 km the figures in mgal are

No.	Stations	$R = 0$	116.2	232.4 km
605a	Vivorata	+ 7	+ 6	+ 4 mgal
605	Mar del Plata	+22	+22	+21 ,,
605b	Miramar	+ 2	+ 2	+ 0 ,,

This profile near the coast has some interest because in this area the Sierra de Tandil runs up towards the coast and breaks off near it and this profile is about at right angles to its direction. Mar del Plata is roughly in the axis of the range. It would be worth while to cover the area with a denser net of stations to see whether the anomalies have everywhere this small size and also over the range itself.

§ 9. Four profiles over features in the South Atlantic, the Bromley Plateau, Tristan da Cunha and the Walvis Ridge (nos. 45, 46, 47, 48).

Two profiles have been observed on the Bromley Plateau, one towards the west-southwest and one towards the east-southeast. The first, profile no. 45, seems simple to interpret. The anomaly-curve for local isostatic compensation combined with $T = 30$ km, is nearly a straight line and so it appears indicated to consider this as the most probable

[1]) Bailey Willis, 1932.

solution. If we assume that the plateau has always been below sea-level it is clear that we can not expect loose sediments to be present here and so it is not surprising that the anomaly-profiles do not show any evidence of it. If our interpretation would be right we could attribute this plateau to a thickening of the thin sialic layer of the ocean-floor. The topography of the ocean-floor in this profile points to a gradual transition at this side from the normal ocean-depth to the depth over the plateau.

The second profile, no. 46, running from the plateau towards the east-southeast, shows greater irregularities in the topography as well as in the anomaly-curves. Besides two steep parts in the first part of the downward slope with a fairly flat part between, we find a sudden elevation again under station no. 622 which has steep sides. The gravity-curves over this area point to regional compensation. To the right this is quite convincing; to the left it is less clear because this part of the profiles is no doubt complicated by the presence of the steep slope to the left of this elevation which seems to be locally compensated. If we correct the curves for regional compensation for the local compensation of this last slope we have to diminish the anomaly at station no. 622 and to increase that at station no. 621 and this evidently smoothes out the curve.

We can also check this conclusion bystarting from the curve of local compensation, e.g. from that for $T = 30$ km, and correcting this curve for the regional compensation of the elevation under station no. 622 by diminishing the anomaly at that station and by increasing the values at the adjoining stations to both sides by a smaller amount. We see that we thus indeed arrive at the best fitting hypothesis. The conclusion to be drawn from this result is that the feature to the right is probably a submarine volcano because we have found in the preceding chapter [1]) that generally volcanic islands are regionally compensated. The topographic profile over this feature is well in harmony wtih this idea; it shows at the top a caldeira-like depression of a diameter of about 10 km and the type of the slopes is like that of a volcano.

The first steeper part from the left of the slope of the Bromley Plateau itself makes the impression to be regionally compensated with a moderate degree of regionality but the conclusion is rather uncertain because we saw that in the curve for local compensation and $T = 30$ km. the value at station no. 621 has to be increased and so this may change our conclusion.

Resuming we may conclude that the gravity results point to the local compensation of the main part of the Bromley Plateau and, therefore, to an origin of this plateau caused by a thickening of the sialic layer here. For the feature to the right in profile no. 46 they point towards its being a submarine volcano and the topography agrees with this hypothesis.

Profile no. 47 over Tristan da Cunha is accompanied by a topographic profile, of which the whole part to the right of the island has been determined by echo-sounding. The horizontal scale of this last profile is 1 : 1.000.000 and so the vertical dimensions in this profile are exaggerated $3^1/_3$ times with regard to the horizontal dimensions. The profile shows a curve typical for a volcano.

The gravity profile which has already been dealt with on p. 107 of the preceding chapter is incomplete; it exists only of two stations of which the upper one is over a depth of 1415 m; stations over the island could not be made. Conclusions are therefore hardly

1) See also: F. A. Vening Meinesz, 1941.

possible; it would be important to supplement the profile by observations on the island itself. As we found already on p. 107 the results now seem to point to local compensation of the island-masses but this conclusion is contrary to the results found over nearly all other volcanic islands and so we will not attach too much importance to it as long as it has not found confirmation by values on the island.

Profile no. 48 over the Walvis Ridge shows two well-pronounced ridges and to the left of them a broad lower rise. The left one of the main ridges shows steep slopes, especially the eastern side of it.

As the gravity anomaly curves for local compensation and for a moderate degree of regionality corresponding to $R = 116.2$ km. both for $T = 30$ km, are rather far apart for several stations, an extra curve was added for $R = 58.1$ km; in the profile this curve was indicated by one dash and two dots. Examining this curve we see that, taken as a whole, it is more regular and reduces the anomalies more than any of the other curves. Still it seems doubtful whether this is the best interpretation of the profile. We can also suppose that the left and steepest of the main ridges is regionally compensated and the right ridge locally. Taking the drawn curve which corresponds to the greatest degree of regionality and correcting this curve for adapting it to local compensation of the right ridge, we have to increase the anomaly of station no. 643 over this ridge and to diminish the stations to both sides with a corresponding lesser amount. We thus obtain a curve which is not less satisfactory than the extra curve and so this assumption seems likewise admissible. We can also derive this last curve by starting from the curve for local compensation and $T = 30$ km and correct it for the regional compensation of the left ridge by diminishing the anomaly at station no. 641 over this ridge and by increasing the stations to both sides with a corresponding lesser amount.

If this last assumption could be accepted it might suggest a volcanic origin of the left ridge. This could also reasonably explain its topograhic cross-section although the eastern slope is rather steep for a volcanic one. We have of course to realize that the vertical dimensions of our profile are tenfold exaggerated.

For explaining the right ridge we might suppose an increase in thickness of the sialic layer and as it is rather narrow and as the Walvis Ridge seems to continue over a great distance we might think of a tectonic origin.

It may in this connection be pointed out that examining the map of shear-patterns of the Earth's crust (page 32) which has already been mentioned, we see that the Walvis Ridge follows one of the two directions given for this area. If we might accept this hypothesis we may probably explain the ridge as a topographic rise caused by a shear movement along this zone; this movement may be expected to bring about a thickening of the sialic matter. The second ridge of volcanic origin might also well be explained by such a crustal movement.

If the first interpretation of the gravity results corresponding to the extra curve of this profile would be the right one, this means a regional isostatic compensation for both ridges of a very moderate degree, the value of R being only 58.1 km. In that case we might assume that both ridges have originated by means of shearing along this zone but along two fault-zones. We might well understand that the topography thus brought about might be compensated locally as well as according to this moderate degree of regionality.

The assumption that the basic phenomenon which has caused the Walvis Ridge has been a crustal shearing along a fault-zone of the crust seems satisfactory as it explains its linear character over such a large distance; it continues at least as far as the coast of Africa and it is usually admitted even to continue in this continent.

Before leaving this profile we may remark that the anomaly-curves point towards local compensation of the low broad rise under station No. 640 but as the differences of the anomalies are small this conclusion is uncertain.

§ 10. Four profiles on the coast of South Africa (Nos. 49, 50, 51 and 52).

Profile No. 49 runs eastward towards a point some 50 km to the north of Cape Town. It has been supplemented by four stations in the interior, Malmesbury (No. 658a), Ceres (No. 658b), Juriesfontein (No. 658c) and Touws Rivier (No. 658d). The third at an elevation of 676 m is not quite in line with the profile but about 20 km to the north of it; it is on the edge of the Karroo while the fourth, at an elevation of 772 m, is just south of the edge.

The oceanic part of the gravity profile seems simple to interpret; it points towards local isostatic compensation with $T = 30$ km; the corresponding curve is nearly straight. The sea-floor slopes gradually downwards towards the Atlantic; there is no steep part in this slope. The gravity curves do not indicate the presence of any loose sedimentary material which may perhaps be explained by the absence of greater rivers on this part of the coast. Another possibility would be that the compensation is moderately regional and that the slight depression of the corresponding curve at the stations Nos. 655 and 656 would be caused by some loose sediments in this part of the shelf.

The anomalies for this whole oceanic part of the profile are positive and, as profile No. 70 shows, this is also true for the stations further out at sea. If we take the anomalies for $T = 30$ km we find that they are all positive from station 645 near the Walvis Ridge up to this coast.

The anomalies over the land part of the profile are more irregular but they do not show large values. We shall not study them in detail as this would require a much denser net and an extensive study of the geology of this part of South Africa. We can say that the anomaly in station 658c (Juriesfontein) on the southwestern corner of the Karroo is positive and that the two stations 658b (Ceres) and 658d (Touws Rivier) just outside the edge of the Karroo show small negative values.

Profile No. 50 from a point on the shelf south of Humansdorp towards the southeast shows a rather irregular depth-profile. From the edge of the shelf the slope is moderately steep till a depth of 2000 m; it then slopes more gradually downwards until a depth of 2600 m is reached and it is steep for the last part down tot the ocean-floor at 4400 m. Further away the floor slopes up again towards a rather broad rise with irregular topography, especially near station No. 666. The profile has not been continued beyond station No. 667 which is still on the ridge.

Examining the anomaly-curves we see that in general the curve for local isostatic compensation combined with $T = 30$ is smoothest but for the part between the stations Nos. 663 and 664, i.e. over the first part of the continental slope, the assumption of regional com pensation fits better; for a radius of regionality R between 116.2 and 232.4 km the agreement of the two stations is best. The smaller value of the anomaly for local compensation and $T = 30$ km at station No. 664 can, however, also be explained by the presence of loose sedimentary material in the slope and as this assumption seems quite acceptable there is no reason not to keep to our original conclusion of local compensation and $T = 30$ km for the whole profile. This leads to the normal hypothesis that the whole topography of this profile is caused by differences in thickness of the sialic layer. This applies as well to the topography of the continental slope as to that of the broad submarine ridge in the right part of the profile.

Profile No. 51 is short. It runs in northwest direction from a depth of about 4000 m towards the coast at a point near the mouth of the Bashee River. Near the coast the topography of the sea-floor shows a remarkable feature, a narrow ridge of some 200 m depth enclosing a channel along the shelf of about 900 m depth and a width of only 16 km. The ridge is bordered by a fairly steep slope running downwards to a depth of about 3000 m; the further part of the slope is gradual.

The anomaly-curves are difficult to interpret. We may perhaps say that the curve for local isostatic compensation and $T = 30$ km is the smoothest of the four but the anomalies left by this way of reduction are so large that we can not accept this conclusion without further investigation. We shall undertake this together with the study of the next profile.

Profile No. 52 runs out eastwards from Durban up to station No. 679; it has been supplemented by two landstations towards the west-northwest, viz. Alverstone at an elevation of 746 m and Hilton Road, a small roadside station past Pietermaritsburg, at an elevation of 1091 m. The last station is already on the Karroo.

The profile of the sea-floor is irregular again. We find a very gradual slope from the coast-line up to a depth of about 1600 m, then a steep one up to a depth of 2700 m and this is followed by a flat bottom for a distance of some 120 km. A broad rise comes next, rising to a depth of somewhat less than 2000 m, and this is bordered on the east side by an irregular, in part rather steep slope down to an ocean-depth of slightly over 5000 m.

The anomaly-curves show a similar picture as those of the preceding profile. Examining them we see that the curve for local isostatic compensation and $T = 30$ km is clearly the most regular one but it leaves rather large anomalies; the anomalies of this curve increase regularly towards the coast from a value of —2 mgal in station No. 679 till a maximum of +46 mgal in Durban (No. 674). Inlands they quickly decrease via + 30 mgal in No. 674a towards —12 mgal in No. 674b on the Karroo. This main feature is similar to that shown by the curve for the same type of compensation in the preceding profile but the transition here is steeper. Station No. 671 shows a local compensation ($T = 30$ km) anomaly of + 2 mgal and station No. 673 of + 44 mgal. It is true that station No. 670 of this profile shows a value again of + 18 mgal. Still the writer thinks that the similarity mentioned is strong enough for suggesting that the main phenomenon in both profiles is the same. As this similarity is less clear for the curves for the other types of isostatic reduction the chances are not too bad that we have here again the normal situation, local compensation with $T = 30$ km, which may be interpreted as an indication of the main part of the topography being caused by a sudden thinning of the sialic layers of the crust.

What can be the meaning of the positive anomalies near the coast gradually disappearing towards the ocean? The fact that in profiles No. 52 they suddenly disappear on the border of the Karroo points to a connection with this formation and this supposition is strengthened by the fact that both profiles Nos. 51 and 52, showing this behavior of the anomalies, run up towards the Karroo while profile No. 50 which did not show it is outside the Karroo area; in profile No. 52 the Karroo starts just east of station No. 674b while in profile No. 51 the Karroo runs up to the coast-line which is some 20 km to the northwest of station No. 673.

Profile No. 52 which is the most complete of the two suggests the possibility that the anomalies are caused by a phenomenon which is the reverse of that supposed for the Californian coast, i.e. a faultzone of the Earth's crust parallel to the coast and a shearing-movement of the blocks on both sides with regard to each other which in this case would mean a lifting of the oceanic block and a downbending of the Karroo while on the Californian coast we have supposed the ocean-block to be pressed downwards and the continental side upwards. Another difference between the two is that in the latter case the relative movement is known to be mainly horizontal while in the present one nothing of such a component is known.

The smaller depth of the ocean at the foot of the continental slope in the profiles Nos. 51 and 52 seems to be in harmony with our hypothesis and the same seems to be true for the fact that the Karroo is known to be a depressed area of the Earth's crust.

Another point in favor of the hypothesis might be that like the coast of California the eastcoast of Africa is one of the major shear zones of the Earth's crust according to the hypothesis about shear-patterns mentioned on page 32 (fig. 9) [1]. The absence of seismicity along this coast points to the probability that even if the supposition is right no movements are going on in this shear zone in the present period.

The supposed presence of a major shear zone leads to the hypothesis that the depression in the crust of a yet unknown character brings about a slight undershoving of the Karroo-block under the oceanic block which thus is pressed upwards above its isostatic equilibrium position. This hypothesis is given here quite tentatively; the writer is conscious of its speculative character and of the need for detailed study before anything more definite could be said about it.

We may finish our investigation of the profiles No. 51 and 52 by remarking that there are no strong indications of loose sediments in the shelf or slope but it would certainly be possible that e.g. stations Nos. 672 and 675 would be affected by such mass-deficiencies; the shape of the anomaly-curves do not make it probable, however, that these effects would be large.

§ 11. Three profiles over features in the Indian Ocean (Nos. 53, 54 and 55).

Profile No. 53 over the Madagascar Ridge just south of the islands.

The left part of this profile shows a flat ocean-floor without much topography. Near station No. 683 the rise towards the Madagascar Ridge begins. The slope is gradual and somewhat irregular; it continues over about 140 km. The top of the ridge is broad and flat. The beginning of the eastern slope is fairly steep but at a thousand meters depth a flat plateau begins which for a long distance slopes only very slightly downwards until a curious V-shaped valley interrupts the regularity; the valley has a depth of some 1500 m. On the east of the valley the slope continues again till at the end of our profile the depth has not yet attained 4000 m; it continues towards the east.

The gravity profile points towards local compensation and we see that the curve for $T = 20$ km is even slightly smoother than that for $T = 30$ km.

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1) See also fig. 10, p. 25 of "F. A. Vening Meinesz, 1947".

Our conclusion must be that, as far as our data allow a decision, they point towards local isostatic equilibrium and a sialic crust which is thicker here than is normal in the Indian Ocean. This thickening of the sialic layer can thus account for the presence of the ridge; on both sides of it the increase in thickness is not sudden but gradual corresponding to the gradual way the topography slopes upwards towards the ridge.

Profile no. 54 to the south of the island of Mauritius.

On this island only one station has been observed, viz. Port Louis (No. 688), and so the material is hardly sufficient to draw conclusions about the isostatic conditions. For a general study of this problem for the volcanic oceanic islands we may refer to the preceding chapter where Mauritius has also been dealt with. The results of this general investigation point to regional compensation with a large radius of regionality for nearly all these islands and it is likely that Mauritius does not make an exception to this rule. The same is shown by our anomaly-curves; if we neglect the result of station No. 689 which probably is due to local mass-irregularities we see that the curve for regional compensation and $R = 232.4$ km is the most regular; it brings the anomaly at Port Louis nearest to those of the other stations. The meaning of the deviation of the anomaly at station No. 689 can not be settled without more observations.

Profile No. 55 has been drawn over a part of the crossing of the Indian Ocean where the topography was found to be particularly irregular. It could thus be better represented than in the small scale profile No. 72 of this crossing. These irregularities give the impression of being of volcanic origin but a more detailed sounding would be necessary for making sure. The same may be said of the gravity profile; it is not detailed enough for a thorough investigation. For this purpose we should need stations over and on different sides of each topographic feature.

As far as our results go they seem to point towards regional compensation which would be in agreement with our supposition of a volcanic origin; this conclusion, however, is practically founded on only one of the stations, viz. No. 695, which only falls in line with the neighbouring stations for regional compensation. For the other stations the different types of compensation do not give enough difference for allowing a decision.

§ 12. Two profiles on the westcoast of Australia (Nos. 56 and 57).

Profile No. 56 runs straight eastward towards Fremantle (No. 709) on the westcoast of Australia. It has been continued inland by means of Holweck-Lejay observations at the stations Perth (No. 709a), the Lakes (No. 709b), York (No. 709c), Quairading (No. 709d) and a pair of stations which have been combined into one, viz. Bruce Rock (No. 709e) and Merredin (No. 709f). This carried the profile up to a distance of about 230 km from Fremantle.

Up to a point near station No. 708 the sea-floor is very regular and the sea-depth about 5000 m. Further eastwards the floor begins to slope upwards in a rather irregular slope which shows no very steep parts; it comes up to a narrow shelf outside the coastline at Fremantle. After a flat coastal belt of some 20-25 km in diameter we reach a fairly steep fault-escarpment of about 250 m elevation which makes the impression of being a young formation; it is the Darling Range. This brings the profile on a plateau with only slight undulations which continues over a great distance inlands.

The gravity curves show surprisingly large anomalies for a profile running up towards a stable continent of which no great tectonic phenomena are known nor any seismic activity. At the stations 710, 709 and 709a the anomalies attain values of about —100 mgal or even more below zero and the different systems of isostatic compensation can not appreciably reduce them. The deficiency of mass, therefore, seems to be brought about by a phenomenon not directly connected with the principle of isostasy. The only indication we have of something unusual going on here is the above-mentioned presence of a recently formed escarpment but the direct gravity-effect of a few hundred meters uncompensated topography is much less than the observed anomalies. Nevertheless this feature points to faulting and this may lead us to compare the profile to those on the west-coast of the U.S. and Mexico and to the profiles west of Sumatra where we have found evidence of a great shearing phenomenon. In doing this we are struck by the resemblance, particularly to profile No. 36 over San Francisco where we find similar large negative anomalies near the coast; in fact the shapes of the four anomalycurves of both profiles are remarkably alike. We can only notice that the deficiency of gravity on the Australian coast is still larger.

This analogy seems to point to a similar phenomenon, i.e. an overriding of the continental block over the oceanic one along a fault-zone parallel to the coast. The fault-escarpment of the Darling Range could be a surface expression of this process but it represents no doubt only part of the relative movement of the two blocks. Other parts may perhaps be indicated by some of the irregularities of the continental slope west of Fremantle.

The absence of earthquakes seems to suggest that this overriding process is possibly not accompanied by an appreciable shearing component parallel to the coast as it is the case on the westcoasts of California and Sumatra. As far as the writer knows no such relative movement is known for the escarpment of the Darling Range and this appears to point in the same sense.

The downwarping of the ocean-floor which, if our hypothesis is right, we may expect at the foot of the continental shelf is not apparent in our sounding-profile as, moreover, it is also the case for the profile no. 36 over San Francisco. It could be hidden by the lower part of the continental slope which extends rather far out at sea. This may perhaps be explained by the presence of sedimentary material although the coast does not show great rivers.

A downwarping of the ocean-floor may account for the negative anomalies under the shelf and slope. It is true that part of these anomalies may be caused by light sediments in this part of the depth-profile but it seems improbable that this could explain more than a small part of them. For the main part we have to look for another cause and as we mentioned we may find this in our hypothesis. We can check this by studying the curve for local isostatic compensation combined with $T = 30$ km. The downwarping of the ocean-floor and the corresponding uplifting of the continental block would give an anomaly-curve as represented in fig. 23 and subtracting this we retain a regular course of the anomalies giving

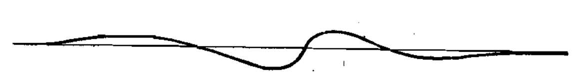

Fig. 23. Supposed anomaly-profile by overriding of continental over oceanic block at west-coast of Australia.

negative values of moderate intensity over this whole area, which are largest over the shelf and the adjoining belt of the continent.

As we have already discussed in Chapter II the explanation of these larger fields of anomalies is difficult. The writer thinks there is reason to suppose, at least for some cases, that deviations of the normal temperature reaching to great depth may be the cause; it must give rise to abnormal densities. We must then suppose that these deviations are so moderate and are so gradually merging towards all sides into normal values that the shear-stresses thus caused in the Earth do not exceed the strength limit in these deeper layers, which as mentioned on p. 39 the writer estimates at least for the upper 500 km in the Earth at about 10 kg/cm². As a consequence of this the hydrostatic balance in the Earth is not readjusted or, in case the temperature deviations are larger, it is not completely reestablished but leaves a disturbance corresponding to this strength limit. The result must be deep-seated small deviations from the normal density which bring about gravity anomalies at the surface of moderate intensity and slowly variable in a horizontal sense.

In our case we should have to suppose higher temperatures than normal below the western border zone of the Australian continent and this would no doubt seem possible as the greater radio-activity of the continental sial must tend towards a difference gradually forming between the temperatures under the continent and under the ocean. At a certain moment this difference will exceed the limit determined by the strength of the plastic lower layers and will disappear. If this hypothesis can be accepted it depends on the length of the period elapsed since the last adjustment whether and in what measure this effect will be present under the borders of the continents. We might imagine that under the western border of Australia it is strong enough to cause the negative anomalies mentioned.

Before leaving this profile we may remark that the westcoast of Australia again belongs to one of the great shear zones of the Earth's crust as supposed in the hypothesis of the writer and represented in fig. 10, p. 25 of "Shear Patterns of the Earth's crust", (Trans. Am. Geoph. Union, 28,1). This is, therefore, in good corroboration with the evidence we find here of major faulting on this coast. We see that it is the same major shear zone to which the westcoast of Sumatra belongs but it is clear that the relative movements of the blocks on both sides is different although they both show an overriding of the ocean-floor by the eastern block. For Sumatra the movement has, besides, a strong component parallel to the zone and for Australia no evidence of such a component is known. There is no mechanical inconsistency in this different behavior as the block east of this zone is folded together along the great tectonic axis south of Java and so we may assume that this shortening of the crust corresponds to the movement along the zone west of Sumatra.

Profile no. 57, running north from the North West Cape of Australia, shows a complicated topography and rather large negative anomalies. Examining the bathymetric map we see that the ridge between the station nos. 716 and 717 makes the impression to belong to the Australian continent; it seems to be the continuation of a part of the continental slope of the northwest coast of this continent. If we can consider it in this way we may say that the profile up to station no. 716 perhaps even up to no. 717 runs about parallel to the west-coast and, as far as we can estimate it, in the continuation of the belt of negative anomalies found in the preceding profile.

This surmise appears to be corroborated by the anomaly-curves. We see that the curves for local isostatic compensation, especally that for $T = 20$ km, are the most regular and this last curve shows a negative anomaly increasing steadily from a value of —11 mgal at station No. 713 to —48 mgal at station No. 717. On the other hand it might also be possible that these negative anomalies ought to be considered in the same light as those found over the basin east of the coast of Virginia (U.S.A.) and the submarine plateau adjoining the eastcoast of South America near Rio de Janeiro which would suggest that the plateau under the stations Nos. 716 and 717 has a similar character as the basin and plateau mentioned. It will be easy to choose between these two interpretations if more observations will be made in this area. Especially one or more profiles at about right angles with this one would be valuable and also some profiles to the east at right angles to the northwest coast of Australia. We may remark here that this coast likewise follows the trend of the shear pattern of the Earth's crust mentioned above for the westcoast of Australia. From the material actually present not much further information can be drawn about our profile nor about the conditions of this last coast. It is hardly possible e.g. to decide whether there is any evidence of light sediments in these parts of the Australian shelf and slope.

If we make use of profle no. 74 in which this profile continues towards Strait Bali to the east of the island of Java, we see that the stations nos. 719, 720 and 721 show again negative anomalies. This part of the profile from station no. 716 onwards has a slightly different direction as it runs towards the north-northeast. If the ridge under stations nos. 716 and 717 may be considered as the continuation of the northwest coast of Australia, this part of the profile may perhaps be accepted as a profile on this coast but we can not come to a decision about it before other profiles on this coast to the east of this one are available.

The sea-floor of this part of our profile has an irregular topography; station no. 721 e.g. is situated over a ridge coming up to a depth of some 3200 m. At station no. 175 we meet the profile over the Java deep which we have already discussed as profile no. 8 in § 9 of chapter II.

Before more profiles have been observed connecting this northwest coast of Australia with the gravity survey over Indonesia it does not seem feasible to give an interpretation of this difficult area, where the influences of Indonesia and of Australia may both be present. This is true for the topography as well as for the gravity anomalies.

Before finishing this chapter we may consider for a moment two short profiles not included in the set of profiles accompanying this publication because, short and incomplete as they are, it was hardly worth while to reproduce them.

The first consists of the stations nos. 25 and 26 at a mutual distance of 33 km. south of Point de Galle on the southwest point of Ceylon; the first is over a sea-depth of 65 m and no. 26 over 3920 m. We see that they are practically over the top and the bottom of the continental slope which is particularly steep here. The anomalies are

no.	depth	$R = 0,\ T = 20$ km	$R = 0,\ T = 30$ km	$R = 116.2$ km, $T = 30$ km	$R = 232.4$ km, $T = 30$ km
25	65 m	—15	—33	—50	—62
26	3920 m	—61	—41	—15	— 1

We see that these results clearly point to the normal conclusion, i.e. local isostatic compensation and $T = 30$ km.

The second profile is situated to the southwest of Socotra. It consists of the stations nos. 17 and 18 at a distance of about 300 km. The sea-depth at no. 17 is 80 m and at no. 18 4210 m. They are separated by the continental slope which begins near station no. 17;

no. 18 is far out at sea. The slope is not as steep as on the southcoast of Ceylon. The results are

no.	depth	$R = 0$, $T = 20$ km	$R = 0$, $T = 30$ km	$R = 116.2$ km, $T = 30$ km	$R = 232.4$ km, $T = 30$ km
17	80 m	—18	—38	—67	—102
18	4210 m	—11	+ 3	+ 3	— 3

The conclusion here is again local isostatic compensation but a value of T of 20 km.

§ 13. Summary of Chapter IV.

We may conclude this chapter by a short summary of our conclusions. With the exception of only two coasts we have found everywhere evidence of local isostatic compensation of the Airy type and in most cases this evidence was clear and fairly decisive. The conclusions about the best value of T for the different coasts were in several cases somewhat less sure but on most coasts a valueof T of 30 km seems to fit best. In a few cases as e.g. the west-coast of Africa near the Canary Islands, the North West Cape of Australia and Socotra a value of 20 km seemed preferable but in none of these cases the evidence could be considered as complete enough for decision.

As we have already discussed in the beginning of this chapter (p. 110), the result that at the edge of the continents local isostatic compensation seems to prevail is in good harmony with the seismic results which render it probable that the sial crust breaks off suddenly or gets thinner at the edge.

The value for T has this meaning that if we assume the crust to consist of only one layer of a density of 2.67 floating on a substratum of a density of 3.27, we find that for zero elevation of the topography a thickness T of this crust fits the gravity results best. In reality the situation must be more complicated. We probably have more than one layer and the total difference of 0.6 between the density of the plastic layer below the crust and that at the surface is distributed over all the discontinuity surfaces. We can however replace the actual situation without making too serious errors by the simplified one if we choose T correspondently; we have dealt with this question in chapter I § 3.

The two exceptions on the general rule of local isostatic compensation were the coasts of Virginia and of Brasil near Rio de Janeiro. In the first case Ewing's seismic results made it already likely that the tertiary layer of the continent slopes downwards and continues under the ocean without a sudden break near the continental edge and the gravity results seem to confirm this; they point towards regional compensation with a great radius of regionality. The geology of the eastern states of the U.S. has brought many geologists to assume that the basin east of the States has been above sea-level and has started to sink in the triassic. As the gravity evidence near Rio de Janeiro is similar to that on the coast of Viginia and as the sea-depth is likewise abnormally small here, there seems reason to suppose here the same process of a sinking away of part of the continent.

On four coasts evidence was found of a shear-zone parallel to the coast and relative movements of the crust on both sides along this zone, viz. on the west coast of California, on the east coast of South Africa where the Karroo touches the coast or is near to it, on the west-coast of Sumatra and on the west-coast of Australia. In the first and the third case the relative movement appears to have also a strong component parallel to the shear-zone.

In the first, the third and the fourth case the vertical movement seems to occur in this way that the continent overrides the ocean-floor and presses it slightly downwards. In the second case, the position appears to be reversed and the indications are that the oceanic block overrides the Karroo.

It is a remarkable fact that these four coasts where we found evidence of faulting all belong to the system of major shear zones of the Earth's crust which has been deduced by the writer fom a hypothesis discussed in "Shear Patterns of the Earth's crust", Trans. Am. Geoph. Union, 28, 1, 1947 (see fig. 10. p. 25).

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CHAPTER V.

Gravity over the Oceans.

§ 1. The North Atlantic.

In the North Atlantic south of 45° N.L. more than 150 stations are available. Crossing the whole Atlantic we have two profiles running from Europe towards the eastcoast of the United States, one just touching the banks south of New Foundland and one over the Bermudas. A third profile runs from the Canary Islands to Porto Rico, a fourth from W. Africa near Konakry to Pernambuco, while two profiles cover the area from St. Vincent (Cape Verde Islands) and Dakar to the Mid Atlantic Rise. The area between the Channel, the Canary Island and the Azores including the area around this last archipelago is covered by a number of profiles which give us a fairly dense net of stations in this area. Still we do not yet dispose of enough stations to make a detailed study of the many topographic features in this area; this is only occasionally possible.

In three gravity maps the most important anomaly figures have been represented. The first gives the values for local compensation, the second those for regional compensation with a radius R of 116.2 km and the third those for a radius R of 232.4 km. The first two sets of anomalies have already been published in a provisional study by the writer of this area in 1942 [1]). All the anomalies have been computed for a crustal thickness of $T = 30$ km.

The anomalies in this whole area show more positive than negative values and their size is not especially large. This last property makes it difficult to draw isogams as the deviations are in general not large enough to draw connecting curves from one profile to the other. We have tentatively tried to draw the isogams of + 30 mgal for the three sets of anomalies but their uncertainty must be emphasized. These curves may, however, make it easier to get a general idea of the areas where the larger positive anomalies occur.

Examining the anomaly-fields two points strike us. In the first place the largest positive anomalies seem to have a vague correlation with the areas of somewhat smaller depth without, however, following all the ridges intersecting this whole region. These ridges make the impression of having a volcanic origin; where they rise above sea-level the islands are all volcanic. We shall presently come back to these ridges and to the way their topography is compensated.

The second point is the absence in this area, notwithstanding its seismicity, of belts of strong negative anomalies. We may, therefore, conclude that probably these earthquakes do not point to phenomena like those in the East Indies and other similar areas where the

1) Vening Meinesz, 1942.

presence of the negative belts in the seismic zones has been interpreted as a proof of the pushing together of the Earth's crust along these belts and the formation there of great bulges of sialic material at the lower boundary of the crust. So we must suppose that in the crust below the North Atlantic other phenomena are occurring.

For our investigation we shall begin by studying more in detail the topography of this region. As we have already mentioned, it is characterized by a great many ridges which enclose basins. The fact that these ridges are mostly straight-lined indicates likewise a non-tectonic origin as most belts of crustal compression have a curved ground-plan.

Several geologists as e.g. KRENKEL, BUCHER and UMBGROVE have already remarked that the axis of these ridges seem to continue in the adjoining continents where we likewise find basins between them. A clear instance of this is given by Krenkel's map of Africa in which the *NE* and *SE* directions continue in the submarine ridges of the Atlantic, e.g. in the Walvis Ridge (fig. 24).

The volcanic character of the ridges as well as their straight courses point to their being connected with shear-planes through the crust and the seismicity in parts of the area indicates that relative movements of the blocks on both sides still occur. The gravity profiles crossing the ridges which we shall presently study are in good harmony with this hypothesis.

A careful examination of the bathymetric map reveals a remarkably systematic pattern of the ridges over this whole area. This has already often been noticed for the Azores area [1]) where many islands show a linear arrangement of volcanic eruption-points along fault-lines in an azimuth of about 115° east, e.g. the islands of Sao Jorge, Pico and Sao Miguel, while the three ridges on which the islands are situated have a direction of about 40° east. The first ridge carries the islands of Corvo and Flores, the second the islands of Graciosa, Terceira, Sao Jorge, Fayal and Pico together with the Princess Alice Bank and the third the island of Sao Miguel, Santa Maria and a bank to the south of these islands. In his paper on the North Atlantic of 1942 the writer has pointed out that these two directions have a much wider distribution and cover in fact the whole eastern part of the North Atlantic though changing somewhat their azimuth at greater distances. This result has led the author to take up an investigation of possible causes of such a wide-spread pattern over the Earth's surface which must probably be a pattern of fault-planes in the crust because shear-stresses always occur in two planes in each point as is evidently the case here. He came to the conclusion that a shift of the crust with regard to the rotation-axis of the Earth could give an explanation. According to this hypothesis such a shift must lead to strong stresses in the rigid crust caused by the adaptation of its shape to a flattening in a new direction. After deriving the shear-pattern which such a stress-distribution must bring about, he adapted the sense and the size of the shift in such a way that the pattern corresponded to that of the topography in the North Atlantic. The result was a pattern over the whole Earth's surface which shows a remarkable correlation to the topography over nearly all other areas where a straight pattern points to shear of the crust. Besides this corroboration of the hypothesis he found a number of other points supporting it and so there appears good reason to consider it at least as a serious possibility. The polar shift which had to be assumed is a change of the poles over 70° along the meridian of 90° longitude; this corresponds to an original position of the northpole near Cal-

1) See e.g. Agostinho, 1936, and H. Cloos, 1939.

cutta. The track described by the poles between the original and final positions does not need to have followed the meridian.

For further details about this hypothesis the writer may refer to the paper he wrote about it in the Transactions of the American Geophysical Union No. 1, 1947. The shear-pattern is reproduced in fig. 9 on page 32 and we shall now study its correlation with the topography of the North Atlantic. We have already mentioned the two directions in the Azores which are in good agreement. In the sense of the azimuth of about 115° east we see a ridge to the northeast of the Azores which crosses the meridian of 20° W at a latitude of about 43° N. and one to the southwest over Cruiser Bank crossing the meridian of 30° W at about 34° N. It is interesting to see that in the prolongation to the ESE of both these ridges we see other features which could well be interpreted as their continuation. To the ESE of the northern ridge we see two parts of the contour of 5000 m following this direction, further an elevation at station No. 498, a narrow ridge to the ESE of this station and lastly the shelf-edge to the west of Lisbon all following this same course. To the east of Lisbon this direction seems to continue in the structural axis of the Iberian Peninsula till it is cut off by the great Guadalquivir fault. It may be that we may even prolong it through a great part of Africa where it coincides with a long line of Krenkel's map given in fig. 24 and over the Seychelles ridge in the Indian Ocean. The second ridge to the south of the Azores seems to continue in the Canary Islands of which the three highest islands, i.e. Palmas, Teneriffe and Grand Canary, are situated on a line in this sense.

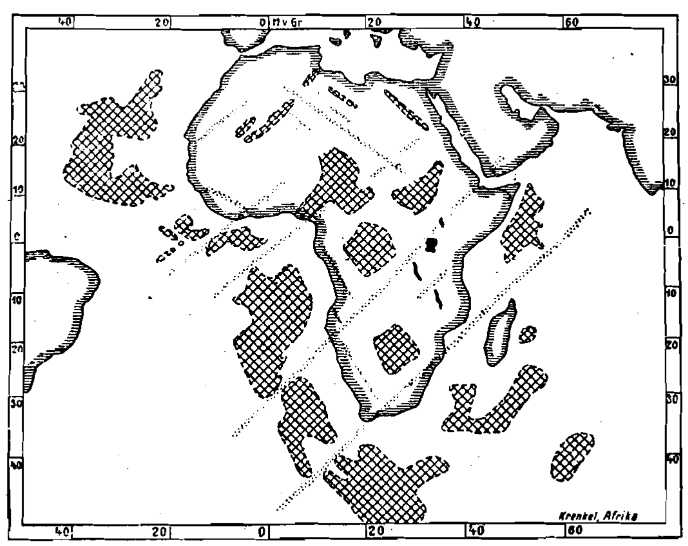

Fig. 24 Krenkel's map of Africa.

Between these two supposed zones of shear we have a broader zone comprising the Azores. To the ESE of the bank south of Santa Maria we see a ridge running in this same direction and pointing towards Madeira and further to the Dacia Bank. To the ESE of the Azores themselves we find the Seine Bank and the Ampère Bank which like Madeira show an alignment in this same sense. The same is true for the combination of the Josephine Bank and the Gorringe Bank which may perhaps be brought in connection with the Altair Bank and the Chaucer Bank to the north of the Azores. It is probably better, however, to express it in a more general way and to consider Madeira and the banks to the northeast of it as possible continuations of the broad zone of faulting of the Azores with adjacent banks.

The correlation of the different features of the Mid Atlantic Ridge mentioned above with the features to the west of the Iberian Peninsula and N.W. Africa receives support from seismic sources. Examining the map of fig. 25 published by REHM (1936) we see alignments of foci of earthquakes of moderate to large intensity in the connecting zones mentioned of which especially those connecting the Cruiser Bank with the Canary Islands and the Azores with Madeira and the banks to the northeast of it seem clearly expressed. The map of foci published more recently by Gutenberg and Richter (1941) indicates only a connecting zone ESE of the Azores [1]).

Another ridge in the direction here examined is found to the WNW of the mouth of the Douro. It may perhaps be continued towards the submarine elevation to the NE of station no. 429 and to another one to the WNW of it.

A major shear-zone of the crust is represented by the shelf-edge of Europe from a point to the SW of Ireland up to the W. coast of southern France. It seems to continue through the Mediterranean towards the Red Sea and the Carlsberg Ridge in the Indian Ocean. We may add that the two shear-directions of our net are corroborated by many other lines in Europe but we shall not further enlarge on them here.

Further to the south we find another major zone correlated to our directions in the Mid-Atlantic Ridge between the Romanche Deep and the meridian of 50° W. It may probably be continued towards the Puerto Rico Trough and the shelf-edge outside the Bahamas Islands. It is accompanied by two parallel belts, the first along the N. coast of South America, the second along the S. W. coast of West Africa which seems to continue in the Cape Verde Islands; the volcanic islands of this group appear to show some alignment in this sense. Perhaps it can be continued further to the WNW along a ridge which points in the direction of an area of the Mid Atlantic Ridge where the topography is particularly disturbed but the indications are not strong enough to draw conclusions.

The number of ridges in the North Atlantic to the west of the Mid-Atlantic Ridge is much smaller and so we do not find many opportunities to check our shear-pattern here.

The following ridges and features show a correlation to the second direction of this pattern which in the Azores has an azimuth of about 40° E.

The eastern one of the three Azores ridges in this sense seems to continue towards the NE in an irregular ridge up to a latitude of about 45° N. while the western ridge appears to continue in the Mid-Atlantic Ridge towards the SW up to an embranchment at about 20° N, 57° W where it cuts the other direction represented by the Mid-Adlantic Ridge to the ESE of it. It is further found in the ridge of the Josephine Bank and in the alignment of the Gorringe Bank, the Ampère Bank, the Seine Bank and the Madeira Archipelago; further also in the NW coast of West Africa continuing in the Cape Verde Islands, likewise in the group of the Canary Islands with Salvages and the Dacia Bank. Lastly we may mention the alignment of elevations to the SW and NE of the St. Paul Rocks.

Closing this enumeration we may mention that the contours of the bathymetric map of the North Atlantic have been drawn by the designer, Mr. Bloem, without any knowledge

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See also Gutenberg, 1945, p. 642.

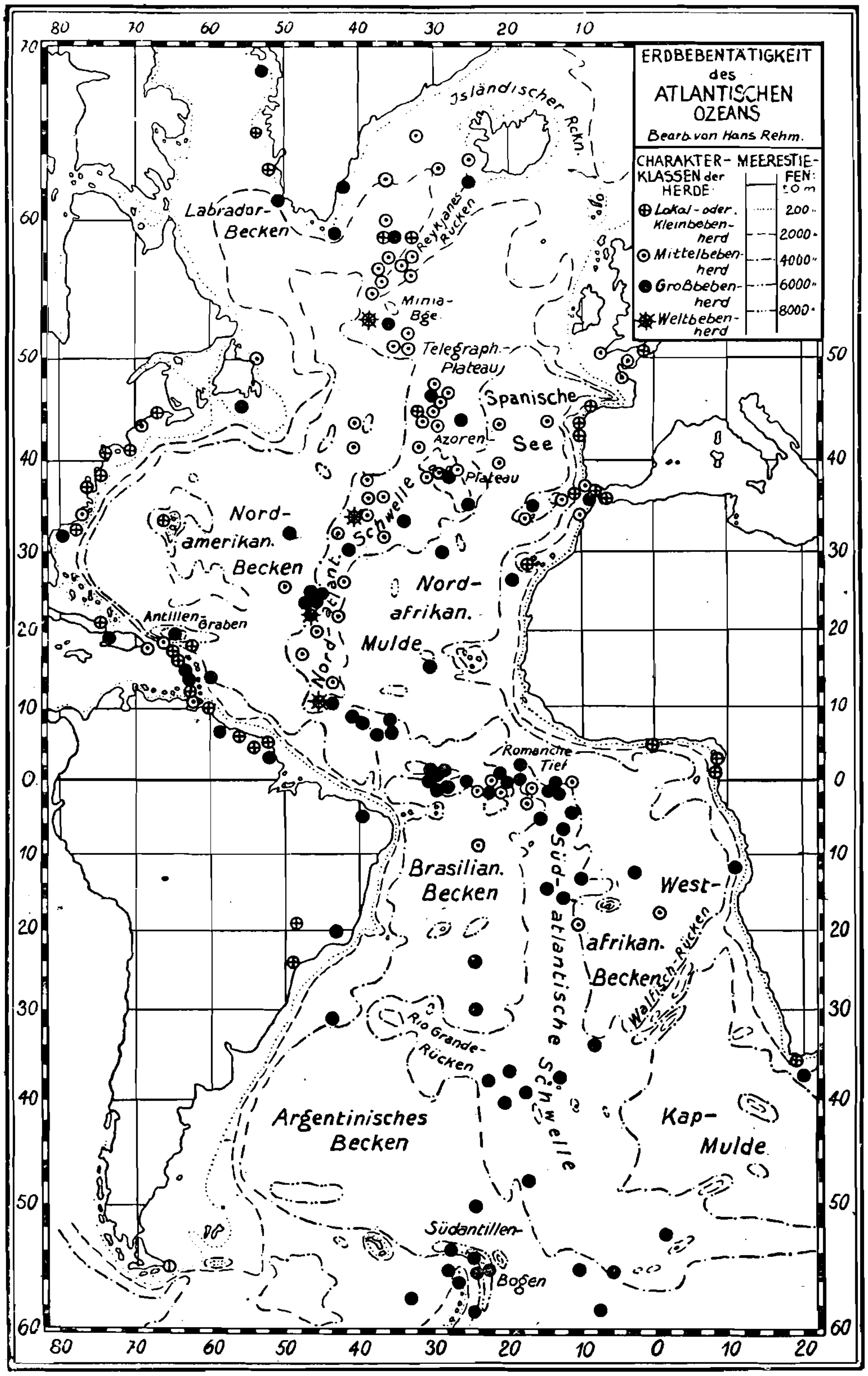

Fig. 25. Map of foci in the Atlantic by H. Rehm (1936)

of the possibillity of prevailing directions in the topography. The data derived from this map are, therefore, not prejudiced.

The topography shows clearly that the elevation of the ridges is usually highest in those areas where the two directions are crossing each other; we find practically all volcanic islands on such crossing-points. If we accept the view that the topography has a volcanic origin and that the ridges occur over fault-planes of the crust the explanation is simple. If the blocks on both sides of these planes move with regard to each other and if this is the case for both planes crossing each other in a certain point, this must bring about a lockering of the crust in this point which may well open up an opportunity for the magma to pass through the crustal layers.

Reverting again to the hypothesis that a shift of the Earth's rotation axis with regard to the crust has brought about this pattern of fault-planes over the whole Earth, it is important to get an idea at what period this could have occurred. Although there is no direct proof for it, the writer thinks that it must have taken place in the first few hunderd million years of the rigid crust's existence; the fact that very old features already show a correlation to the shear pattern is in favour of this view. It is probable that since it occurred no new polar shift of importance could any more come about because the energy necessary for overcoming the friction between all the crustal blocks would absorb too great a part of the available energy provided by the subcrustal currents for enabling these currents to bring about a shift of the crust as a whole. Their effect would since be limited to the movement and the deformation of only those crustal blocks which are in direct contact with the currents. For a further elaboration of these view-points the writer must refer to his paper of 1947 on this subject.

Once a shear-pattern being present it would influence the crust's reaction on all other forces and phenomena acting since on the crust; each force would tend to revive the appropriate planes. If the earthquakes in the Atlantic may be interpreted as a proof of new shear-movements going on along some of the old planes the question arises what may be the origin of these movements. Our present knowledge does not yet seem to allow us an answer to this question.

We shall now return to the gravity field for making a more detailed study of the anomalies. Part of them has already been examined in the two preceding chapters, where we studied the gravity results over volcanic islands and over the continental margins. In chapter III we found that Madeira, the Canary Islands, St. Vincent (Cape Verde Islands) and the Bermudas seem to be regionally compensated according to a large radius of regionality; for the Canary Islands and for Bermudas the number of stations is small and so the result is somewhat uncertain. The islands of Fayal and São Miguel in the Azores appear to be an exception but here also the number of stations is insufficient for sure conclusions; Fayal appears locally compensated and São Miguel according to a small degree of regionality or perhaps also locally.

Assuming our hypothesis, this behaviour does not seem difficult to explain. All the islands constitute a volcanic load on the crust and if this crust is not too much dissected by fault-planes it must react as a rigid whole. The large degree of regionality points to a thickness of not less than 30 km but it may also be more. In the Azores, however, we know that many fault-planes are present, especially in the area of Fayal, and so we can well understand a more local giving way to the load. As even the load of the high island of Hawaii does not seem to be sufficient for breaking the crust and for settling in local isostatic equilibrium, it is clear that we can not expect this for any of the Atlantic islands. We must, therefore, suppose the fault-planes allowing the local isostatic balance of Fayal to have another origin and this agrees with our hypothesis.

It is worth while to examine whether the different submarine banks in the eastern Atlantic show the same character of compensation. For the Josephine Bank we dispose of two profiles from station no. 809 on the bank (depth 666 m) towards the deep sea, viz. one to the west and one to the north. They are both represented in the eastern part of profile no. 63 which, between the stations 809 and 811, follows a northern course. We see that the profile to the west seems simple to interpret; it clearly points to a large degree of regionality according to a radius R of a least 116.2 km. Towards the north, however, the meaning of the gravity results is less clear; the high value of the anomaly over station No. 811 e.g. does not disappear for any of the methods of reduction and so the difference from the value of No. 809 appears to be disturbed by another cause; we are thus prevented from drawing conclusions about the way of compensation of the bank. We may perhaps attribute this complication to the direction of this profile which does not differ much from the azimuth of about 40° W of the fault-plane suspected to have given rise to this bank; in the length-direction of these faults we may expect rather irregular gravity values.

A similar uncertainty seems to attend the interpretation of the profile over the stations Nos. 474, 475 and 476 which forms part of profile No. 58. At station No. 475 it cuts a ridge connecting the Josephine and Gorringe Banks which in the frame-work of our hypothesis can probably be attributed to a fault-plane in the second direction. We find a fairly high positive anomaly at station No. 475 over this ridge which does not disappear for any reduction-method. So here also the decision about the way of compensation of the ridge is hampered by irregularities over the suspected fault.

The profile of the stations Nos. 480, 481 and 482, forming also part of profile No. 58, cuts the ridge running WNW from the neighbourhood of the mouth of the Douro. The part towards the south of the ridge points to local and that to the north rather to regional compensation according to a radius R of somewhat less than 116.2 km. In connection with this profile it seems worth while to examine the fairly large anomalies in the stations 493 and 494 of profile No. 59; they are found over two smaller elevations of the sea-floor. The anomaly over station 494 is the largest of the two. Now this station is in line with the supposed continuation towards the WNW of the fault-plane connected with the ridge here discussed and so the question may be raised whether the small ridge and the high positive anomaly are also related to this fault.

The anomaly in station 493 seems to be connected with another feature.

If our supposition about station No. 494 would be justified, we might perhaps expect some further evidence of our fault-plane near station No. 732 of profile No. 60 or perhaps further to the SW. Examining this profile we see indeed an irregularity in the anomaly-curves between the stations Nos. 732 and 734 and so this may indeed be the case but, if so, it is a different effect from that in profile No. 59 as, moreover, the character of the irregularity in profile No. 59 differed already from that in profile No. 58. The variability of the features along a fault makes it possible to accept such a correlation; it is certainly true that all three profiles show a marked irregularity in the corresponding spots. The profiles Nos. 59 and 60 show another well-marked irregularity near the stations 491, resp. 428

and 729 but an interpretation does not yet seem possible before more local research in sounding and gravity-work has been done here; profile No. 58 does not show any corresponding feature.

This concludes the examination of the material available for the study of the banks; the other features crossed have too small dimensions for serving for this purpose. Our conclusion of this short investigation can be that the profiles show a tendency towards regional compensation but that in most cases complications are present which render this conclusion uncertain. This result seems to be in good harmony with our hypothesis of the banks being connected with a system of fault-planes in the crust in the same way as the islands seem to be; in most cases their origin is probably also volcanic, at least for the chief part of their topography. This explains also their irregular cross-section and the variable height along the axis as well as the more or less straight ground-plan of their axis.

During the expedition of Hr. Ms. Submarine O. 16 the rough seas have in a number of cases led to a longer dive than normal and this gave an opportunity for a second observation at a short distance from the first. Among these pairs of stations there are five where the depths differ considerably for the two stations of the pair and so they make it possible to have a short distance check on the degree of regionality of the isostatic compensation. As the following table shows, the results of four of the five pairs confirm our conclusion that in general regional compensation prevails. The table gives the anomalies for $T = 20$ km with local compensation and for $T = 30$ km with local compensation, regional compensation with a radius R of 116.2 km, and regional compensation with $R = 232.2$ km.

Station nr.	Latitude	Longitude	Depth m	Anomalies in mgal.			
				$T = 20$ km $R = 0$	$T = 30$ km		
					$R = 0$	116.2 km	232.2 km
730	45°39′	13°07′	4620	+ 7	+ 15	+ 18	+ 15
731	45 31	13 16	4110	+ 26	+ 25	+ 20	+ 17
733	44 06	16 10	4635	+ 31	+ 43	+ 48	+ 39
734	43 54	16 29	3620	+ 73	+ 64	+ 50	+ 41
740	38 47.6	27 36.3	1880	+ 43	+ 41	+ 39	+ 20
741	38 41.6	27 40.1	1305	+ 69	+ 60	+ 49	+ 30
742	38 05	29 05	990	+ 54	+ 43	+ 33	+ 12
743	37 55	29 14	380	+ 51	+ 34	+ 20	+ 3
744	38 52	30 29	1145	+ 66	+ 58	+ 51	+ 43
745	38 58	30 37	1480	+ 48	+ 43	+ 40	+ 34

The two first pairs have been observed between the Channel and the Azores and the other three in the Azores Archipelago. The middle one of these last three pairs seems to show a preference for local compensation. It has been observed over the northern slope of the Princess Alice Bank and so this result appears to suggest a fault-plane in the crust between the two stations here. All the other pairs point to regional compensation.

We shall now study the different gravity profiles over the Mid-Atlantic Ridge which are found in the profiles nos. 62, 63, 64, 65, 66, 67, 68 and 69 while the profiles nos. 37 and 38 give details for the last two; these last profiles have already been discussed in the preceding chapter.

Profile 62 shows a fairly clear irregularity in station no. 453 where a decrease of the anomalies is found independent of the system of isostatic reduction. It is situated on the western slope of the Mid-Atlantic Ridge. It is probably some local effect which can not be interpreted without further gravity research and more local sounding in this area.

The ridge itself has not well been sounded here, but according to the map its axis is probably not far from station no. 455. The gravity curves clearly point to local compensation; it causes the deviation of the anomaly at that station practically to disappear. The whole profile shows positive anomalies.

Profile no. 63 is extremely irregular in the area of the Azores. We see e.g. a high positive anomaly in station 801 to the west of the island of Fayal which does not disappear for other systems of reduction. It is impossible to determine its meaning and its character without more local research around this station; at this moment we can only guess that it may be caused by heavy volcanic or plutonic masses connected with the great volcanic activity in this area.

The curve for local compensation and $T = 30$ km of this profile is as a whole again more regular than the other anomaly-curves and so we may conclude that here likewise the Mid-Atlantic Ridge seems to be more or less locally compensated. The disturbances of the local compensation are, however, so strong in this profile that the conclusion is uncertain.

Profile no. 64 does not disagree with our conclusion about local compensation of the Mid-Atlantic Ridge; it diminishes the deviation of the anomaly at station 445 over the highest part of the ridge with regard to those at the neigbouring stations. More local sounding here would be desirable to get a better insight in its topography here. As in all the other Azores profiles the anomalies are all positive.

Before leaving this area of the Azores we may remark that the three anomaly-maps clearly show that the gravity results at the row of stations nos. 447—451 west of the Mid-Atlantic Ridge all show smaller positive anomalies for local than for regional compensation; we see this likewise in the stations 451, 449 and 447 of the three profiles dealt with. So this whole group of stations corroborates the result hitherto found.

The same is true for the profiles nos. 65, 66, 67 and 68. Profile no. 65 shows a fairly detailed topography and here we see again how the local features of the Mid-Atlantic Ridge seem to be more or less regionally compensated (see e.g. the curve for the stations 746—750) while for the ridge as a whole local compensation appears to prevail (see the stations 751—753). We can also say that in this profile the western slope of the ridge especially shows local compensation.

In profile no. 66 the gravity-stations are far apart and the topography is only imperfectly known and so our conclusion can not have much strength. Still, as far as it goes, it seems to indicate local compensation.

The combination of the profiles nos. 67 and 68 also appears to point this way. They run from the same station on the ridge towards the N. and towards the ENE and if we take the mean of the two next stations in both profiles, viz. nos. 533 and 535 we find that local compensation with $T = 30$ km brings this mean at about the same value as no. 534.

Profile no. 68 has been reproduced in detail on a larger scale in profile no. 37 and we have already discussed it in the preceding chapter. We there arrived at the same conclusion. As we have mentioned it in that discussion, the gravity-stations are too far apart in this profile for any possible conclusion about the compensation of the detailed topography.

Profile No. 69 does not offer a good opportunity for determining the way of compensation of the Mid-Atlantic Ridge as a whole. The topography of the ridge is very irregular here and it is entirely dominated by its main feature, the Romanche Trough. The detailed sounding and gravity profiles over this trough are represented by profiles Nos. 38 and 38a which we have discussed at some length in the preceding chapter. We there arrived at the conclusion that the trough is regionally compensated and that it probably represents a great caldeira. For our discussion of the Mid-Atlantic Ridge as a whole we can not use this profile.

Summing up our investigation of the Mid-Atlantic Ridge, we can state that the detailed topography has probably a volcanic character and is in general more or less regionally compensated which seems to be in good agreement with our supposition; only in the Azores, where the crust is probably much dissected by faults, the compensation appears to be more local as far as the few island stations allow us to conclude. The Mid- Atlantic Ridge as a whole seems to be locally compensated but here also we must remark that this statement is uncertain as in most profiles the indications in this sense are not strong. The fact, however, that they all point in the same sense gives our conclusion nevertheless some value.

This result is remarkable. It points to the topography of this ridge having a double character,, viz. that of a general rise covered by local volcanic features. The general rise being locally compensated, it seems that we must attribute it to a thickening of the sialic layers in the same way as we can explain the higher level of the continents and the local compensation of the shelf-slopes at their margins. The geology of the islands in the Atlantic points in general to a sialic layer being present in great parts at least of this ocean and the same result is given by seismology; it is likewise made probable, as Umbgrove remarks [1]) by the petrographical data derived from the ocean-floor and by the similarity of basins and ridges of the Atlantic and of the surrounding continents. We, therefore, may conclude that the supposition of a sialic layer of greater thickness in the area of the Mid-Atlantic Rise does not encounter special difficulties. The gravity results appear no doubt to point this way.

We now come to the last major problem of the gravity results in the North Atlantic which we shall attack in this §, the presence of fields of positive anomalies, especially in the area of the Azores. Examining the anomaly-maps we see that the field in the Azores area does not exactly coincide with the area of somewhat lesser depth of which we mentioned the vague correlation in the beginning of this §; in some parts it extends further as e.g. to the west of the archipelago where the above-mentioned positive anomalies occur over great depth. In the same way it continues further to the east, viz. up to station No. 807. It does not on the other hand seem to follow the ridge to the S. of Sao Miguel nor the Mid-Atlantic Ridge although more observations are needed to be sure about these points. The patch of positive anomalies over Madeira also extends further than the island, viz. over station 467 where the depth is already 4000 m.

1) Umbgrove 1947, e.g. p. 224 e.s.

In view of these facts it appears likely that these positive anomalies are caused by deeper plutonic phenomena in the Earth which are connecfed with the volcanic activity of these areas and which must likewise be the cause of more local high anomaly-values as e.g. in station 801 west of Horta and station 475 between the Gorringe and Josephine Banks. It is likely that the rising of magma along the fault-planes is not restricted to those points where it reaches the surface; we must also expect extensive plutonic activity forming batholiths or laccoliths near the fault-zone.

For explaining the extensive field of positive anomalies over the Azores area it is, however, not sufficient to explain the presence of heavy masses in the crust but we must also make it clear that the isostatic readjustment does not keep pace with it. For explaining this lack of balance we can use the following formula for the isostatic readjustment derived by the writer from the post-glacial uplift of Scandinavia [1]).

$$dA = 3\tfrac{1}{2} \times 10^{-5}\, AL \text{ per year}$$

in which A and dA are the anomaly and its disappearance per year and L the diameter in thousands of kilometers of the patch of anomalies, supposed circular in shape. Putting in our case

$$A = 45 \text{ mgal}$$
$$L = 1 \times 1000 \text{ km},$$

we find

$$dA = 1.6 \times 10^{-3} \text{ mgal per year.}$$

This corresponds to a sinking of 2 cm per year and so the rising of magma, if distributed over the whole area, must correspond to such an amount in order to keep the anomaly at its present value. This does not appear an impossible figure and so we can thus indeed explain the field of positive anomalies over the Azores area. For the other areas the necessary yearly magma-rising can be smaller in the same ratio as the diameter of the area is smaller; for the Madeira area e.g. we should thus find ½ cm per year.

It is of course possible that this magma rising is not confined to the crust but that it likewise takes place in the plastic substratum where it could be caused by the decrease of pressure brought about by the outlet provided by the fault-zones in the crust.

In discussing our explanation we have to realize that another explanation, viz. along the lines mentioned in chapter II for the fields of positive anomalies in the Indonesian Archipelago, i.e. by assuming areas of cooling in the deeper layers of the Earth, appears difficult to accept for this part of the North Atlantic. There is no evidence at all of any convection currents having recently occurred in the plastic layer below the crust in this area and so such a cooling of the deeper layers in the area of the Azores archipelago seems unlikely. For the smaller patches of positive anomalies, moreover, such a deep-seated cause is in itself already improbable.

Accepting the explanation here proposed we should have found a second cause for large areas of positive anomalies at the surface of the Earth. It may be remarked that such areas imply deviations in the regular figure of the geoid and so the presence of irregularities in the figure of the Earth need not surprise us.

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1) Vening Meinesz, 1937. p. 662.

Besides the areas of positive anomalies in the North Atlantic which we have thus tried to explain by volcanic and plutonic activity, there is also a fairly extensive area of negative anomalies bordering the American continent which requires explanation. We shall take up this question, however, in the next § where we shall at the same time deal with similar areas in the other oceans.

§ 2. The profiles 70-76 over the other oceans.

Several parts of these profiles have already been discussed in the previous chapter where we have dealt with the profiles near the margins of the continents and over some other features. We shall now examine them as a whole.

A. Profile No. 70 over the South Atlantic.

The whole western part of this profile from the coast of the Argentine up to and over the Bromley Plateau shows negative anomalies, especially the profile for local isostatic reduction. As the coastal part of this profile as well as the part over the Bromley plateau have been found to be locally compensated [1]), we have probably to prefer these local anomalies. As we have already remarked, negative values have already been found in all the areas bordering on the east-coast of the American continents which have hitherto been surveyed, viz. east of Virginia, east of Pernambuco and south of Rio de Janeiro, and so it makes the impression to be a general feature although of course much more surveying is needed before a statement can be made; we do not yet know at all how extensive the fields are at right angles to the profiles.

East of the Bromley Plateau a series of positive anomalies have been found and the same is true for the area around Tristan da Cunha. To the east of this island the anomalies decrease and in stations Nos. 635 and 636 slight negative values have been found. Further to the east they become positive again and they remain positive practically without interruption over the whole distance up to Capetown. The crossing of the Walvis Ridge (profile No. 48) has already been discussed in the previous chapter on page 123; we found that probably the main ridge is locally compensated and the second ridge to the west of it regionally.

B. Profile no. 71 between Socotra and N. Sumatra.

This profile shows negative anomalies over practically its entire length. Only the values in het stations nos. 18 and 19 in the western part of the crossing from Socotra to Ceylon are positive but small. East of these stations the anomalies become strongly negative, especially in the area of the Laccadive Islands (no. 22) and south of India (no. 23); in station no. 23, for instance, the anomaly varies from —71 mgal for local reduction to —104 mgal for large regionality of compensation. The crossing from Ceylon to Sabang (N. of Sumatra) shows likewise negative anomalies.

C. Profile no. 72 to the southeast of Mauritius.

This profile shows positive anomalies over its whole length. The first part has been represented in detail in profiles nos. 54 and 55 which have been discussed on page 127. The positive anomalies of this profile are contrary to the idea that a longitude term is present

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1) See the discussion of the profiles nos. 44, 45 and 46 on pp. 121 and 122.

in the Earth's gravity; according to the formulas given by Heiskanen a.o. the anomalies in this area ought in that case to be negative.

D. Profile no. 73 to the west of Australia.

At sea this profile shows small anomalies of variable sign; their mean value is slightly negative for local compensation (—5 mgal) and slightly positive for regional compensation (+7 mgal for $R = 116.2$ km) but as the continental edge seems to be locally compensated we probably have to prefer the first figure. Below the continental margin strong negative anomalies are found [1]).

E. Profile no. 74 between the N.W. Cape of Australia and Java.

This profile shows variable anomalies which for its southern part are all negative; in its northern part we see the strong negative values of the tectonic belt south of Java which are separated by three slightly positive anomalies in the stations nos. 174, 175 and 723 from the negative values in the southern part. As it has already been remarked in the discussion of profile no. 57 on pp. 129 e.s. it is difficult to give an interpretation of the negative anomalies in the southern part before more data in the area between Australia and Indonesia are available.

F. Profile no. 75 over the Pacific from San Francisco to Guam.

After a few stations with negative anomalies west of San Francisco the anomalies change to positive values which continue over a great part of the Pacific at least for local isostatic reduction or for a small degree of regionality. Near the 180th degree of longitude we find two negative values and further west a broader area of negative anomalies which in the neighbourhood of Guam changes again to positive values. For a larger degree of regionality the distribution is slightly different but the tendency towards slight positive anomalies over a great part of the Pacific remains the same.

The profile over Honolulu has been discussed in chapter III; it shows a large degree of regionality of the isostatic compensation, which points to these volcanic islands being loads on an unbroken crust.

G. Profile no. 76 over Yap and Strait Surigao.

This profile shows fairly strong positive anomalies over the whole basin between the Marianas and the Philippine Islands but as the stations are far apart the continuity of these positive values is not certain. The profiles over the Guam, Yap and Mindanao Troughs have been discussed in chapter II, pp. 87 e.s.

§ 3. Short general discussion of the anomaly-fields over the oceans.

In the table of p. 146 the mean values of the anomalies of the different parts of the oceanic profiles have been put together.

A discussion of the meaning of the different fields of anomalies revealed by these profiles is no doubt premature; we need a much more complete survey than those isolated

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1) See also the discussion of profile no. 56 on pp. 127 e.s.

Mean isostatic anomaly in mgal for different oceanic profiles.

N° and name of profile		Number of stations	Local isost. $T=30$	Regional isostatic anom. $T=30$ km			
				R = 58.1	116.2	174.3	232.4
60,	Channel to Azores	25	+23	+25	+26	+28	+30
58, 59	Channel to Madeira	33	+10	+12	+14	+17	+21
	Azores to Madeira	10	+22	+23	+24	+27	+30
59	Madeira to Canaries	4	−13	−10	− 8	− 4	− 2
63	Azores to Lisbon	12	+30	+27	+22	+21	+21
66	Canaries to Mid-Atl. Rise at 24° N	7	+ 3	+ 7	+12	+15	+18
61, 63	Azores Archipelago	17	+44	+43	+38	+32	+25
65	Mid-Atlantic Rise at 34° N	6	+26	+25	+21	+18	+14
66 + St. 829, 830	Mid-Atlantic Rise at 25° N	4	+16	+15	+10	+ 5	0
68	Mid-Atlantic Rise at 7° N	2	+ 4	− 2	−12	−16	−18
63	Azores to Cape Henry	20	− 1	− 1	− 1	+ 2	+ 6
65	Mid-Atl. Rise at 34° N to Bermudas	13	0	+ 2	+ 2	+ 4	+ 7
65	Bermudas to Cape Henry	5	−26	−23	−23	−21	−19
66 + St. 825-828	Mid-Atl. Rise at 25° N to Puerto Rico	8	− 4	− 2	0	+ 2	+ 3
67	Cape Verde Is to Mid-Atl. Rise at 7° N	9	−12	−10	− 8	− 6	− 4
68	Dakar to Mid-Atl. Rise at 7° N	10	−10	− 9	− 9	− 7	− 5
69	Konakry to Mid-Atl. Rise at 1° N	9	− 1	+ 1	+ 3	+ 6	+10
69	Mid-Atl. Rise at 1° S to Pernambuco (Romanche Tr. not included)	14	−22	−22	−22	−20	−18
70	Mar del Plata to Bromley Plateau	9	− 6	− 5	− 4	− 1	+ 3
70	Bromley Plateau	3	−14	−14	−23	−35	−48
70	Bromley Plat. to Tristan da C.	8	+14	+15	+14	+13	+13
70	Tristan da C. to Walvis Ridge	9	+ 6	+ 6	+ 5	+ 5	+ 6
70	Walvis Ridge to Capetown	11	+12	+15	+17	+18	+20
	Capetown to S. pt. Madagascar	16	+11	+12	+15	+20	+25
71	Socotra to Ceylon	6	−31	−31	−35	−37	−37
71	Ceylon to N. Sumatra	3	−32	−23	−17	−12	− 9
72	Mauritius to 30° S, 72° E	13	+18	+21	+22	+25	+26
73	Fremantle to 32° S, 107° E	5	− 5	+ 1	+ 7	+13	+19
74	N.W. Cape Austr. to 13° S, 113° E	9	−27	−35	−43	−45	−45
75	S. Francisco to 30° N, 140° W	6	− 4	0	+ 1	+ 3	+ 3
75	30° N, 140° W to Honolulu	6	+13	+13	+13	+14	+16
75	Honolulu to 15° N, 164° E	11	+10	+ 7	+ 3	+ 1	0
75	15° N, 164° E to Guam (Nero Tr. not included)	5	− 8	− 6	− 6	− 5	− 3

profiles before a first attempt could be made. Such a discussion ought, moreover, also to comprise the data for the adjoining continents. We shall here restrict ourselves to a few tentative remarks.

In the first place it does not seem likely to the writer that a systematic longitude term in gravity in the way it has often been suggested is present. The size of the anomaly-fields and their distribution do not at all point to such a term but rather to effects in the Earth of smaller size which find no doubt their origin in less deep-seated causes. Of course the anomaly-field of the Earth when developed in spherical harmonics will show a longitude term but there is no reason for supposing this term among all the others to have a separate cause. Such a cause is extremely unlikely; a flattening of the Earth in the plane of the equator does not represent equilibrium and so it is difficult to understand how the Earth could maintain a disturbance of so large a size up to the present period.

In the second place the writer wants to draw attention to a curious coincidence. Examining the distribution of the fields of negative anomalies we see that a number of them appears to correspond to areas which have been supposed to have sunk down below sea-level. In the first place we may mention the supposed borderlands Cascadia and Appalachia which have been assumed to have provided sediments for the Sierra Nevada resp. Appalachian geosynclines. The supposition of the last borderland has, moreover, received support by Ewing's well-known seismic results on the eastcoast of Virginia which show the tertiary surface to slope gradually downwards when going from the coast towards the deep sea. The gravity profiles on both coasts show negative values in the area adjoining the continent.

Secondly we may point to the isthmian links as supposed by Bailey Willis [1]). The Brazil-Guinea Ridge as well as the Africa-India Isthmus seem to show negative anomalies, the last in the crossing of the Laccadive Islands mentioned under E. in the above discussion. Willis, moreover, extends the permanent continental masses in his map over the area to the south and southeast of Rio de Janeiro which are likewise marked by negative anomalies. Lastly we may perhaps also mention the area of negative anomalies west and northwest of Australia as an area where a land-connection has been supposed.

It is no doubt possible that these coincidences are fortuitous and that, therefore, no deeper cause can be found but it seems worth while to keep the point in mind. A systematic gravity survey of the areas mentioned may help to come to a decision.

In the third place the writer should wish to point out that deeper temperature deviations in the Earth could explain anomaly-fields at the surface. In chapter II we have already discussed this point for areas where cooling may be assumed to have been brought about by convection-currents. It appears hardly doubtful, however, that also areas of higher temperature are likely to occur. The higher percentage of radio-activity of the sial with regard to the sima makes it probable e.g. that below the continents the temperature will be higher than below the oceans and perhaps this higher temperature extends also somewhat over belts surrounding the continents. The consequence would be a field of slight negative anomalies over the continents possibly extending over the surrounding oceanic belts. Because the formula of normal gravity has been derived from the gravity values on the continents, this effect might explain the tendency of slightly positive anomalies over the oceans which seems to be

1) Bailey Willis, 1932.

present. The mean positive anomaly over the oceans, however, seems less than the writer has originally estimated it; in the first place the indirect isostatic reduction has somewhat reduced it and in the second place the stations in the areas bordering on the continents have in the beginning been isostatically reduced according to the supposition of regional compensation and this gives higher values there than the assumption of local compensation which in those areas seems to be nearer to the truth.

The supposition of a higher temperature inside the Earth below the continents than below the oceans can of course only be true for those areas where this difference has not yet started convection-currents destroying it.

In the fourth place we may point to the possibility suggested in § 1 of this chapter for part of The North Atlantic that strong recent volcanism in an area may perhaps lead to a field of positive anomalies.

Lastly we may expect that convection-currents will bring about fields of anomalies. It is true that we have found in chapter II that the anomalies brought about by these currents can not be predicted but it seems nevertheless likely that effects will be present.

We thus see that many possible causes for extensive fields of anomalies can be surmised and this list is no doubt far from being complete. These extensive fields are of especial interest to the geodesist because they must bring about wide-spread deviations of the geoid from the equilibrium spheriod.

We have not mentioned here nor elsewhere in this publication the possibility of chemical changes, of differentiation or of changes of state which might cause deviations of density in parts of the Earth. The writer does not think there are clear indications of any of these processes on a large scale and as they make it more difficult to assume repeated convection, which may explain a number of problems otherwise hard to account for, the writer feels inclined not to suppose such processes unless the facts lead to such an assumption.

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Description of the tables

Table of Free-air and Isostatic Anomalies for all the stations (left page).

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3. Mean error of latitude,
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Table of effects of Topography, of Indirect reduction and of Compensation (right page).

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2. Effect of topography, zones $A - 0_2$,
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4. Hayford reduction, effect of compensation, zones $A - 0_2$,
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6. Indirect reduction for Airy method, $T = 30$ km,
$T = 20$ km,
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$T = 20$ km,
8. Local Airy reduction, effects of top. + comp., zones $18 - 1$, $T = 30$ km,
$T = 20$ km,

9 — 18. Id. for Regional Airy reductions for different radii, $T = 30$ km,
$T = 20$ km.

Table of Free-air and Isostatic Anomalies for all the Stations.

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km.					
											$R = 0$ Heisk.	29.05	58.1	116.2	174.3	232.4
1	36°55′	N	2	7°20′	W	2	110	5	+ 29	+ 11	+ 18 + 21	+ 18 + 21	+ 18 + 21	+ 18 + 21	+ 17 + 20	+ 14 + 17
2	36°52′	N	2	7°42′	W	2	540	4	+ 6	+ 7	+ 16 + 20	+ 16 + 19	+ 16 + 20	+ 14 + 18	+ 10 + 14	+ 5 + 8
3	36°17′	N	2	1°05′	W	2	2500	6	+ 24	+ 115	+ 82 + 58	+ 85 + 62	+ 91 + 70	+ 113 + 98	+ 136 + 126	+ 155 + 150
4	37°01′	N	2	7°55′	E	2	100	5	+ 78	+ 58	+ 58 + 60	+ 58 + 59	+ 56 + 56	+ 55 + 54	+ 55 + 54	+ 57 + 56
5	36°47′6	N	0.0	10°11′.4	E	0.0	Tunis	2	+ 28	+ 25	+ 34 + 37	+ 34 + 37	+ 33 + 37	+ 30 + 34	+ 26 + 29	+ 21 + 23
6	34°58′	N	2	16°47′	E	2	2200	5	— 1	+ 16	+ 8 + 5	+ 8 + 7	+ 7 + 4	+ 2 — 1	+ 1 — 3	+ 1 — 2
7	32°06′	N	2	24°32′	E	2	115	4	+ 44	+ 18	+ 30 + 34	+ 30 + 34	+ 29 + 32	+ 27 + 30	+ 21 + 22	+ 15 + 16
8	31°58′	N	2	28°52′	E	2	2020	5	— 64	— 24	— 43 — 54	— 42 — 55	— 40 — 50	— 32 — 39	— 24 — 29	— 17 — 21
9	31°09′	N	0.2	29°52′.4	E	0.2	Alexan- dria	2	+ 6	— 14	— 10 — 5	— 10 — 6	— 11 — 8	— 17 — 15	— 22 — 20	— 25 — 24
10	31°32′	N	2	29°44′	E	2	620	4	— 18	— 21	— 20 — 18	— 20 — 18	— 21 — 19	— 25 — 25	— 29 — 30	— 32 — 33
11	29°56′	N	0.2	32°33′3	E	0.2	Suez	4	— 1	+ 24	+ 24 + 23	+ 25 + 24	+ 27 + 27	+ 30 + 31	+ 31 + 32	+ 31 + 32
12	26°12′	N	2	35°02′	E	2	1080	5	+ 20	+ 73	+ 56 + 45	+ 57 + 47	+ 59 + 49	+ 68 + 59	+ 80 + 73	+ 91 + 86
13	20°42′	N	2	38°28′	E	2	1260	4	— 8	+ 47	+ 28 + 17	+ 29 + 18	+ 31 + 20	+ 39 + 31	+ 51 + 43	+ 63 + 57
14	15°11′	N	2	41°58′	E	2	830	5	+ 5	+ 69	+ 58 + 48	+ 59 + 51	+ 62 + 55	+ 69 + 63	+ 78 + 73	+ 88 + 84
15	14°24′	N	2	42°30′	E	2	80	4	+ 9	+ 39	+ 28 + 21	+ 28 + 21	+ 31 + 24	+ 34 + 33	+ 50 + 46	+ 58 + 56
16	12°47′.6	N	0.0	44°58′.8	E	0.0	Aden	5	+ 21	+ 28	+ 25 + 24	+ 25 + 24	+ 25 + 23	+ 28 + 26	+ 32 + 31	+ 34 + 31
17	11°54′	N	2	53°04′	E	2	80	6	+ 19	— 67	— 38 — 18	— 40 — 21	— 46 — 28	— 67 — 56	— 87 — 79	— 102 — 96
18	10°02′	N	2	55°25′	E	2	4210	6	— 19	+ 4	+ 3 — 11	+ 8 — 1	+ 11 + 11	+ 3 + 2	— 2 — 4	— 3 — 4
19	7°57′	N	2	61°54′	E	2	4390	4	— 9	+ 7	0 — 8	+ 2 — 6	+ 2 — 6	+ 7 + 2	+ 14 + 11	+ 18 + 19
20	7°53′	N	2	65°58′	E	2	4390	6	— 33	— 29	— 30 — 34	— 28 — 32	— 29 — 32	— 33 — 35	— 33 — 36	— 31 — 33
21	7°56′	N	2	68°46′	E	2	4390	6	— 42	— 35	— 40 — 43	— 38 — 43	— 42 — 47	— 41 — 46	— 41 — 45	— 37 — 40

Table of effects of Topography, of Indirect Isostatic Reduction and of Compensation.

No.	Topog	Hayford 113.7 km			I.R T=30	R=0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		Reductions in 0.1 mgal															
		I.R.	Comp A-0_2	t+c 18-1	I.R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
1	— 84	+ 11	+ 83	+ 173	+ 4 + 1	+ 103 + 112	+ 85 + 56	+ 100 + 112	+ 85 + 56	+ 100 + 109	+ 85 + 56	+ 97 + 104	+ 92 + 62	+ 90 + 98	+ 111 + 76	+ 75 + 81	+ 150 + 120
2	— 409	+ 15	+ 180	+ 208	+ 6 + 3	+ 200 + 222	+ 106 + 68	+ 193 + 208	+ 106 + 68	+ 190 + 197	+ 109 + 70	+ 205 + 212	+ 119 + 76	+ 214 + 229	+ 149 + 100	+ 191 + 206	+ 222 + 183
3	—1708	+ 8	+ 834	— 47	+ 2 + 1	+1167 +1392	— 30 — 27	+1136 +1354	— 36 — 27	+1075 +1279	— 36 — 27	+ 859 + 995	— 44 — 31	+ 645 + 727	— 58 — 44	+ 483 + 531	— 91 — 83
4	— 91	+ 10	+ 202	+ 83	+ 2 0	+ 251 + 239	+ 39 + 28	+ 255 + 255	+ 39 + 28	+ 268 + 279	+ 39 + 28	+ 274 + 295	+ 46 + 32	+ 259 + 283	+ 57 + 43	+ 218 + 235	+ 86 + 75
5	— 18	+ 9	— 55	+ 95	+ 1 0	— 86 — 98	+ 48 + 30	— 87 — 98	+ 48 + 30	— 82 — 101	+ 48 + 30	— 63 — 75	+ 56 + 33	— 33 — 39	+ 72 + 47	— 16 — 19	+ 108 + 91
6	—1443	+ 26	+1024	+ 226	+ 8 + 4	+1228 +1303	+ 119 + 74	+1223 +1290	+ 119 + 74	+1236 +1311	+ 124 + 77	+1256 +1347	+ 147 + 93	+1200 +1310	+ 217 + 150	+1026 +1104	+ 383 + 347
7	— 89	+ 11	+ 217	+ 117	+ 2 0	+ 163 + 147	+ 60 + 38	+ 164 + 156	+ 60 + 38	+ 172 + 173	+ 62 + 39	+ 189 + 187	+ 72 + 46	+ 224 + 239	+ 48 + 69	+ 213 + 226	+ 165 + 143
8	—1442	+ 16	+ 900	+ 128	+ 5 + 2	+1163 +1299	+ 67 + 44	+1147 +1282	+ 67 + 44	+1123 +1255	+ 71 + 47	+1033 +1139	+ 84 + 54	+ 911 +1004	+ 122 + 87	+ 750 + 814	+ 212 + 193
9	— 14	+ 8	+ 122	+ 81	+ 2 0	+ 126 + 102	+ 41 + 24	+ 128 + 108	+ 41 + 24	+ 147 + 130	+ 42 + 24	+ 188 + 191	+ 51 + 31	+ 214 + 230	+ 74 + 49	+ 196 + 209	+ 129 + 110
10	— 411	+ 12	+ 325	+ 105	+ 4 + 1	+ 369 + 378	+ 55 + 34	+ 368 + 374	+ 55 + 34	+ 377 + 383	+ 59 + 37	+ 411 + 432	+ 69 + 43	+ 417 + 455	+ 102 + 71	+ 370 + 396	+ 178 + 160
11	— 9	— 2	— 173	— 68	— 4 — 4	— 206 — 194	— 41 — 31	— 215 — 204	— 41 — 31	— 230 — 232	— 42 — 31	— 256 — 269	— 48 — 35	— 245 — 265	— 64 — 50	— 211 — 227	— 98 — 89
12	— 691	+ 1	+ 304	— 145	— 2 — 2	+ 419 + 500	— 87 — 61	+ 408 + 482	— 87 — 61	+ 390 + 464	— 88 — 61	+ 311 + 366	— 98 — 67	+ 214 + 243	— 117 — 83	+ 150 + 164	— 163 — 131
13	— 866	+ 4	+ 452	— 142	— 1 — 2	+ 596 + 682	— 85 — 62	+ 586 + 669	— 85 — 62	+ 565 + 652	— 85 — 62	+ 486 + 549	— 92 — 68	+ 388 + 434	— 108 — 80	+ 305 + 332	— 144 — 114
14	— 550	— 1	+ 99	— 192	— 3 — 5	+ 142 + 211	— 119 — 86	+ 131 + 184	— 119 — 86	+ 106 + 147	— 123 — 90	+ 54 + 77	— 136 — 97	— 1 + 6	— 174 — 129	— 22 — 19	— 250 — 217
15	— 64	— 3	— 45	— 186	— 5 — 4	— 5 + 36	— 115 — 84	— 9 + 29	— 115 — 84	— 29 + 8	— 119 — 88	— 96 — 76	— 131 — 95	— 168 — 175	— 169 — 127	— 178 — 187	— 245 — 213
16	— 10	+ 2	— 19	— 43	— 2 — 2	— 3 + 3	— 27 — 21	— 2 + 6	— 27 — 21	— 3 + 11	— 27 — 21	— 27 — 18	— 32 — 22	— 56 — 58	— 40 — 31	— 63 — 67	— 56 — 50
17	— 106	+ 33	+ 458	+ 475	+ 13 + 7	+ 428 + 336	+ 230 + 139	+ 448 + 355	+ 231 + 139	+ 505 + 428	+ 239 + 143	+ 690 + 687	+ 265 + 161	+ 800 + 856	+ 348 + 227	+ 742 + 791	+ 555 + 461
18	—2824	+ 54	+1862	+ 679	+ 20 + 11	+2283 +2554	+ 304 + 178	+2233 +2457	+ 306 + 178	+2192 +2334	+ 314 + 183	+2233 +2392	+ 351 + 209	+2147 +2349	+ 483 + 312	+1827 +1970	+ 821 + 694
19	—3005	+ 58	+2029	+ 759	+ 21 + 11	+2569 +2799	+ 327 + 189	+2547 +2780	+ 329 + 189	+2540 +2773	+ 337 + 194	+2247 +2660	+ 377 + 220	+2254 +2476	+ 503 + 319	+1880 +2029	+ 833 + 690
20	—3020	+ 59	+2129	+ 792	+ 21 + 10	+2625 +2828	+ 340 + 194	+2605 +2807	+ 342 + 195	+2611 +2798	+ 353 + 202	+2605 +2802	+ 393 + 228	+2471 +2707	+ 532 + 336	+2084 +2257	+ 899 + 749
21	—3033	+ 60	+2151	+ 755	+ 21 + 11	+2663 +2848	+ 326 + 187	+2649 +2839	+ 328 + 188	+2671 +2875	+ 339 + 193	+2639 +2846	+ 378 + 219	+2481 +2720	+ 518 + 329	+2087 +2257	+ 876 + 747

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. $R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
22	8°06′	N	2	72°48′	E	2	1870	5	— 34	— 60	— 48 — 44	— 48 — 44	— 51 — 47	— 54 — 51	— 59 — 56	— 64 — 61
23	7°20′	N	2	77°28′	E	2	160	5	— 28	— 93	— 71 — 58	— 73 — 60	— 78 — 67	— 90 — 83	— 99 — 95	— 104 — 101
24	6°56′9	N	0.0	79°51′.0	E	0.0	Colombo	3	+ 23	— 30	— 2 + 9	— 2 + 9	— 4 + 8	— 10 + 1	— 20 — 9	— 32 — 23
25	5°50′	N	2	80°12′	E	2	65	7	+ 68	— 50	— 33 — 15	— 35 — 21	— 41 — 32	— 50 — 45	— 56 — 51	— 62 — 57
26	5°32′	N	2	80°12′	E	2	3920	8	— 78	— 28	— 41 — 61	— 36 — 53	— 28 — 39	— 15 — 19	— 8 — 7	— 1 — 2
27	5°44′	N	2	87°07′	E	2	4020	7	— 27	— 24	— 24 — 29	— 22 — 26	— 23 — 27	— 24 — 26	— 22 — 24	— 22 — 21
28	6°02′	N	2	92°50′	E	2	4100	7	— 77	— 18	— 32 — 57	— 26 — 44	— 19 — 28	— 13 — 17	— 7 — 9	— 3 — 3
29	5°53′.2	N	0.0	95°18′.7	E	0.0	Sabang	2	+ 83	+ 12	+ 19 + 27	+ 18 + 25	+ 16 + 21	+ 11 + 15	+ 8 + 10	+ 7 + 9
30	6°01′	N	2	96°55′	E	2	1420	7	— 5	+ 25	+ 21 + 14	+ 23 + 16	+ 25 + 19	+ 34 + 31	+ 45 + 45	+ 52 + 54
31	6°01′	N	2	96°59′	E	2	1140	6	0	+ 17	+ 15 + 9	+ 16 + 10	+ 18 + 13	+ 26 + 24	+ 34 + 34	+ 40 + 41
32	4°26′	N	2	98°53′	E	2	54	7	— 1	— 9	— 2 — 1	— 2 — 1	— 1 — 1	0 + 1	+ 3 + 4	+ 6 + 8
33	49°04′	N	2	5°55′	W	2	109	8	+ 1	— 12	— 4 — 1	— 4 — 1	— 4 — 1	— 4 — 1	— 4 — 1	— 4 — 1
34	44°59′	N	2	8°39′	W	2	4720	7	— 30	+ 30	— 3 — 21	+ 1 — 18	+ 4 — 12	+ 11 0	+ 25 + 17	+ 36 + 30
35	37°22′.8	N	0.0	6°00′	W	0.0	Sevilla	4	+ 14	+ 19	+ 26 + 25	+ 26 + 26	+ 28 + 28	+ 30 + 33	+ 30 + 33	+ 29 + 32
36	36°10′	N	2	3°25′	W	2	620	5	+ 2	+ 26	+ 14 + 6	+ 15 + 7	+ 17 + 9	+ 28 + 22	+ 39 + 36	+ 49 + 47
37	36°52′	N	2	0°01′	E	2	2540	9	— 16	+ 60	+ 24 + 5	+ 26 + 7	+ 29 + 9	+ 47 + 31	+ 71 + 60	+ 93 + 86
38	37°08′	N	2	4°17′	E	2	2300	10	— 45	+ 38	+ 24 + 4	+ 28 + 13	+ 34 + 25	+ 42 + 37	+ 49 + 45	+ 53 + 50
39	37°05′	N	2	4°28′	E	2	1780	13	— 28	+ 27	+ 16 + 3	+ 19 + 8	+ 24 + 17	+ 29 + 25	+ 35 + 31	+ 38 + 36
40	36°20′	N	2	15°31′	E	2	1130	12	+ 1	— 4	— 11 — 12	— 11 — 14	— 12 — 16	— 5 — 12	— 6 — 7	— 3 — 4
41	35°13′	N	2	18°31′	E	2	3630	15	— 22	+ 27	+ 1 — 12	+ 3 — 9	+ 4 — 8	+ 6 — 3	+ 11 + 2	+ 18 + 11
42	33°56′	N	2	22°12′	E	2	2180	6	— 47	— 18	— 29 — 35	— 28 — 32	— 29 — 33	— 30 — 35	— 27 — 31	— 21 — 24

No.	Topog	Hayford 113.7 km			I.R T=30	R=0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t+c 18-1	I.R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
22	—13[illegible]5	+ 40	+ 997	+ 527	+ 16 + 8	+1183 +1239	+ 250 + 154	+1179 +1242	+ 252 + 154	+1195 +1268	+ 259 + 159	+1205 +1287	+ 287 + 177	+1163 +1269	+ 372 + 248	+1001 +1076	+ 590 + 491
23	— 133	+ 32	+ 360	+ 391	+ 12 + 6	+ 368 + 307	+ 187 + 121	+ 383 + 325	+ 187 + 121	+ 425 + 389	+ 191 + 124	+ 533 + 546	+ 209 + 134	+ 570 + 616	+ 259 + 177	+ 508 + 544	+ 376 + 310
24	— 16	+ 29	+ 58	+ 456	+ 12 + 5	+ 39 + 20	+ 217 + 132	+ 39 + 21	+ 217 + 132	+ 48 + 24	+ 222 + 135	+ 91 + 80	+ 239 + 147	+ 137 + 142	+ 293 + 189	+ 142 + 149	+ 414 + 322
25	— 213	+ 44	+ 783	+ 564	+ 17 + 8	+ 937 + 873	+ 264 + 162	+ 958 + 937	+ 265 + 162	+1016 +1042	+ 273 + 166	+1078 +1150	+ 300 + 185	+1048 +1143	+ 383 + 252	+ 897 + 965	+ 595 + 488
26	—2621	+ 46	+1499	+ 580	+ 18 + 9	+1964 +2283	+ 269 + 162	+1910 + 2202	+ 271 + 162	+1825 +2057	+ 278 + 167	+1672 +1838	+ 306 + 186	+1507 +1657	+ 392 + 246	+1249 +1350	+ 584 + 498
27	—2749	+ 62	+1917	+ 738	+ 22 + 10	+2377 +2577	+ 325 + 186	+2355 +2548	+ 327 + 186	+2355 +2545	+ 335 + 191	+2326 +2512	+ 374 + 217	+2180 +2389	+ 502 + 318	+1834 +1981	+ 840 + 697
28	—2645	+ 47	+1497	+ 511	+ 18 + 9	+1937 +2283	+ 243 + 152	+1875 +2153	+ 245 + 152	+1797 +1989	+ 250 + 157	+1705 +1860	+ 277 + 174	+1560 +1715	+ 365 + 246	+1304 +1407	+ 579 + 488
29	— 47	+ 32	+ 424	+ 305	+ 13 + 6	+ 518 + 498	+ 153 + 98	+ 527 + 526	+ 153 + 98	+ 548 + 563	+ 157 + 101	+ 584 + 615	+ 171 + 109	+ 579 + 632	+ 209 + 140	+ 506 + 543	+ 290 + 241
30	— 937	+ 24	+ 431	+ 183	+ 8 + 3	+ 578 + 685	+ 88 + 55	+ 566 + 668	+ 88 + 55	+ 544 + 640	+ 88 + 55	+ 449 + 520	+ 92 + 56	+ 329 + 374	+ 99 + 61	+ 245 + 268	+ 114 + 76
31	— 763	+ 27	+ 390	+ 178	+ 8 + 3	+ 525 + 617	+ 85 + 55	+ 514 + 601	+ 85 + 55	+ 491 + 571	+ 85 + 55	+ 409 + 470	+ 89 + 55	+ 318 + 358	+ 97 + 63	+ 244 + 265	+ 114 + 81
32	— 54	+ 24	+ 4	+ 103	+ 6 + 1	+ 12 + 22	+ 43 + 33	+ 12 + 19	+ 43 + 33	+ 9 + 18	+ 43 + 33	— 4 + 3	+ 39 + 31	— 20 — 20	+ 28 + 20	— 23 — 26	+ 4 — 7
33	— 102	+ 11	+ 53	+ 171	+ 3 + 2	+ 64 + 70	+ 85 + 55	+ 63 + 70	+ 85 + 55	+ 63 + 67	+ 85 + 55	+ 60 + 65	+ 89 + 56	+ 52 + 59	+ 97 + 61	+ 46 + 51	+ 113 + 75
34	—3186	+ 44	+2036	+ 503	+ 17 + 10	+2654 +2939	+ 243 + 147	+2617 +2904	+ 245 + 147	+2582 +2839	+ 251 + 152	+2468 +2698	+ 287 + 173	+2225 +2449	+ 394 + 261	+1837 +1991	+ 674 + 581
35	+ 10	+ 6	— 135	+ 73	0 0	— 158 — 142	+ 31 + 21	— 164 — 150	+ 31 + 21	— 178 — 175	+ 31 + 21	— 201 — 216	+ 29 + 20	— 199 — 217	+ 25 + 15	— 172 — 187	+ 14 + 1
36	— 467	+ 6	+ 249	— 26	+ 1 — 1	+ 366 + 443	— 22 — 18	— 356 + 433	— 22 — 18	+ 335 + 414	— 22 — 18	+ 237 + 286	— 31 — 23	+ 139 + 163	— 47 — 38	+ 85 + 95	— 86 — 82
37	—1732	+ 12	+ 992	— 28	+ 4 + 2	+1350 +1529	— 22 — 16	+1330 +1515	— 22 — 16	+1297 +1495	— 22 — 16	+1121 +1274	— 27 — 19	+ 893 + 997	— 34 — 25	+ 690 + 754	— 55 — 46
38	—1598	+ 16	+ 670	+ 85	+ 6 + 3	+ 863 +1077	+ 45 + 29	+ 822 + 992	+ 45 + 29	+ 756 + 870	+ 47 + 31	+ 668 + 740	+ 56 + 36	+ 576 + 635	+ 84 + 61	+ 470 + 511	+ 149 + 138
39	—1236	+ 15	+ 588	+ 79	+ 5 + 3	+ 751 + 906	+ 42 + 27	+ 721 + 850	+ 42 + 27	+ 674 + 763	+ 42 + 27	+ 611 + 674	+ 51 + 33	+ 537 + 592	+ 74 + 54	+ 441 + 479	+ 131 + 120
40	— 838	+ 18	+ 679	+ 192	+ 6 + 2	+ 860 + 910	+ 101 + 64	+ 860 + 927	+ 101 + 64	+ 861 + 945	+ 105 + 67	+ 782 + 891	+ 119 + 75	+ 742 + 814	+ 160 + 109	+ 621 + 672	+ 256 + 219
41	—2463	+ 35	+1651	+ 290	+ 12 + 6	+2080 +2268	+ 145 + 88	+2058 +2243	+ 147 + 88	+2044 +2224	+ 153 + 92	+1990 +2158	+ 181 + 109	+1853 +2032	+ 269 + 184	+1557 +1679	+ 496 + 448
42	—1509	+ 23	+ 993	+ 204	+ 8 + 3	+1212 +1314	+ 107 + 68	+1202 +1290	+ 107 + 68	+1205 +1295	+ 111 + 71	+1202 +1303	+ 128 + 83	+1115 +1223	+ 182 + 127	+ 938 +1012	+ 303 + 268

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
43	44°18′	N	6	15°27′	W	6	5200	4	− 25	+ 6	− 4 − 19	+ 1 − 11	+ 4 − 2	+ 8 + 6	+ 8 + 6	+ 5 + 5
44	43°11′	N	2	18°44′	W	2	4570	4	+ 48	+ 60	+ 50 + 45	+ 51 + 45	+ 50 + 44	+ 50 + 46	+ 54 + 51	+ 58 + 57
45	41°22′	N	8	21°39′	W	2	4040	7	+ 23	+ 24	+ 20 + 15	+ 22 + 17	+ 21 + 17	+ 21 + 19	+ 23 + 21	+ 23 + 24
46	39°48′	N	3	24°57′	W	3	3580	5	+ 40	+ 56	+ 47 + 38	+ 50 + 42	+ 51 + 47	+ 55 + 53	+ 57 + 56	+ 60 + 62
47	38°31′.77	N	0.02	28°37.′47	W	0.02	Horta	2	+ 107	− 1	+ 24 + 42	+ 21 + 37	+ 15 + 27	+ 5 + 13	− 4 + 3	− 12 − 6
48	36°23′	N	2	26°43′	W	3	3610	4	+ 26	+ 39	+ 36 + 31	+ 38 + 33	+ 37 + 31	+ 43 + 39	+ 52 + 55	+ 58 + 60
49	33°42′	N	2	24°19′	W	5	5480	4	− 1	+ 27	+ 11 + 3	+ 15 + 5	+ 15 + 7	+ 21 + 15	+ 29 + 25	+ 35 + 33
50	30°48′	N	2	22°30′	W	2	5170	4	− 2	+ 5	− 4 − 6	− 2 − 7	− 4 − 9	− 4 − 9	− 2 − 7	+ 1 − 2
51	29°20′	N	6	19°15′	W	2	4610	4	− 20	− 5	− 14 − 21	− 12 − 19	− 13 − 19	− 11 − 14	− 7 − 10	− 4 − 4
52	28°40′	N	2	15°53′	W	2	3630	5	− 38	− 2	− 7 − 20	− 3 − 13	0 − 6	+ 6 + 5	+ 5 + 4	+ 3 + 3
53	28°09′.3	N	0.0	15°25′.2	W	0.0	L. Palmas	2	+ 194	+ 76	+ 89 + 108	+ 86 + 101	+ 76 + 86	+ 61 + 64	+ 54 + 55	+ 51 + 52
54	27°13′	N	2	17°48′	W	3	3730	4	+1 3	+ 32	+ 22 + 13	+ 24 + 16	+ 26 + 20	+ 30 + 27	+ 35 + 33	+ 37 + 37
55	26°33′	N	2	21°37′	W	2	4780	4	+ 3	+ 12	+ 11 − 1	+ 14 − 1	+ 16 0	+ 25 + 3	+ 25 + 7	+ 24 + 11
56	25°44′	N	4	25°19′	W	5	4990	4	+ 8	+ 7	+ 7 + 3	+ 9 + 4	+ 8 + 4	+ 6 + 5	+ 5 + 3	+ 4 + 4
57	25°07′	N	4	28°50′	W	2	5310	11	− 8	− 2	− 7 − 9	− 5 − 10	− 5 − 11	− 4 − 8	− 2 − 6	0 − 2
58	25°00′	N	3	32°30′	W	4	5920	4	− 10	+ 26	+ 5 0	+ 9 + 1	+ 13 + 5	+ 22 + 16	+ 31 + 25	+ 36 + 32
59	24°34′	N	2	35°57′	W	5	5950	5	− 14	+ 10	− 8 − 11	− 5 − 12	− 5 − 12	− 2 − 6	+ 1 − 6	+ 7 + 2
60	24°03′	N	2	39°34′	W	4	5490	4	− 12	+ 7	− 7 − 11	− 4 − 13	− 4 − 13	+ 4 − 1	+ 12 + 8	+ 18 + 16
61	23°44′	N	2	43°00′	W	3	3970	5	+ 16	+ 4	+ 11 + 7	+ 13 + 10	+ 13 + 12	+ 13 + 14	+ 11 + 12	+ 11 + 13
62	23°21′	N	2	47°05′	W	3	3550	4	+ 21	− 9	+ 5 + 10	+ 5 + 9	+ 2 + 4	− 5 − 3	− 9 − 7	− 10 − 7
63	23°03′	N	2	50°45′	W	3	4870	4	+ 11	+ 26	+ 20 + 13	+ 24 + 17	+ 26 + 21	+ 30 + 28	+ 32 + 31	+ 34 + 34

No.	Topog	Hayford 113.7 km			I.R T=30	R=0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0$_2$	t+c 18-1	I.R. T=20	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1
43	—3329	+ 57	+2158	+ 803	+ 21	+2750	+ 341	+2700	+ 343	+2658	+ 354	+2579	+ 398	+2433	+ 548	+2053	+ 953
					+ 11	+3062	+ 189	+2984	+ 190	+2895	+ 197	+2777	+ 226	+2666	+ 341	+2219	+ 797
44	—3101	+ 56	+2160	+ 769	+ 21	+2725	+ 332	+2710	+ 334	+2716	+ 345	+2671	+ 384	+2492	+ 524	+2088	+ 892
					+ 10	+2931	+ 187	+2925	+ 188	+2934	+ 194	+2886	+ 220	+2733	+ 328	+2261	+ 741
45	—2771	+ 53	+1956	+ 749	+ 20	+2449	+ 327	+2427	+ 329	+2425	+ 338	+2394	+ 378	+2244	+ 508	+1892	+ 856
					+ 8	+2654	+ 187	+2630	+ 187	+2627	+ 193	+2583	+ 220	+2459	+ 322	+2039	+ 710
46	—2406	+ 47	+1559	+ 639	+ 18	+2033	+ 291	+2004	+ 293	+1978	+ 301	+1915	+ 332	+1787	+ 432	+1508	+ 684
					+ 9	+2250	+ 172	+2208	+ 172	+2157	+ 177	+2073	+ 199	+1958	+ 280	+1623	+ 561
47	— 27	+ 35	+ 510	+ 560	+ 14	+ 591	+ 257	+ 614	+ 257	+ 669	+ 263	+ 749	+ 288	+ 760	+ 360	+ 666	+ 540
					+ 9	+ 513	+ 155	+ 561	+ 155	+ 661	+ 158	+ 786	+ 176	+ 826	+ 234	+ 714	+ 430
48	—2372	+ 43	+1565	+ 636	+ 18	+1964	+ 290	+1948	+ 292	+1945	+ 299	+1862	+ 327	+1686	+ 416	+1395	+ 642
					+ 10	+2140	+ 172	+2124	+ 172	+2134	+ 177	+2036	+ 196	+1810	+ 268	+1508	+ 517
49	—3579	+ 62	+2387	+ 846	+ 22	+3083	+ 357	+3047	+ 359	+3031	+ 370	+2927	+ 412	+2698	+ 560	+2247	+ 957
					+ 11	+3337	+ 196	+3316	+ 197	+3290	+ 203	+3177	+ 232	+2965	+ 345	+2438	+ 792
50	—3548	+ 67	+2499	+ 908	+ 24	+3166	+ 372	+3144	+ 374	+3156	+ 385	+3114	+ 431	+2925	+ 596	+2453	+1036
					+ 12	+3368	+ 205	+3378	+ 206	+3396	+ 213	+3364	+ 243	+3213	+ 368	+2667	+ 866
51	—3073	+ 56	+2098	+ 772	+ 22	+2661	+ 336	+2638	+ 338	+2632	+ 349	+2574	+ 389	+2403	+ 522	+2014	+ 881
					+ 11	+2887	+ 189	+2868	+ 190	+2852	+ 197	+2783	+ 223	+2634	+ 328	+2179	+ 729
52	—2283	+ 39	+1357	+ 531	+ 17	+1705	+ 252	+1670	+ 254	+1627	+ 262	+1545	+ 292	+1464	+ 382	+1244	+ 622
					+ 9	+1937	+ 152	+1867	+ 152	+1794	+ 157	+1668	+ 176	+1600	+ 253	+1341	+ 521
53	— 132	+ 36	+ 822	+ 452	+ 15	+ 952	+ 218	+ 984	+ 218	+1070	+ 223	+1198	+ 249	+1186	+ 329	+1026	+ 522
					+ 8	+ 849	+ 136	+ 915	+ 136	+1061	+ 139	+1268	+ 155	+1290	+ 221	+1101	+ 442
54	—2478	+ 45	+1635	+ 607	+ 19	+2083	+ 283	+2057	+ 285	+2031	+ 293	+1958	+ 327	+1799	+ 435	+1505	+ 714
					+ 10	+2300	+ 169	+2268	+ 169	+2223	+ 174	+2131	+ 197	+1976	+ 285	+1623	+ 597
55	—3232	+ 62	+2241	+ 837	+ 23	+2772	+ 350	+2743	+ 352	+2716	+ 363	+2576	+ 406	+2429	+ 554	+2052	+ 949
					+ 12	+3066	+ 195	+3057	+ 196	+3046	+ 203	+2982	+ 232	+2835	+ 344	+2348	+ 791
56	—3384	+ 68	+2371	+ 952	+ 25	+2985	+ 385	+2960	+ 387	+2964	+ 398	+2931	+ 445	+2776	+ 609	+2339	+1056
					+ 13	+3207	+ 211	+3197	+ 212	+3191	+ 219	+3155	+ 249	+3044	+ 373	+2536	+ 878
57	—3601	+ 71	+2495	+ 978	+ 26	+3174	+ 390	+3148	+ 392	+3145	+ 403	+3089	+ 450	+2903	+ 615	+2437	+1057
					+ 12	+3389	+ 214	+3395	+ 215	+3394	+ 222	+3337	+ 252	+3188	+ 377	+2649	+ 876
58	—4253	+ 77	+2790	+1022	+ 27	+3673	+ 399	+3633	+ 401	+3588	+ 412	+3439	+ 463	+3180	+ 636	+2649	+1116
					+ 13	+3921	+ 221	+3909	+ 222	+3865	+ 229	+3720	+ 261	+3497	+ 394	+2884	+ 935
59	—4089	+ 82	+2749	+1015	+ 28	+3600	+ 399	+3569	+ 401	+3554	+ 412	+3476	+ 462	+3281	+ 631	+2757	+1095
					+ 14	+3824	+ 218	+3829	+ 219	+3822	+ 226	+3738	+ 257	+3600	+ 386	+2999	+ 908
60	—3733	+ 76	+2519	+ 951	+ 28	+3271	+ 385	+3243	+ 387	+3225	+ 398	+3102	+ 444	+2865	+ 603	+2388	+1022
					+ 13	+3500	+ 213	+3512	+ 214	+3505	+ 221	+3363	+ 250	+3150	+ 370	+2596	+ 849
61	—2724	+ 68	+1907	+ 864	+ 25	+2387	+ 359	+2365	+ 361	+2354	+ 370	+2319	+ 412	+2198	+ 545	+1859	+ 890
					+ 12	+2595	+ 201	+2568	+ 202	+2544	+ 208	+2498	+ 234	+2406	+ 339	+2007	+ 730
62	—2503	+ 70	+1869	+ 863	+ 26	+2281	+ 360	+2276	+ 362	+2302	+ 372	+2328	+ 412	+2229	+ 547	+1892	+ 895
					+ 13	+2400	+ 202	+2410	+ 203	+2455	+ 209	+2497	+ 234	+2437	+ 340	+2040	+ 736
63	—3550	+ 63	+2368	+ 966	+ 28	+3039	+ 390	+2995	+ 392	+2970	+ 403	+2887	+ 449	+2705	+ 608	+2270	+1025
					+ 14	+3301	+ 214	+3262	+ 215	+3216	+ 222	+3119	+ 251	+2967	+ 371	+2460	+ 846

Reductions in 0.1 mgal

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
							Anomalies in milligal		Upper line: Airy, $T = 30$ km. / Lower line: Airy, $T = 20$ km.					
64	22°45′ N	2	54°34′ W	2	5920	4	− 24	− 10	+ 29	+ 33	+ 34	+ 37	+ 38	+ 33
									+ 22	+ 26	+ 30	+ 36	+ 38	+ 34
65	22°17′ N	2	58°24′ W	3	5880	4	− 35	− 30	− 33	− 31	− 31	− 29	− 26	− 25
									− 35	− 36	− 38	− 34	− 32	− 29
66	21°35′ N	2	63°22′ W	2	5690	4	− 6	− 4	− 6	− 4	− 5	− 5	− 5	− 6
									− 7	− 9	− 11	− 10	− 11	− 10
67	20°44′ N	4	65°37′ W	7	5510	4	+ 9	+ 7	+ 5	+ 6	+ 1	− 9	− 14	− 11
									+ 7	+ 2	− 6	− 15	− 21	− 18
68	19°32′ N	3	66°46′ W	5	8040	4	− 341	− 193	− 292	− 283	− 269	− 222	− 176	− 141
									− 297	− 292	− 279	− 235	− 186	− 147
69	18°24′ N	1	67°42′ W	1	290	4	− 18	− 153	− 106	− 108	− 116	− 142	− 173	− 197
									− 80	− 83	− 92	− 124	− 161	− 189
70	16°55′ N	2	67°42′ W	2	4930	4	− 32	+ 11	− 13	− 11	− 10	0	+ 16	+ 30
									− 28	− 24	− 22	− 10	+ 10	+ 29
71	12°06′.4 N	0.0	68°56′.1 W	0.0	Curaçao	3	+ 160	+ 75	+ 79	+ 77	+ 72	+ 67	+ 62	+ 55
									+ 118	+ 113	+ 103	+ 101	+ 105	+ 133
72	12°00′ N	2	69°12′ W	2	1130	4	− 12	− 22	− 12	− 11	− 10	− 12	− 16	− 21
									− 10	− 7	− 6	− 7	− 10	− 16
73	12°55′ N	2	71°54′ W	4	1570	4	− 70	− 94	− 87	− 87	− 87	− 91	− 96	− 101
									− 83	− 84	− 85	− 88	− 94	− 99
74	10°22′ N	3	77°13′ W	2	3320	4	− 43	+ 3	− 19	− 17	− 14	− 6	+ 6	+ 19
									− 33	− 33	− 27	− 15	− 1	+ 15
75	9°51′ N	5	78°01′ W	3	1480	5	− 34	− 48	− 53	− 53	− 55	− 57	− 55	− 53
									− 50	− 51	− 55	− 69	− 55	− 52
76	9°22′.4 N	0.0	79°53′.3 W	0.0	Colon	3	+ 67	+ 18	+ 37	+ 36	+ 33	+ 24	+ 14	+ 6
									+ 47	+ 46	+ 43	+ 32	+ 20	+ 11
77	8°57′.5 N	0.0	79°33′.9 W	0.0	Panama	3	+ 73	+ 38	+ 61	+ 61	+ 60	+ 54	+ 43	+ 29
									+ 69	+ 70	+ 70	+ 64	+ 52	+ 36
78	7°01′ N	2	82°37′ W	2	2990	4	+ 42	+ 92	+ 75	+ 78	+ 84	+ 100	+ 113	+ 123
									+ 58	+ 62	+ 70	+ 93	+ 111	+ 123
79	10°21′ N	2	88°30′ W	5	3470	4	+ 29	+ 44	+ 31	+ 32	+ 29	+ 30	+ 35	+ 42
									+ 27	+ 27	+ 23	+ 25	+ 30	+ 39
80	13°35′ N	2	95°27′ W	2	3870	4	+ 28	+ 40	+ 22	+ 22	+ 17	+ 18	+ 23	+ 31
									+ 22	+ 20	+ 14	+ 14	+ 18	+ 27
81	15°03′ N	5	98°20′ W	5	3660	4	+ 19	+ 51	+ 33	+ 34	+ 35	+ 39	+ 51	+ 63
									+ 23	+ 25	+ 25	+ 30	+ 44	+ 59
82	15°17′ N	2	98°23′ W	2	3970	4	− 7	+ 54	+ 24	+ 28	+ 32	+ 48	+ 66	+ 82
									+ 5	+ 9	+ 15	+ 36	+ 58	+ 78
83	15°35′ N	2	98°20′ W	2	4730	4	− 97	+ 22	− 18	− 10	+ 2	+ 25	+ 45	+ 61
									− 59	− 42	− 20	+ 13	+ 39	+ 58
84	15°55′ N	5	98°16′ W	3	890	4	+ 16	− 13	− 9	− 10	− 14	− 17	− 13	− 10
									− 1	− 5	− 13	− 18	− 15	− 12

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp $A\text{-}0_2$	t + c 18·1	I.R. T=20	Comp $A\text{-}0_2$	t + c 18·1	Comp $A\text{-}0_2$	t + c 18·1	Comp $A\text{-}0_2$	t + c 18·1	Comp $A\text{-}0_2$	t + c 18·1	Comp $A\text{-}0_2$	t + c 18·1	Comp $A\text{-}0_2$	t + c 18·1
64	—4001	+ 82	+2715	+1062	+ 29	+3039	+ 409	+2994	+ 411	+2970	+ 422	+2887	+ 473	+2705	+ 649	+2270	+1132
					+ 15	+3301	+ 220	+3262	+ 227	+3216	+ 234	+3119	+ 266	+2967	+ 400	+2460	+ 945
65	—3990	+ 88	+2750	+1099	+ 30	+3529	+ 414	+3501	+ 417	+3495	+ 428	+3420	+ 481	+3212	+ 661	+2693	+1165
					+ 15	+3741	+ 229	+3756	+ 231	+3763	+ 239	+3694	+ 271	+3533	+ 410	+2935	+ 976
66	—3866	+ 88	+2699	+1056	+ 30	+3434	+ 407	+3406	+ 410	+3407	+ 421	+3360	+ 473	+3174	+ 654	+2668	+1169
					+ 15	+3638	+ 225	+3656	+ 227	+3670	+ 235	+3631	+ 267	+3493	+ 407	+2909	+ 983
67	—3763	+ 90	+2758	+ 933	+ 30	+3400	+ 378	+3389	+ 380	+3426	+ 391	+3469	+ 442	+3345	+ 618	+2834	+1102
					+ 15	+3562	+ 211	+3610	+ 212	+3674	+ 220	+3733	+ 252	+3662	+ 387	+3072	+ 942
68	—5444	+ 76	+3140	+ 753	+ 27	+4593	+ 328	+4507	+ 330	+4351	+ 338	+3852	+ 375	+3268	+ 494	+2613	+ 803
					+ 15	+4791	+ 191	+4749	+ 191	+4614	+ 196	+4150	+ 219	+3562	+ 315	+2823	+ 658
69	— 277	+ 65	+ 790	+ 768	+ 25	+ 798	+ 333	+ 818	+ 335	+ 885	+ 344	+1111	+ 383	+1286	+ 514	+1183	+ 858
					+ 13	+ 695	+ 190	+ 723	+ 190	+ 811	+ 195	+1102	+ 222	+1375	+ 325	+1261	+ 710
70	—3309	+ 67	+2132	+ 680	+ 26	+2790	+ 306	+2761	+ 308	+2742	+ 316	+2613	+ 350	+2345	+ 455	+1932	+ 729
					+ 15	+3075	+ 181	+3037	+ 181	+3008	+ 187	+2862	+ 209	+2583	+ 294	+2094	+ 594
71	— 27	+ 46	+ 444	+ 384	+ 19	+ 616	+ 204	+ 637	+ 204	+ 684	+ 208	+ 703	+ 231	+ 696	+ 296	+ 606	+ 448
					+ 11	+ 556	— 121	+ 612	— 121	+ 711	— 124	+ 747	— 137	+ 757	— 190	+ 652	— 367
72	— 741	+ 42	+ 447	+ 355	+ 18	+ 534	+ 188	+ 520	+ 188	+ 512	+ 192	+ 512	+ 211	+ 494	+ 264	+ 426	+ 384
					+ 11	+ 593	+ 113	+ 570	+ 113	+ 552	+ 116	+ 548	+ 127	+ 538	+ 169	+ 459	+ 307
73	—1109	+ 52	+ 866	+ 434	+ 22	+1044	+ 212	+1040	+ 212	+1042	+ 217	+1053	+ 243	+1024	+ 319	+ 884	+ 507
					+ 13	+1092	+ 132	+1101	+ 132	+1111	+ 135	+1124	+ 151	+1117	+ 215	+ 953	+ 428
74	—2229	+ 54	+1418	+ 297	+ 23	+1814	+ 151	+1790	+ 151	+1758	+ 155	+1656	+ 174	+1483	+ 228	+1228	+ 356
					+ 12	+2014	+ 98	+2017	+ 98	+1950	+ 101	+1818	+ 113	+1634	+ 159	+1326	+ 308
75	— 953	+ 48	+ 735	+ 305	+ 20	+ 967	+ 156	+ 968	+ 156	+ 987	+ 160	+ 990	+ 179	+ 909	+ 232	+ 763	+ 358
					+ 10	+1008	+ 100	+1015	+ 100	+1050	+ 103	+1177	+ 115	+ 998	+ 160	+ 825	+ 305
76	— 12	+ 43	+ 163	+ 294	+ 18	+ 149	+ 149	+ 154	+ 149	+ 178	+ 153	+ 255	+ 169	+ 312	+ 211	+ 293	+ 308
					+ 9	+ 106	+ 95	+ 117	+ 95	+ 145	+ 98	+ 247	+ 107	+ 332	+ 143	+ 312	+ 253
77	— 9	+ 40	— 12	+ 334	+ 16	— 52	+ 167	— 54	+ 167	— 50	+ 171	— 8	+ 188	+ 56	+ 238	+ 74	+ 355
					+ 9	— 70	+ 106	— 71	+ 106	— 76	+ 109	— 31	+ 119	+ 54	+ 160	+ 77	+ 290
78	—2016	+ 49	+1121	+ 342	+ 19	+1504	+ 169	+1470	+ 169	+1408	+ 173	+1229	+ 189	+1048	+ 237	+ 848	+ 341
					+ 11	+1739	+ 107	+1699	+ 107	+1618	+ 110	+1373	+ 120	+1160	+ 160	+ 918	+ 279
79	—2378	+ 68	+1681	+ 484	+ 27	+2093	+ 235	+2084	+ 237	+2100	+ 243	+2063	+ 273	+1923	+ 367	+1616	+ 600
					+ 15	+2232	+ 143	+2232	+ 143	+2271	+ 148	+2233	+ 167	+2109	+ 245	+1743	+ 516
80	—2645	+ 74	+1932	+ 521	+ 29	+2429	+ 249	+2431	+ 251	+2472	+ 257	+2430	+ 292	+2269	+ 402	+1904	+ 682
					+ 16	+2538	+ 153	+2554	+ 153	+2617	+ 158	+2592	+ 179	+2465	+ 270	+2045	+ 597
81	—2481	+ 65	+1653	+ 440	+ 26	+2103	+ 216	+2085	+ 217	+2078	+ 221	+2009	+ 247	+1812	+ 326	+1499	+ 516
					+ 15	+2295	+ 136	+2275	+ 136	+2270	+ 140	+2199	+ 156	+1995	+ 220	+1620	+ 443
82	—2670	+ 60	+1626	+ 371	+ 24	+2146	+ 186	+2110	+ 186	+2066	+ 190	+1884	+ 212	+1644	+ 272	+1340	+ 413
					+ 13	+2418	+ 119	+2382	+ 119	+2315	+ 122	+2087	+ 135	+1818	+ 187	+1451	+ 353
83	—3015	+ 55	+1458	+ 316	+ 22	+2052	+ 157	+1968	+ 159	+1846	+ 161	+1605	+ 175	+1361	+ 220	+1095	+ 317
					+ 12	+2529	+ 101	+2354	+ 101	+2131	+ 104	+1794	+ 112	+1509	+ 149	+1191	+ 264
84	— 580	+ 48	+ 553	+ 273	+ 20	+ 673	+ 131	+ 687	+ 131	+ 726	+ 133	+ 738	+ 144	+ 675	+ 175	+ 565	+ 248
					+ 11	+ 650	+ 89	+ 685	+ 89	+ 764	+ 91	+ 803	+ 99	+ 741	+ 130	+ 611	+ 234

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R=0 Heisk.	29.05	58.1	116.2	174.3	232.4
85	17°35′ N	7	103°26′ W	2	5030	4	−102	+11	−33	−25	−14	+12	+34	+51
									−61	−58	−39	−2	+26	+46
86	18°01′ N	7	103°25′ W	2	3050	4	−94	−41	−52	−50	−48	−41	−30	−18
									−63	−59	−56	−47	−34	−20
87	18°15′ N	7	103°26′ W	2	710	4	+14	−16	−16	−17	−21	−26	−25	−20
									−9	−11	−18	−26	−26	−19
88	23°06′.0 N	0.0	106°24′.8 W	0.0	Mazatlan	3	+22	+24	+29	+29	+30	+32	+34	+36
									+29	+29	+30	+33	+36	+38
89	24°24′ N	2	113°23′ W	7	3610	4	−6	+35	+16	+20	+23	+34	+45	+54
									+3	+6	+11	+27	+42	+53
90	26°32′ N	2	115°40′ W	2	3140	5	−3	+11	−6	−6	−7	−4	+8	+20
									−10	−13	−16	−12	+2	+17
91	27°02′ N	2	115°21′ W	2	3340	4	−37	+7	−25	−22	−19	−14	−15	−6
									−34	−33	−29	−17	−21	−10
92	27°20′ N	2	115°10′ W	2	3080	4	−85	−51	−55	−52	−49	−45	−43	−40
									−63	−59	−54	−47	−43	−40
93	29°13′ N	6	117°06′ W	2	3320	4	−49	−15	−27	−25	−26	−22	−13	−1
									−36	−32	−33	−29	−18	−5
94	31°01′ N	2	119°19′ W	2	3760	5	−24	+14	−3	0	+4	+13	+21	+26
									−17	−13	−7	+7	+17	+25
95	33°12′ N	3	121°30′ W	2	4010	4	−12	+28	+4	+7	+8	+16	+29	+40
									−10	−7	−5	+8	+22	+37
96	35°50′ N	2	122°43′ W	2	3490	4	−14	+33	+10	+13	+16	+29	+44	+54
									−5	−2	+3	+21	+39	+53
97	37°48′.5 N	0.0	122°25′.9 W	0.0	S. Francisco	3	+11	−14	+1	+1	+1	−5	−12	−18
									+8	+8	+8	+2	−7	−15
98	37°29′ N	5	123°09′ W	6	680	4	−24	−68	−56	−57	−60	−69	−75	−79
									−47	−49	−54	−65	−73	−78
99	37°06′ N	3	123°54′ W	2	3760	4	−34	+15	−12	−9	−4	+9	+20	+29
									−29	−27	−18	+1	+15	+26
100	36°22′ N	2	125°22′ W	4	4520	5	−34	−12	−26	−24	−24	−23	−20	−16
									−34	−33	−31	−28	−24	−19
101	34°46′ N	2	128°34′ W	7	4920	4	−15	−7	−11	−9	−11	−11	−8	−4
									−16	−15	−16	−15	−11	−8
102	33°15′ N	2	131°52′ W	2	5120	4	−11	+4	+3	+6	+8	+14	+9	+5
									−7	−2	+3	+16	+16	+16
103	33°12′ N	2	134°01′ W	2	4930	4	−6	−4	+5	+8	+7	+4	+5	+4
									−2	+4	+5	+5	+5	+7
104	30°15′ N	2	138°25′ W	5	4820	4	−8	−6	+15	+20	+23	+13	+10	+2
									+4	+16	+26	+24	+21	+7
105	28°57′ N	2	141°14′ W	2	4970	4	+4	+2	+7	+8	+7	+8	+12	+17
									+3	+4	+4	+6	+11	+18

No.	Topog	Hayford 113.7 km I.R.	Hayford 113.7 km Comp A-0₂	Hayford 113.7 km t+c 18-1	I.R T=30 / I.R. T=20	R=0 (Heisk.) Comp A-0₂	R=0 (Heisk.) t+c 18-1	29.05 Comp A-0₂	29.05 t+c 18-1	58.1 Comp A-0₂	58.1 t+c 18-1	116.2 Comp A-0₂	116.2 t+c 18-1	174.3 Comp A-0₂	174.3 t+c 18-1	232.4 Comp A-0₂	232.4 t+c 18-1
85	—3178	+ 57	+1654	+ 338	+ 24	+2293	+ 167	+2214	+ 169	+2098	+ 171	+1824	+ 190	+1545	+ 249	+1243	+ 382
					+ 13	+2644	+ 109	+2614	+ 109	+2421	+ 112	+2038	+ 125	+1712	+ 173	+1348	+ 333
86	—1855	+ 49	+1015	+ 263	+ 20	+1290	+ 128	+1268	+ 128	+1247	+ 132	+1165	+ 143	+1017	+ 177	+ 829	+ 251
					+ 10	+1450	+ 74	+1415	+ 84	+1386	+ 87	+1288	+ 92	+1123	+ 121	+ 902	+ 209
87	— 524	+ 47	+ 539	+ 233	+ 20	+ 696	+ 113	+ 706	+ 113	+ 742	+ 113	+ 784	+ 123	+ 755	+ 146	+ 647	+ 199
					+ 10	+ 674	+ 71	+ 699	+ 71	+ 764	+ 71	+ 840	+ 78	+ 824	+ 97	+ 696	+ 155
88	— 31	+ 33	— 54	+ 31	+ 12	— 55	+ 1	— 58	+ 1	— 64	+ 1	— 82	— 5	— 92	— 17	— 86	— 41
					+ 5	— 42	— 1	— 48	— 1	— 59	— 1	— 83	— 5	— 99	— 14	— 92	— 43
89	—2419	+ 61	+1489	+ 455	+ 24	+1947	+ 220	+1916	+ 220	+1877	+ 226	+1742	+ 252	+1551	+ 327	+1278	+ 510
					+ 13	+2175	+ 137	+2145	+ 137	+2095	+ 140	+1917	+ 157	+1707	+ 219	+1382	+ 428
90	—2364	+ 66	+1683	+ 472	+ 26	+2143	+ 228	+2134	+ 230	+2143	+ 234	+2081	+ 262	+1880	+ 345	+1554	+ 552
					+ 14	+2276	+ 140	+2304	+ 140	+2334	+ 144	+2275	+ 160	+2069	+ 231	+1682	+ 467
91	—2352	+ 64	+1440	+ 409	+ 25	+1996	+ 202	+1970	+ 202	+1938	+ 207	+1857	+ 231	+1804	+ 302	+1548	+ 468
					+ 14	+2180	+ 128	+2169	+ 128	+2123	+ 131	+1991	+ 146	+1969	+ 203	+1667	+ 400
92	—1782	+ 55	+1011	+ 379	+ 22	+1269	+ 188	+1243	+ 188	+1209	+ 192	+1151	+ 213	+1064	+ 277	+ 892	+ 422
					+ 12	+1429	+ 121	+1390	+ 121	+1334	+ 124	+1255	+ 137	+1166	+ 188	+ 963	+ 359
93	—2173	+ 58	+1384	+ 388	+ 23	+1735	+ 192	+1717	+ 192	+1715	+ 197	+1662	+ 218	+1506	+ 284	+1248	+ 431
					+ 13	+1906	+ 122	+1869	+ 122	+1868	+ 125	+1817	+ 138	+1655	+ 193	+1350	+ 366
94	—2465	+ 62	+1544	+ 475	+ 25	+2000	+ 230	+1968	+ 232	+1927	+ 237	+1808	+ 267	+1639	+ 355	+1363	+ 579
					+ 14	+2236	+ 140	+2204	+ 140	+2137	+ 145	+1981	+ 161	+1803	+ 234	+1471	+ 492
95	—2702	+ 64	+1769	+ 474	+ 25	+2288	+ 232	+2260	+ 234	+2240	+ 239	+2129	+ 269	+1914	+ 357	+1583	+ 580
					+ 14	+2528	+ 143	+2499	+ 143	+2471	+ 147	+2330	+ 164	+2108	+ 240	+1710	+ 496
96	—2349	+ 55	+1425	+ 401	+ 22	+1889	+ 199	+1859	+ 199	+1819	+ 203	+1666	+ 227	+1457	+ 294	+1192	+ 450
					+ 12	+2120	+ 126	+2094	+ 126	+2040	+ 129	+1846	+ 144	+1608	+ 197	+1288	+ 377
97	— 12	+ 38	+ 19	+ 203	+ 15	— 6	+ 99	— 4	+ 99	0	+ 99	+ 43	+ 110	+ 93	+ 136	+ 103	+ 188
					+ 7	— 25	+ 62	— 21	+ 62	— 23	+ 62	+ 24	+ 68	+ 96	+ 89	+ 109	+ 154
98	— 387	+ 48	+ 466	+ 316	+ 18	+ 531	+ 161	+ 542	+ 161	+ 572	+ 165	+ 637	+ 182	+ 650	+ 237	+ 569	+ 358
					+ 10	+ 505	+ 105	+ 521	+ 105	+ 572	+ 108	+ 667	+ 120	+ 703	+ 163	+ 613	+ 307
99	—2511	+ 59	+1536	+ 423	+ 23	+2061	+ 210	+2030	+ 210	+1978	+ 215	+1816	+ 242	+1628	+ 320	+1349	+ 512
					+ 13	+2311	+ 133	+2293	+ 133	+2206	+ 136	+1996	+ 152	+1796	+ 218	+1460	+ 439
100	—3105	+ 76	+2129	+ 676	+ 29	+2694	+ 303	+2671	+ 305	+2668	+ 315	+2615	+ 354	+2447	+ 489	+2053	+ 848
					+ 14	+2920	+ 177	+2905	+ 178	+2888	+ 183	+2825	+ 207	+2682	+ 316	+2223	+ 727
101	—3382	+ 84	+2359	+ 860	+ 30	+2947	+ 360	+2927	+ 362	+2933	+ 373	+2889	+ 418	+2708	+ 569	+2268	+ 972
					+ 15	+3167	+ 201	+3159	+ 202	+3161	+ 209	+3120	+ 238	+2971	+ 351	+2480	+ 812
102	—3357	+ 85	+2210	+ 915	+ 31	+2813	+ 375	+2773	+ 377	+2744	+ 388	+2642	+ 432	+2542	+ 581	+2180	+ 980
					+ 16	+3088	+ 209	+3034	+ 210	+2981	+ 217	+2819	+ 246	+2707	+ 360	+2258	+ 812
103	—3222	+ 86	+2181	+ 933	+ 31	+2701	+ 384	+2670	+ 386	+2665	+ 396	+2645	+ 442	+2496	+ 590	+2100	+ 991
					+ 15	+2958	+ 211	+2897	+ 212	+2878	+ 219	+2848	+ 248	+2736	+ 362	+2274	+ 809
104	—2995	+ 90	+1918	+ 963	+ 33	+2341	+ 389	+2293	+ 391	+2252	+ 402	+2304	+ 446	+2191	+ 595	+1878	+ 990
					+ 17	+2650	+ 215	+2528	+ 216	+2420	+ 223	+2407	+ 252	+2323	+ 364	+2025	+ 810
105	—3389	+ 94	+2346	+ 969	+ 35	+2941	+ 388	+2920	+ 390	+2922	+ 401	+2869	+ 445	+2684	+ 590	+2243	+ 977
					+ 17	+3164	+ 214	+3155	+ 215	+3155	+ 222	+3102	+ 250	+2942	+ 360	+2431	+ 797

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	Anomalies in milligal Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
106	27°27′	N	2	144°21′	W	2	4900	4	+ 21	+ 14	+ 25 + 21	+ 27 + 23	+ 27 + 25	+ 26 + 27	+ 25 + 26	+ 25 + 27
107	25°45′	N	2	147°43′	W	2	5210	4	+ 11	+ 1	+ 10 + 9	+ 12 + 8	+ 10 + 6	+ 10 + 8	+ 11 + 9	+ 12 + 13
108	24°19′	N	2	150°48′	W	3	5270	4	+ 7	− 4	+ 6 + 7	+ 8 + 6	+ 6 + 3	+ 5 + 3	+ 5 + 3	+ 5 + 4
109	22°′57	N	2	153°40′	W	2	4590	4	+ 41	+ 26	+ 39 + 38	+ 41 + 38	+ 41 + 39	+ 42 + 44	+ 41 + 43	+ 37 + 41
110	22°13′	N	2	155°24′	W	2	4510	4	+ 3	− 15	− 8 − 7	− 7 − 8	− 11 − 12	− 13 − 14	− 10 − 11	− 3 − 2
111	21°45′	N	2	156°13′	W	2	5430	4	− 96	− 46	− 65 − 82	− 58 − 79	− 48 − 64	− 25 − 31	− 7 − 7	+ 2 + 6
112	21°09′.0	N	1	157°28′.0	W	1	510	4	+ 165	+ 21	+ 86 + 116	+ 83 + 114	+ 74 + 102	+ 44 + 65	+ 13 + 27	− 12 − 2
113	21°18′.4	N	0.0	157°52′.0	W	0.0	Honolulu	3	+ 213	+ 42	+ 103 + 139	+ 99 + 134	+ 87 + 118	+ 51 + 71	+ 22 + 34	+ 1 + 11
114	20°48′	N	2	158°36′	W	2	4290	4	− 18	− 5	− 5 − 17	− 1 − 13	+ 3 − 7	+ 19 + 17	+ 29 + 32	+ 31 + 37
115	20°29′	N	2	160°30′	W	4	4590	4	+ 14	+ 8	+ 13 + 9	+ 15 + 10	+ 14 + 10	+ 15 + 13	+ 19 + 18	+ 23 + 44
116	19°58′	N	2	164°56′	W	6	4960	4	+ 10	+ 4	+ 10 + 8	+ 12 + 8	+ 10 + 7	+ 10 + 8	+ 12 + 11	+ 15 + 15
117	19°31′	N	2	168°27′	W	2	3520	4	+ 41	− 5	+ 18 + 30	+ 16 + 27	+ 8 + 14	− 3 − 1	− 5 − 4	− 3 − 1
118	19°07′	N	2	171°35′	W	3	2640	4	+ 67	− 11	+ 22 + 42	+ 20 + 37	+ 10 + 22	− 6 − 7	− 14 − 11	− 18 − 14
119	18°37′	N	3	175°00′	W	4	1790	4	+ 84	− 29	+ 18 + 43	+ 15 + 38	+ 5 + 24	− 16 − 5	− 32 − 24	− 44 − 36
120	18°06′	N	2	178°14′	W	2	3830	4	0	− 35	− 12 − 7	− 12 − 7	− 15 − 11	− 21 − 17	− 25 − 22	− 27 − 23
121	17°47′	N	3	179°33′	E	3	4900	4	− 9	− 6	− 4 − 10	− 1 − 9	− 1 − 6	+ 4 + 2	+ 10 + 10	+ 14 − 4
122	17°02′	N	2	176°24′	E	2	3190	4	+ 50	− 14	+ 19 + 33	+ 18 + 28	+ 11 + 19	− 1 + 6	− 13 − 10	− 20 − 17
123	16°12′	N	2	171°53′	E	3	5600	4	− 13	− 5	+ 4 − 5	+ 9 + 3	+ 9 + 5	+ 10 + 10	+ 7 + 7	+ 6 + 7
124	15°32′	N	2	168°27′	E	2	5600	4	− 6	+ 14	+ 8 + 1	+ 13 + 2	+ 16 + 8	+ 28 + 25	+ 32 + 32	+ 32 + 33
125	15°07′	N	2	164°56′	E	2	5330	4	+ 10	+ 13	+ 13 + 10	+ 15 + 9	+ 13 + 8	+ 13 + 9	+ 17 + 13	+ 25 + 22
126	14°43′	N	2	161°30′	E	4	5490	4	− 23	− 9	− 11 − 18	− 7 − 16	− 4 − 10	+ 4 + 2	+ 10 + 9	+ 13 + 14

No.	Topog	Reductions in 0.1 mgal															
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t + c 18-1	I.R. $T=20$	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
106	—3334	+ 97	+2299	+1008	+ 35	+2865	+ 400	+2839	+ 402	+2834	+ 413	+2792	+ 459	+2647	+ 614	+2236	+1030
					+ 17	+3101	+ 219	+3081	+ 220	+3058	+ 227	+3004	+ 256	+2901	+ 376	+2421	+ 846
107	—3583	+ 103	+2512	+1064	+ 36	+3150	+ 411	+3130	+ 413	+3136	+ 424	+3087	+ 471	+2910	+ 640	+2445	+1094
					+ 18	+3360	+ 225	+3367	+ 226	+3379	+ 233	+3333	+ 263	+3196	+ 391	+2640	+ 905
108	—3634	+ 106	+2557	+1083	+ 37	+3193	+ 415	+3172	+ 417	+3183	+ 428	+3144	+ 479	+2976	+ 649	+2504	+1117
					+ 18	+3398	+ 227	+3409	+ 228	+3425	+ 233	+3392	+ 266	+3269	+ 397	+2723	+ 924
109	—3200	+ 101	+2225	+1026	+ 36	+2780	+ 405	+2757	+ 407	+2753	+ 418	+2691	+ 464	+2548	+ 623	+2157	+1047
					+ 18	+2994	+ 220	+2995	+ 221	+2982	+ 228	+2897	+ 257	+2793	+ 378	+2331	+ 859
110	—3089	+ 97	+2222	+ 952	+ 35	+2779	+ 387	+2767	+ 389	+2793	+ 399	+2774	+ 440	+2602	+ 577	+2182	+ 934
					+ 18	+2954	+ 215	+2963	+ 216	+2997	+ 223	+2996	+ 248	+2853	+ 354	+2364	+ 757
111	—3672	+ 88	+2157	+ 931	+ 33	+2951	+ 377	+2880	+ 379	+2771	+ 387	+2503	+ 426	+2199	+ 547	+1799	+ 860
					+ 18	+3305	+ 213	+3267	+ 213	+3114	+ 220	+2762	+ 244	+2426	+ 339	+1950	+ 683
112	— 300	+ 87	+ 721	+ 931	+ 32	+ 681	+ 373	+ 709	+ 375	+ 788	+ 385	+1046	+ 425	+1228	+ 556	+1132	+ 902
					+ 16	+ 551	+ 213	+ 581	+ 214	+ 689	+ 220	+1033	+ 245	+1314	+ 348	+1209	+ 741
113	— 43	+ 88	+ 765	+ 902	+ 31	+ 736	+ 371	+ 775	+ 373	+ 888	+ 381	+1206	+ 422	+1372	+ 550	+1247	+ 881
					+ 16	+ 552	+ 211	+ 604	+ 211	+ 759	+ 218	+1204	+ 244	+1472	+ 343	+1332	+ 712
114	—2880	+ 85	+1765	+ 903	+ 32	+2346	+ 370	+2306	+ 372	+2253	+ 380	+2059	+ 419	+1838	+ 537	+1519	+ 842
					+ 17	+2640	+ 210	+2602	+ 210	+2531	+ 217	+2264	+ 242	+2023	+ 334	+1641	+ 669
115	—3104	+ 95	+2134	+ 933	+ 33	+2700	+ 375	+2679	+ 377	+2681	+ 388	+2628	+ 429	+2450	+ 565	+2050	+ 929
					+ 17	+2921	+ 213	+2907	+ 214	+2901	+ 221	+2845	+ 247	+2686	+ 355	+2021	+ 765
116	—3424	+ 101	+2396	+ 986	+ 36	+2996	+ 394	+2978	+ 396	+2988	+ 407	+2941	+ 453	+2760	+ 612	+2316	+1030
					+ 18	+3213	+ 216	+3213	+ 217	+3220	+ 224	+3174	+ 253	+3029	+ 374	+2511	+ 852
117	—2478	+ 97	+1941	+ 900	+ 35	+2304	+ 373	+2316	+ 375	+2390	+ 385	+2454	+ 425	+2340	+ 560	+1977	+ 910
					+ 18	+2362	+ 210	+2389	+ 211	+2515	+ 217	+2634	+ 242	+2561	+ 349	+2137	+ 746
118	—1951	+ 92	+1722	+ 916	+ 33	+1990	+ 376	+2010	+ 378	+2100	+ 388	+2222	+ 429	+2165	+ 564	+1847	+ 919
					+ 17	+1978	+ 211	+2024	+ 211	+2170	+ 219	+2366	+ 245	+2365	+ 349	+1992	+ 747
119	—1370	+ 96	+1443	+ 962	+ 35	+1607	+ 389	+1633	+ 391	+1721	+ 402	+1895	+ 443	+1910	+ 585	+1659	+ 955
					+ 18	+1549	+ 213	+1599	+ 214	+1737	+ 221	+1992	+ 247	+2075	+ 356	+1785	+ 770
120	—2665	+ 95	+1951	+ 971	+ 35	+2365	+ 389	+2354	+ 391	+2379	+ 402	+2401	+ 443	+2293	+ 585	+1943	+ 956
					+ 18	+2506	+ 215	+2501	+ 216	+2536	+ 223	+2575	+ 249	+2508	+ 358	+2100	+ 777
121	—3351	+ 97	+2256	+ 972	+ 35	+2867	+ 390	+2841	+ 392	+2826	+ 403	+2734	+ 446	+2528	+ 589	+2110	+ 968
					+ 18	+3122	+ 216	+3106	+ 217	+3078	+ 224	+2967	+ 251	+2775	+ 361	+2485	+ 791
122	—2371	+ 100	+1930	+ 983	+ 35	+2271	+ 384	+2276	+ 386	+2329	+ 397	+2404	+ 442	+2371	+ 593	+2044	+ 993
					+ 18	+2313	+ 217	+2360	+ 218	+2446	+ 225	+2548	+ 254	+2587	+ 369	+2205	+ 825
123	—3544	+ 97	+2362	+1001	+ 33	+2950	+ 398	+2901	+ 400	+2888	+ 411	+2826	+ 458	+2695	+ 617	+2280	+1045
					+ 18	+3229	+ 220	+3149	+ 221	+3119	+ 228	+3047	+ 258	+2954	+ 380	+2470	+ 866
124	—3733	+ 97	+2435	+1001	+ 34	+3162	+ 399	+3115	+ 401	+3068	+ 412	+2908	+ 459	+2697	+ 623	+2264	+1060
					+ 18	+3432	+ 220	+3415	+ 221	+3357	+ 228	+3151	+ 258	+2962	+ 383	+2455	+ 879
125	—3632	+ 98	+2533	+ 973	+ 34	+3186	+ 386	+3161	+ 388	+3168	+ 399	+3122	+ 445	+2928	+ 596	+2449	+1006
					+ 18	+3396	+ 217	+3404	+ 218	+3413	+ 225	+3373	+ 254	+3217	+ 372	+2663	+ 833
126	—3657	+ 100	+2404	+1018	+ 35	+3103	+ 402	+3056	+ 404	+3013	+ 415	+2891	+ 460	+2680	+ 615	+2243	+1025
					+ 17	+3369	+ 221	+3344	+ 222	+3280	+ 229	+3132	+ 258	+2944	+ 374	+2433	+ 836

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
127	14°05′	N	2	158°08′	E	2	5870	4	− 20	− 18	− 18 − 19	− 15 − 21	− 17 − 23	− 16 − 21	− 13 − 18	− 9 − 13
128	13°38′	N	2	155°56′	E	2	5910	4	− 28	− 26	− 27 − 28	− 26 − 30	− 27 − 32	− 25 − 29	− 23 − 27	− 18 − 22
129	12°42′	N	2	150°58′	E	3	5770	4	+ 8	+ 6	+ 11 + 10	+ 14 + 8	+ 14 + 8	+ 12 + 7	+ 9 + 3	+ 8 + 2
130	12°02′	N	2	147°38′	E	2	5620	4	+ 5	+ 2	+ 5 + 5	+ 7 + 3	+ 3 − 2	− 4 − 8	− 7 − 12	− 7 − 13
131	12°20′	N	5	146°00′	E	2	6660	4	− 86	− 29	− 53 − 69	− 50 − 73	− 51 − 81	− 49 − 73	− 26 − 45	− 2 − 16
132	12°48′	N	4	145°35′	E	4	8740	4	− 247	− 117	− 212 − 208	− 197 − 198	− 168 − 172	− 119 − 125	− 87 − 92	− 71 − 75
133	13°08′	N	4	145°16′	E	2	2850	4	+ 84	+ 30	+ 38 + 59	+ 34 + 41	+ 24 + 23	+ 19 + 17	+ 18 + 15	+ 18 + 16
134	13°26′.8	N	0.0	144°39′.8	E	0.0	Guam	3	+ 211	+ 5	+ 60 + 97	+ 55 + 87	+ 43 + 69	+ 14 + 34	− 20 − 8	− 46 − 38
135	13°42′	N	2	142°53′	E	2	3610	4	+ 46	+ 25	+ 35 + 37	+ 36 + 37	+ 35 + 36	+ 32 + 37	+ 21 + 24	+ 17 + 21
136	10°35′	N	2	140°23′	E	2	2600	4	+ 77	+ 16	+ 46 + 58	+ 46 + 57	+ 40 + 50	+ 27 + 35	+ 15 + 20	+ 5 + 9
137	9°57′	N	2	140°05′	E	2	2350	4	+ 77	+ 13	+ 56 + 71	+ 56 + 72	+ 50 + 67	+ 32 + 45	+ 10 + 18	− 7 − 1
138	9°25′	N	2	138°34′	E	3	7690	4	− 154	− 31	− 77 − 107	− 55 − 85	− 32 − 52	− 7 − 12	+ 7 + 5	+ 13 + 13
139	9°30′.7	N	0.0	138°10′.4	E	0.0	Yap.	3	+ 288	+ 69	+ 86 + 135	+ 75 + 107	+ 52 + 61	+ 39 + 40	+ 40 + 40	+ 41 + 44
140	9°21′	N	2	138°47′	E	2	4510	4	− 1	+ 21	+ 12 + 2	+ 15 + 4	+ 16 + 4	+ 31 + 27	+ 43 + 43	+ 48 + 51
141	9°30′	N	6	136°36′	E	6	4780	4	+ 10	+ 42	+ 39 + 19	+ 45 + 25	+ 54 + 44	+ 65 + 64	+ 68 + 70	+ 65 + 69
142	9°52′	N	2	132°46′	E	2	6050	4	+ 12	+ 41	+ 33 + 23	+ 40 + 30	+ 45 + 38	+ 50 + 48	+ 53 + 50	+ 54 + 53
143	10°12′	N	2	129°22′	E	2	5740	4	+ 46	+ 56	+ 31 + 48	+ 32 + 46	+ 37 + 43	+ 45 + 45	+ 48 + 45	+ 49 + 47
144	10°19′	N	2	127°39′	E	2	5730	4	+ 48	+ 67	+ 50 + 49	+ 51 + 43	+ 46 + 37	+ 37 + 29	+ 37 + 28	+ 51 + 43
145	10°17′	N	2	126°41′	E	3	8740	4	− 200	+ 12	− 124 − 127	− 104 − 113	− 66 − 80	+ 5 − 7	+ 51 + 43	+ 80 + 75
146	10°16′	N	2	125°59′	E	2	50	4	+ 270	+ 127	+ 157 + 184	+ 153 + 177	+ 143 + 161	+ 118 + 127	+ 101 + 105	+ 93 + 97
147	13°19′	N	2	121°38′	E	2	541	4	+ 20	+ 12	+ 33 + 34	+ 34 + 37	+ 37 + 41	+ 38 + 45	+ 33 + 41	+ 27 + 35

No.	Topog	Reductions in 0.1 mgal															
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp $A\text{-}0_2$	t + c 18-1	I.R. $T=20$	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1
127	—3998	+ 103	+2786	+1092	+ 35 + 19	+3528 +3740	+ 415 + 229	+3499 +3754	+ 417 + 230	+3501 +3767	+ 428 + 237	+3445 +3717	+ 479 + 269	+3237 +3558	+ 655 + 403	+2711 +2953	+1140 + 952
128	—4047	+ 102	+2836	+1093	+ 34 + 17	+3589 +3804	+ 416 + 227	+3569 +3824	+ 418 + 229	+3570 +3836	+ 429 + 236	+3504 +3776	+ 481 + 267	+3296 +3616	+ 661 + 407	+2762 +3004	+1153 + 962
129	—3879	+ 100	+2723	+1076	+ 34 + 17	+3411 +3621	+ 410 + 230	+3378 +3635	+ 413 + 232	+3370 +3627	+ 424 + 240	+3340 +3604	+ 475 + 273	+3187 +3501	+ 659 + 412	+2690 +2928	+1168 + 995
130	—3866	+ 100	+2776	+1021	+ 33 + 17	+3432 +3625	+ 400 + 221	+3411 +3645	+ 403 + 223	+3432 +3689	+ 415 + 231	+3453 +3717	+ 468 + 264	+3298 +3613	+ 653 + 407	+2783 +3021	+1167 +1002
131	—4826	+ 98	+3237	+ 918	+ 33 + 17	+4083 +4432	+ 377 + 211	+4057 +4469	+ 379 + 212	+4048 +4540	+ 390 + 219	+3990 +4431	+ 436 + 249	+3601 +4019	+ 594 + 376	+2943 +3242	+1013 + 863
132	—5564	+ 93	+3194	+ 976	+ 32 + 18	+4793 +4946	+ 390 + 215	+4639 +4938	+ 392 + 216	+4336 +4578	+ 403 + 223	+3797 +4073	+ 451 + 254	+3315 +3616	+ 619 + 384	+2694 +2918	+1077 + 907
133	—2886	+ 93	+2354	+ 982	+ 32 + 17	+2919 +2905	+ 390 + 216	+2964 +3082	+ 392 + 217	+3055 +3260	+ 403 + 224	+3050 +3287	+ 451 + 255	+2889 +3172	+ 621 + 385	+2432 +2643	+1078 + 909
134	— 117	+ 84	+1099	+ 989	+ 30 + 16	+1200 +1025	+ 396 + 216	+1244 +1124	+ 398 + 217	+1353 +1295	+ 409 + 224	+1598 +1615	+ 456 + 253	+1773 +1907	+ 621 + 379	+1598 +1712	+1062 + 879
135	—2499	+ 80	+1740	+ 886	+ 29 + 15	+2220 +2371	+ 363 + 204	+2207 +2369	+ 365 + 204	+2208 +2372	+ 374 + 211	+2198 +2333	+ 415 + 238	+2168 +2364	+ 548 + 341	+1870 +2014	+ 888 + 723
136	—1815	+ 77	+1512	+ 838	+ 28 + 15	+1744 +1788	+ 351 + 200	+1749 +1799	+ 353 + 200	+1791 +1865	+ 362 + 206	+1881 +1987	+ 401 + 232	+1873 +2037	+ 532 + 336	+1625 +1747	+ 882 + 732
137	—1522	+ 76	+1241	+ 843	+ 28 + 15	+1350 +1367	+ 353 + 200	+1353 +1354	+ 355 + 200	+1395 +1401	+ 364 + 207	+1542 +1596	+ 405 + 234	+1627 +1759	+ 535 + 340	+1456 +1560	+ 877 + 725
138	—4349	+ 77	+2224	+ 819	+ 28 + 15	+3201 +3663	+ 346 + 199	+2987 +3441	+ 348 + 199	+2741 +3111	+ 356 + 205	+2454 +2685	+ 397 + 231	+2193 +2413	+ 512 + 330	+1803 +1963	+ 849 + 696
139	— 291	+ 79	+1570	+ 836	+ 29 + 15	+1932 +1606	+ 353 + 201	+2040 +1887	+ 355 + 201	+2262 +2337	+ 363 + 207	+2349 +2525	+ 404 + 233	+2216 +2427	+ 531 + 333	+1866 +2016	+ 862 + 704
140	—3090	+ 76	+1971	+ 820	+ 28 + 15	+2593 +2855	+ 346 + 199	+2568 +2846	+ 348 + 199	+2542 +2832	+ 356 + 205	+2354 +2580	+ 395 + 230	+2111 +2324	+ 518 + 326	+1744 +1888	+ 835 + 679
141	—3185	+ 78	+1920	+ 869	+ 28 + 15	+2513 +2879	+ 360 + 205	+2450 +2815	+ 362 + 205	+2349 +2618	+ 372 + 212	+2201 +2391	+ 413 + 239	+2031 +2230	+ 547 + 342	+1702 +1837	+ 907 + 749
142	—3843	+ 91	+2493	+ 965	+ 31 + 15	+3212 +3508	+ 389 + 213	+3142 +3439	+ 391 + 214	+3082 +3345	+ 402 + 221	+2982 +3221	+ 448 + 250	+2793 +3067	+ 609 + 373	+2349 +2549	+1039 + 869
143	—3929	+ 92	+2723	+1018	+ 31 + 15	+3649 +3678	+ 395 + 218	+3643 +3698	+ 398 + 220	+3584 +3711	+ 409 + 228	+3452 +3667	+ 461 + 260	+3232 +3522	+ 644 + 401	+2708 +2931	+1160 + 978
144	—3958	+ 90	+2863	+ 819	+ 31 + 15	+3560 +3758	+ 351 + 198	+3544 +3790	+ 353 + 199	+3585 +3848	+ 364 + 204	+3630 +3902	+ 407 + 233	+3472 +3791	+ 561 + 354	+2928 +3169	+ 970 + 824
145	—5954	+ 73	+3051	+ 709	+ 26 + 14	+4848 +5024	+ 316 + 185	+4645 +4878	+ 318 + 185	+4258 +4550	+ 326 + 190	+3510 +3797	+ 362 + 215	+2933 +3200	+ 482 + 310	+2339 +2524	+ 791 + 660
146	— 187	+ 63	+ 926	+ 626	+ 23 + 13	+1007 + 868	+ 285 + 170	+1046 + 937	+ 287 + 170	+1143 +1086	+ 295 + 175	+1364 +1410	+ 325 + 197	+1433 +1548	+ 422 + 276	+1265 +1354	+ 668 + 555
147	— 361	+ 31	+ 62	+ 343	+ 10 + 6	+ 67 + 119	+ 158 + 97	+ 55 + 92	+ 158 + 97	+ 27 + 45	+ 158 + 97	+ 7 — 1	+ 168 + 104	+ 29 + 26	+ 192 + 123	+ 36 + 36	+ 241 + 173

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	Anomalies in milligal — Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
148	14°35′.2	N	0.0	120°57′.9	E	0.0	Manila	3	— 14	— 53	— 26 — 18	— 25 — 17	— 25 — 15	— 31 — 19	— 43 — 33	— 57 — 49
149	8°50′	N	2	121°52′	E	2	4870	4	— 29	+ 87	+ 33 — 12	+ 39 + 6	+ 48 + 19	+ 79 + 59	+ 117 + 105	+ 145 + 140
150	4°35′	N	2	123°44′	E	2	5140	4	+ 80	+ 129	+ 94 + 82	+ 96 + 82	+ 97 + 82	+ 103 + 91	+ 111 + 99	+ 127 + 118
151	0°29′	S	2	125°59′	E	2	2390	4	— 216	— 209	— 215 — 218	— 214 — 217	— 214 — 218	— 213 — 217	— 206 — 209	— 197 — 197
152	1°45′	S	2	126°57′	E	2	1390	4	+ 4	— 17	— 16 — 13	— 16 — 14	— 18 — 17	— 19 — 20	— 16 — 17	— 10 — 9
153	2°35′	S	2	127°12′	E	2	5190	4	— 7	+ 110	+ 84 + 43	+ 92 + 62	+ 106 + 85	+ 134 + 127	+ 152 + 153	+ 154 + 157
154	3°23′	S	2	127°27′	E	2	3550	4	— 66	— 26	— 6 — 5	— 3 + 1	— 2 + 4	— 8 0	— 23 — 18	— 34 — 30
155	3°41′.3	S	0.0	128°10′.4	E	0.0	Am- boina	2	+ 114	0	+ 15 + 36	+ 11 + 28	+ 3 + 12	— 10 — 5	— 20 — 17	— 27 — 25
156	3°′59	S	2	129°23′	E	2	4520	4	— 22	+ 71	+ 38 + 5	+ 45 + 15	+ 57 + 34	+ 84 + 76	+ 99 + 97	+ 102 + 102
157	4°32′.0	S	0.0	129°53′.7	E	0.0	Banda	2	+ 193	+ 34	+ 36 + 64	+ 29 + 50	+ 12 + 20	— 8 — 12	— 5 — 11	+ 3 — 1
158	5°36′	S	2	129°28′	E	2	4850	4	+ 27	+ 81	+ 48 + 33	+ 50 + 35	+ 50 + 36	+ 56 + 44	+ 66 + 55	+ 74 + 65
159	7°10′	S	1	128°54′	E	1	3430	4	+ 14	+ 33	+ 30 + 30	+ 29 + 32	+ 24 + 23	+ 17 + 13	+ 21 + 17	+ 25 + 22
160	7°40′	S	1	128°47′	E	1	4610	4	— 102	+ 3	— 31 — 70	— 23 — 56	— 7 — 28	+ 15 + 8	+ 23 + 20	+ 28 + 26
161	8°13′	S	1	128°33′	E	1	1060	4	— 42	— 84	— 79 — 65	— 80 — 70	— 87 — 83	— 95 — 94	— 95 — 94	— 96 — 95
162	8°48′	S	1	128°26′	E	1	2120	4	— 151	— 119	— 122 — 131	— 119 — 127	— 115 — 120	— 110 — 110	— 109 — 108	— 109 — 108
163	9°36′	S	1	128°07′	E	1	340	4	+ 41	— 5	+ 4 + 12	+ 4 + 10	+ 1 + 5	— 4 — 2	— 6 — 4	— 7 — 5
164	7°52′	S	1	121°57′	E	1	2570	4	+ 9	+ 51	+ 43 + 28	+ 47 + 34	+ 54 + 46	+ 65 + 65	+ 68 + 69	+ 65 + 66
165	7°45′	S	1	119°58′	E	1	4990	4	— 111	+ 28	— 26 — 71	— 18 — 60	— 3 — 37	+ 38 + 21	+ 71 + 63	+ 93 + 91
166	8°27′.1	S	0.1	118°42′.7	E	0.1	Bima	4	+ 119	+ 68	+ 103 + 120	+ 101 + 117	+ 96 + 109	+ 84 + 94	+ 70 + 78	+ 59 + 65
167	7°53′	S	1	114°54′	E	1	910	4	+ 28	+ 36	+ 51 + 49	+ 53 + 53	+ 58 + 60	+ 59 + 65	+ 53 + 60	+ 45 + 51
168	7°12′.1	S	0.0	112°44′.6	E	0.0	Soera- baya	2	+ 6	— 16	+ 1 + 5	+ 1 + 5	+ 2 + 7	+ 3 + 9	+ 1 + 8	— 3 + 3

No.	Topog	Hayford 113.7 km			I.R T=30	R=0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t+c 18-1	I R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
148	— 9	+ 35	— 30	+ 398	+ 12	— 77	+ 192	— 81	+ 192	— 85	+ 196	— 47	+ 213	+ 22	+ 261	+ 49	+ 374
					+ 7	— 79	+ 118	— 87	+ 118	— 110	+ 121	— 76	+ 132	+ 16	+ 172	+ 49	+ 298
149	—3308	+ 46	+1777	+ 324	+ 19	+2514	+ 154	+2451	+ 154	+2539	+ 158	+2037	+ 170	+1623	+ 209	+1258	+ 295
					+ 10	+3030	+ 99	+2853	+ 99	+2722	+ 101	+2313	+ 108	+1815	+ 140	+1373	+ 240
150	—3451	+ 74	+2366	+ 523	+ 27	+3031	+ 247	+3008	+ 249	+3001	+ 255	+2907	+ 289	+2710	+ 401	+2271	+ 682
					+ 14	+3263	+ 153	+3260	+ 153	+3256	+ 158	+3144	+ 179	+2974	+ 272	+2462	+ 600
151	—1609	+ 53	+1114	+ 374	+ 20	+1389	+ 185	+1379	+ 185	+1382	+ 189	+1356	+ 206	+1232	+ 258	+1024	+ 371
					+ 11	+1502	+ 116	+1488	+ 116	+1494	+ 119	+1478	+ 130	+1352	+ 172	+1105	+ 300
152	—1069	+ 51	+ 872	+ 357	+ 19	+1069	+ 177	+1071	+ 177	+1084	+ 181	+1089	+ 195	+1010	+ 242	+ 849	+ 343
					+ 10	+1112	+ 112	+1128	+ 112	+1158	+ 115	+1179	+ 123	+1105	+ 160	+ 916	+ 271
153	—2910	+ 51	+1247	+ 443	+ 19	+1767	+ 218	+1679	+ 218	+1540	+ 225	+1228	+ 251	+ 975	+ 327	+ 759	+ 518
					+ 10	+2271	+ 134	+2073	+ 134	+1846	+ 138	+1402	+ 155	+1089	+ 216	+ 827	+ 433
154	—1665	+ 55	+ 773	+ 441	+ 21	+ 824	+ 215	+ 798	+ 245	+ 781	+ 222	+ 820	+ 248	+ 880	+ 329	+ 795	+ 528
					+ 12	+ 915	+ 131	+ 855	+ 131	+ 817	+ 135	+ 845	+ 153	+ 950	+ 218	+ 849	+ 443
155	— 113	+ 59	+ 736	+ 455	+ 22	+ 859	+ 221	+ 895	+ 223	+ 975	+ 229	+1075	+ 256	+1088	+ 343	+ 952	+ 552
					+ 13	+ 740	+ 136	+ 827	+ 136	+ 975	+ 141	+1128	+ 159	+1181	+ 229	+1023	+ 467
156	—2922	+ 58	+1489	+ 446	+ 23	+2084	+ 220	+2012	+ 222	+1886	+ 227	+1583	+ 256	+1344	+ 344	+1087	+ 568
					+ 13	+2506	+ 136	+2408	+ 136	+2208	+ 141	+1775	+ 158	+1490	+ 230	+1179	+ 490
157	— 203	+ 65	+1314	+ 417	+ 25	+1548	+ 205	+1613	+ 207	+1774	+ 212	+1945	+ 240	+1832	+ 323	+1539	+ 535
					+ 14	+1348	+ 128	+1492	+ 128	+1787	+ 133	+2090	+ 149	+2005	+ 220	+1661	+ 465
158	—3256	+ 76	+2183	+ 455	+ 29	+2801	+ 216	+2776	+ 218	+2769	+ 225	+2674	+ 262	+2455	+ 384	+2046	+ 709
					+ 14	+3048	+ 131	+3033	+ 132	+3020	+ 136	+2910	+ 158	+2699	+ 260	+2214	+ 653
159	—2036	+ 63	+1390	+ 393	+ 25	+1660	+ 193	+1665	+ 195	+1713	+ 200	+1749	+ 229	+1626	+ 316	+1365	+ 536
					+ 13	+1740	+ 121	+1725	+ 121	+1811	+ 125	+1893	+ 143	+1781	+ 217	+1472	+ 474
160	—2970	+ 58	+1494	+ 367	+ 23	+2058	+ 182	+1968	+ 184	+1809	+ 188	+1567	+ 213	+1403	+ 293	+1165	+ 486
					+ 12	+2526	+ 113	+2383	+ 113	+2099	+ 117	+1724	+ 133	+1543	+ 199	+1260	+ 423
161	— 711	+ 53	+ 738	+ 341	+ 21	+ 888	+ 172	+ 902	+ 172	+ 965	+ 176	+1020	+ 199	+ 954	+ 263	+ 805	+ 423
					+ 11	+ 822	+ 110	+ 874	+ 110	+ 994	+ 113	+1098	+ 126	+1044	+ 180	+ 867	+ 362
162	—1423	+ 48	+ 762	+ 294	+ 19	+ 964	+ 149	+ 936	+ 149	+ 892	+ 153	+ 821	+ 170	+ 765	+ 220	+ 651	+ 334
					+ 11	+1116	+ 97	+1073	+ 97	+1002	+ 100	+ 891	+ 111	+ 837	+ 150	+ 700	+ 282
163	— 90	+ 43	+ 279	+ 223	+ 17	+ 330	+ 110	+ 338	+ 110	+ 364	+ 112	+ 402	+ 123	+ 389	+ 152	+ 334	+ 222
					+ 10	+ 301	+ 71	+ 320	+ 71	+ 367	+ 73	+ 430	+ 79	+ 425	+ 104	+ 360	+ 184
164	—1728	+ 50	+ 902	+ 359	+ 21	+1188	+ 179	+1149	+ 179	+1071	+ 184	+ 937	+ 207	+ 840	+ 277	+ 701	+ 450
					+ 11	+1412	+ 113	+1357	+ 113	+1235	+ 116	+1031	+ 131	+ 926	+ 188	+ 760	+ 391
165	—3181	+ 44	+1483	+ 265	+ 17	+2185	+ 132	+2102	+ 132	+1949	+ 133	+1531	+ 144	+1175	+ 171	+ 893	+ 228
					+ 10	+2684	+ 85	+2576	+ 85	+2345	+ 85	+1761	+ 93	+1320	+ 113	+ 977	+ 179
166	— 61	+ 45	+ 184	+ 343	+ 17	+ 33	+ 171	+ 51	+ 171	+ 101	+ 175	+ 202	+ 192	+ 292	+ 239	+ 290	+ 352
					+ 9	— 64	+ 108	— 36	+ 108	+ 43	+ 111	+ 178	+ 122	+ 307	+ 159	+ 307	+ 286
167	— 608	+ 41	+ 169	+ 318	+ 15	+ 205	+ 158	+ 182	+ 158	+ 143	+ 152	+ 114	+ 174	+ 132	+ 212	+ 125	+ 299
					+ 8	+ 293	+ 101	+ 254	+ 101	+ 179	+ 104	+ 115	+ 111	+ 141	+ 143	+ 132	+ 242
168	— 11	+ 34	— 64	+ 256	+ 11	— 73	+ 125	— 75	+ 125	— 84	+ 125	— 103	+ 132	— 98	+ 146	— 84	+ 177
					+ 5	— 63	+ 78	— 66	+ 78	— 79	+ 78	— 110	+ 83	— 107	+ 93	— 92	+ 124

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. $R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
169	8°05′.5 S	0.2	114°25′.5 E	0.2	150	4	+ 7	− 21	+ 5 + 18	+ 5 + 17	+ 2 + 14	− 9 + 2	− 23 − 15	− 34 − 28
170	8°51′ S	1	114°38′ E	4	270	4	+ 134	+ 59	+ 71 + 83	+ 70 + 79	+ 66 + 71	+ 60 + 65	+ 56 + 60	+ 53 + 56
171	9°41′ S	3	114°15′ E	2	3950	4	− 84	− 39	− 60 − 73	− 57 − 71	− 53 − 66	− 40 − 46	− 29 − 33	− 20 − 24
172	10°23′ S	3	113°55′ E	2	2680	4	− 50	− 96	− 91 − 76	− 93 − 82	− 104 − 98	− 119 − 121	− 122 − 126	− 117 − 120
173	10°59′ S	2	113°40′ E	2	6680	4	− 153	− 34	− 96 − 120	− 85 − 112	− 68 − 89	− 35 − 45	− 16 − 22	− 6 − 10
174	11°40′ S	2	113°15′ E	2	4280	5	+ 28	+ 29	+ 23 + 21	+ 24 + 21	+ 20 + 17	+ 16 + 12	+ 18 + 14	+ 21 + 19
175	12°47′ S	3	112°46′ E	3	4180	4	+ 22	+ 21	+ 17 + 15	+ 19 + 17	+ 17 + 16	+ 14 + 16	+ 10 + 11	+ 4 + 6
176	12°24′ S	3	110°00′ E	3	4390	4	+ 32	+ 27	+ 30 + 28	+ 32 + 29	+ 31 + 29	+ 29 + 29	+ 28 + 28	+ 22 + 24
177	11°05′ S	3	110°04′ E	2	5040	4	+ 30	+ 51	+ 34 + 28	+ 36 + 29	+ 32 + 25	+ 32 + 24	+ 40 + 33	+ 49 + 45
178	10°18′ S	2	110°03′ E	2	7080	4	− 165	− 42	− 105 − 126	− 91 − 115	− 73 − 92	− 44 − 55	− 25 − 33	− 13 − 17
179	9°31′ S	3	110°18′ E	2	1320	4	− 20	− 110	− 96 − 77	− 98 − 83	− 108 − 97	− 127 − 124	− 135 − 136	− 135 − 137
180	9°00′ S	2	110°33′ E	2	3020	4	− 20	+ 9	+ 5 − 8	+ 8 − 3	+ 13 + 6	+ 24 + 23	+ 28 + 29	+ 37 + 29
181	8°14′ S	2	110°32′ E	2	130	4	+ 110	+ 51	+ 75 + 88	+ 74 + 87	+ 70 + 82	+ 61 + 69	+ 52 + 59	+ 44 + 51
182	7°35′ S	2	106°55′ E	2	230	4	+ 153	+ 71	+ 90 + 101	+ 89 + 98	+ 86 + 93	+ 83 + 90	+ 77 + 84	+ 67 + 73
183	8°26′ S	2	106°36′ E	2	2210	4	− 80	− 132	− 126 − 115	− 127 − 120	− 134 − 129	− 144 − 144	− 147 − 148	− 143 − 143
184	9°21′ S	2	106°21′ E	2	6610	4	− 73	+ 21	− 37 − 50	− 31 − 47	− 21 − 35	+ 5 − 7	+ 27 + 18	+ 42 + 35
185	10°13′ S	3	105°55′ E	2	4780	4	+ 79	+ 65	+ 78 + 77	+ 81 + 83	+ 74 + 79	+ 53 + 54	+ 43 + 38	+ 40 + 35
186	11°42′ S	2	105°24′ E	2	5280	4	+ 25	+ 33	+ 28 + 24	+ 30 + 22	+ 28 + 21	+ 32 + 27	+ 36 + 32	+ 34 + 32
187	10°38′ S	3	102°29′ E	3	5120	4	+ 22	+ 14	+ 26 + 25	+ 28 + 26	+ 24 + 23	+ 16 + 14	+ 14 + 11	+ 12 + 11
188	9°00′ S	3	102°47′ E	3	5380	4	+ 40	+ 54	+ 42 + 40	+ 44 + 39	+ 42 + 36	+ 40 + 34	+ 41 + 34	+ 43 + 38
189	7°46′ S	4	103°09′ E	4	6260	4	− 54	+ 21	− 24 − 37	− 19 − 35	− 13 − 28	+ 10 − 1	+ 27 + 19	+ 40 + 34

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
	Reductions in 0.1 mgal	I.R.	Comp A-0_2	t+c 18-1	I R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
169	— 110	+ 43	+ 11	+ 340	+ 15	— 56	+ 168	— 50	+ 169	— 25	+ 173	+ 68	+ 187	+ 163	+ 231	+ 178	+ 325
					+ 8	— 109	+ 106	— 104	+ 106	— 81	+ 109	+ 35	+ 117	+ 166	+ 152	+ 188	+ 262
170	— 313	+ 50	+ 593	+ 416	+ 19	+ 714	+ 204	+ 728	+ 204	+ 764	+ 208	+ 797	+ 230	+ 781	+ 288	+ 677	+ 428
					+ 9	+ 679	+ 128	+ 718	+ 128	+ 797	+ 131	+ 848	+ 143	+ 850	+ 192	+ 729	+ 347
171	—2623	+ 61	+1617	+ 500	+ 24	+2121	+ 240	+2084	+ 242	+2036	+ 247	+1877	+ 276	+1687	+ 363	+1399	+ 580
					+ 12	+2357	+ 148	+2332	+ 148	+2275	+ 152	+2060	+ 169	+1858	+ 244	+1512	+ 493
172	—1906	+ 73	+1711	+ 581	+ 26	+2009	+ 272	+2033	+ 274	+2130	+ 282	+2252	+ 315	+2168	+ 428	+1839	+ 710
					+ 13	+1987	+ 164	+2040	+ 164	+2201	+ 169	+2409	+ 193	+2368	+ 284	+1984	+ 607
173	—4340	+ 74	+2418	+ 660	+ 27	+3441	+ 300	+3325	+ 302	+3143	+ 312	+2776	+ 350	+2458	+ 479	+2023	+ 819
					+ 13	+3821	+ 174	+3737	+ 175	+3508	+ 180	+3043	+ 205	+2708	+ 308	+2191	+ 698
174	—2917	+ 77	+2107	+ 727	+ 29	+2618	+ 320	+2606	+ 322	+2631	+ 333	+2635	+ 371	+2476	+ 509	+2082	+ 870
					+ 14	+2785	+ 184	+2783	+ 185	+2815	+ 191	+2842	+ 217	+2714	+ 323	+2252	+ 732
175	—2813	+ 79	+1999	+ 742	+ 29	+2485	+ 352	+2463	+ 354	+2467	+ 365	+2452	+ 409	+2342	+ 562	+1988	+ 976
					+ 14	+2676	+ 193	+2657	+ 194	+2654	+ 201	+2631	+ 230	+2563	+ 346	+2148	+ 810
176	—2992	+ 80	+2089	+ 872	+ 29	+2619	+ 363	+2598	+ 365	+2602	+ 376	+2569	+ 422	+2424	+ 581	+2044	+1016
					+ 14	+2820	+ 200	+2807	+ 201	+2804	+ 208	+2767	+ 237	+2657	+ 358	+2211	+ 846
177	—3426	+ 80	+2392	+ 745	+ 29	+3025	+ 328	+3008	+ 330	+3022	+ 341	+2998	+ 380	+2779	+ 518	+2317	+ 886
					+ 15	+3237	+ 187	+3234	+ 188	+3265	+ 193	+3248	+ 219	+3052	+ 328	+2514	+ 745
178	—4467	+ 75	+2488	+ 675	+ 28	+3532	+ 304	+3387	+ 306	+3196	+ 314	+2873	+ 353	+2561	+ 478	+2111	+ 807
					+ 14	+3883	+ 178	+3774	+ 179	+3540	+ 183	+3142	+ 209	+2821	+ 309	+2288	+ 683
179	—1076	+ 67	+1338	+ 566	+ 26	+1537	+ 266	+1563	+ 268	+1650	+ 276	+1812	+ 305	+1796	+ 402	+1547	+ 645
					+ 13	+1467	+ 161	+1530	+ 161	+1666	+ 166	+1913	+ 187	+1954	+ 265	+1665	+ 540
180	—2053	+ 56	+1190	+ 513	+ 22	+1548	+ 243	+1513	+ 244	+1454	+ 251	+1323	+ 278	+1202	+ 350	+ 905	+ 562
					+ 11	+1774	+ 149	+1729	+ 149	+1638	+ 153	+1446	+ 171	+1319	+ 239	+1086	+ 468
181	— 106	+ 44	+ 237	+ 416	+ 17	+ 242	+ 201	+ 251	+ 201	+ 283	+ 205	+ 362	+ 222	+ 397	+ 272	+ 358	+ 394
					+ 8	+ 197	+ 122	+ 209	+ 122	+ 256	+ 125	+ 369	+ 134	+ 429	+ 176	+ 385	+ 304
182	— 245	+ 51	+ 501	+ 517	+ 19	+ 616	+ 242	+ 627	+ 242	+ 649	+ 249	+ 655	+ 274	+ 640	+ 351	+ 553	+ 540
					+ 9	+ 606	+ 149	+ 637	+ 149	+ 684	+ 153	+ 699	+ 171	+ 698	+ 230	+ 597	+ 442
183	—1690	+ 67	+1533	+ 606	+ 26	+1842	+ 279	+1854	+ 281	+1910	+ 291	+1984	+ 320	+1900	+ 431	+1616	+ 678
					+ 12	+1856	+ 169	+1910	+ 169	+1997	+ 174	+2123	+ 196	+2078	+ 278	+1741	+ 566
184	—4506	+ 80	+2746	+ 744	+ 29	+3795	+ 325	+3730	+ 327	+3618	+ 337	+3321	+ 377	+2961	+ 520	+2341	+ 900
					+ 14	+4073	+ 186	+4044	+ 187	+3924	+ 192	+3613	+ 219	+3255	+ 331	+2639	+ 768
185	—3151	+ 87	+2340	+ 861	+ 29	+2776	+ 356	+2757	+ 348	+2804	+ 369	+2970	+ 414	+2910	+ 583	+2485	+1034
					+ 13	+2963	+ 199	+2901	+ 200	+2935	+ 206	+3157	+ 236	+3187	+ 364	+2700	+ 880
186	—3612	+ 87	+2480	+ 969	+ 30	+3177	+ 379	+3157	+ 383	+3157	+ 394	+3073	+ 444	+2860	+ 620	+2391	+1107
					+ 14	+3397	+ 214	+3417	+ 215	+3421	+ 222	+3327	+ 255	+3144	+ 388	+2600	+ 935
187	—3486	+ 88	+2499	+ 980	+ 30	+3028	+ 389	+3010	+ 391	+3034	+ 402	+3067	+ 452	+2915	+ 625	+2458	+1097
					+ 13	+3228	+ 213	+3224	+ 214	+3242	+ 221	+3301	+ 252	+3200	+ 384	+2669	+ 918
188	—3738	+ 88	+2625	+ 882	+ 31	+3318	+ 366	+3294	+ 368	+3302	+ 379	+3277	+ 426	+3102	+ 597	+2610	+1063
					+ 13	+3519	+ 203	+3533	+ 204	+3551	+ 210	+3536	+ 242	+3410	+ 373	+2842	+ 903
189	—1240	+ 78	+2679	+ 737	+ 28	+3590	+ 325	+3542	+ 327	+3464	+ 337	+3197	+ 377	+2885	+ 518	+2384	+ 892
					+ 14	+3872	+ 186	+3854	+ 187	+3779	+ 192	+3478	+ 219	+3173	+ 328	+2590	+ 758

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	Anomalies in milligal Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km. $R = 0$ Heisk.	29.05	58.1	116.2	174.3	232.4
190	7°04′	S	2	102°29′	E	2	4410	4	− 21	+ 4	− 15 − 23	− 13 − 25	− 12 − 23	− 5 − 12	+ 3 − 1	+ 9 + 7
191	6°42′	S	3	102°55′	E	2	2410	4	− 26	− 68	− 59 − 51	− 60 − 53	− 65 − 60	− 75 − 73	− 78 − 79	− 80 − 79
192	6°58′	S	2	104°07′	E	2	2090	4	− 51	− 93	− 83 − 76	− 83 − 77	− 87 − 81	− 96 − 93	− 101 − 100	− 103 − 101
193	6°17′	S	2	104°41′	E	2	50	4	+ 126	+ 44	+ 62 + 73	+ 61 + 70	+ 58 + 65	+ 54 + 61	+ 49 + 56	+ 41 + 47
194	6°05′.3	S	0.2	105°37′.0	E	0.2	40	4	+ 42	0	+ 23 + 31	+ 23 + 31	+ 23 + 31	+ 19 + 28	+ 11 + 20	+ 2 + 10
195	6°05′.6	S	0.0	106°53′.0	E	0.0	T. Priok	2	+ 60	+ 32	+ 52 + 58	+ 53 + 58	+ 54 + 60	+ 54 + 62	+ 52 + 60	+ 44 + 52
196	7°47′	S	2	116°16′	E	2	1443	4	+ 4	+ 28	+ 32 + 26	+ 34 + 29	+ 38 + 34	+ 48 + 49	+ 53 + 57	+ 51 + 56
197	8°54′	S	1	118°13′	E	1	500	4	+ 63	+ 12	+ 31 + 41	+ 31 + 40	+ 30 + 38	+ 24 + 32	+ 12 + 19	+ 1 + 6
198	8°45′	S	1	118°25′	E	1	Tjempi B (Soembawa)	3	+ 88	+ 18	+ 41 + 57	+ 40 + 54	+ 35 + 47	+ 23 + 32	+ 10 + 16	− 1 + 4
199	9°32′	S	1	118°10′	E	1	2298	5	− 7	− 4	+ 7 − 7	− 2 − 6	0 − 4	+ 5 + 5	+ 9 + 11	+ 6 + 9
200	10°23′	S	5	117°56′	E	5	4234	4	− 147	− 112	− 131 − 145	− 128 − 140	− 126 − 135	− 123 − 129	− 115 − 121	− 105 − 107
201	11°01′	S	5	117°47′	E	5	4600	5	− 40	− 11	− 35 − 42	− 34 − 44	− 34 − 45	− 33 − 41	− 25 − 33	− 14 − 19
202	12°00′	S	5	117°25′	E	5	5400	5	+ 23	+ 55	+ 29 + 24	+ 30 + 21	+ 28 + 18	+ 30 + 20	+ 41 + 31	+ 49 + 42
203	12°45′	S	3	117°12′	E	3	5500	4	+ 20	+ 44	+ 25 + 22	+ 28 + 20	+ 26 + 17	+ 25 + 18	+ 26 + 18	+ 29 + 22
204	11°36′5	S	1	118°34′5	E	1	4900	5	+ 30	+ 64	+ 34 + 27	+ 34 + 23	+ 31 + 18	+ 35 + 24	+ 47 + 36	+ 62 + 55
205	11°13′	S	3	119°20′	E	3	6370	5	− 115	+ 5	− 48 − 83	− 36 − 69	− 20 − 42	+ 2 − 10	+ 21 + 14	+ 36 + 32
206	10°20′.7	S	0.1	120°25′.6	E	0.1	280	4	+ 106	+ 35	+ 61 + 74	+ 60 + 73	+ 56 + 69	+ 42 + 53	+ 25 + 33	+ 10 + 16
207	10°22′	S	2	121°05′	E	2	1582	3	− 39	− 55	− 36 − 34	− 35 − 32	− 36 − 31	− 43 − 36	− 54 − 49	− 63 − 59
208	9°29′5	S	0.5	121°21′	E	0.5	2512	3	− 42	− 6	− 15 − 27	− 11 − 23	− 6 − 17	+ 10 + 7	+ 18 + 20	+ 18 + 20
209	8°54′.5	S	0.5	121°36′	E	0.5	Endeh (960)	4	+ 56	+ 19	+ 34 + 43	+ 33 + 43	+ 29 + 37	+ 15 + 20	+ 8 + 9	+ 6 + 8
210	9°35′	S	3	122°32′	E	3	3100	4	− 129	− 79	− 105 − 119	− 102 − 118	− 100 − 116	− 81 − 94	− 56 − 62	− 41 − 42

Reductions in 0.1 mgal

No.	Topog	Hayford 113.7 km			I.R $T=30$	R=0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t+c 18-1	I.R. $T=20$	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
190	—3137	+ 73	+2118	+ 693	+ 27	+2733	+ 311	+2710	+ 313	+2697	+ 321	+2589	+ 360	+2379	+ 487	+1981	+ 822
					+ 13	+2962	+ 183	+2969	+ 183	+2951	+ 189	+2816	+ 214	+2610	+ 316	+2144	+ 699
191	—1757	+ 66	+1482	+ 630	+ 25	+1775	+ 290	+1780	+ 292	+1821	+ 301	+1887	+ 334	+1815	+ 442	+1548	+ 724
					+ 11	+1825	+ 173	+1848	+ 173	+1912	+ 178	+2019	+ 201	+1982	+ 292	+1667	+ 609
192	—1444	+ 62	+1236	+ 567	+ 23	+1472	+ 265	+1474	+ 267	+1498	+ 275	+1564	+ 304	+1523	+ 396	+1309	+ 636
					+ 11	+1521	+ 161	+1528	+ 161	+1568	+ 166	+1665	+ 187	+1659	+ 262	+1405	+ 527
193	— 55	+ 45	+ 375	+ 458	+ 18	+ 464	+ 220	+ 476	+ 220	+ 449	+ 224	+ 514	+ 245	+ 503	+ 308	+ 437	+ 457
					+ 8	+ 439	+ 138	+ 472	+ 138	+ 522	+ 141	+ 548	+ 153	+ 548	+ 205	+ 469	+ 372
194	— 47	+ 38	+ 55	+ 373	+ 15	+ 45	+ 179	+ 45	+ 179	+ 45	+ 182	+ 70	+ 196	+ 108	+ 233	+ 110	+ 321
					+ 6	+ 40	+ 111	+ 39	+ 111	+ 37	+ 113	+ 58	+ 121	+ 113	+ 152	+ 117	+ 249
195	— 13	+ 33	— 66	+ 323	+ 12	— 75	+ 153	— 79	+ 153	— 89	+ 155	— 108	+ 166	— 103	+ 188	— 87	+ 244
					+ 4	— 64	+ 98	— 68	+ 98	— 85	+ 99	— 116	+ 104	— 112	+ 124	— 95	+ 181
196	— 990	+ 39	+ 400	+ 307	+ 15	+ 545	+ 154	+ 523	+ 154	+ 481	+ 157	+ 371	+ 169	+ 285	+ 203	+ 223	+ 285
					+ 7	+ 667	+ 98	+ 635	+ 98	+ 580	+ 100	+ 427	+ 107	+ 321	+ 135	+ 243	+ 221
197	— 386	+ 50	+ 410	+ 435	+ 19	+ 471	+ 213	+ 472	+ 213	+ 485	+ 217	+ 520	+ 242	+ 563	+ 311	+ 514	+ 478
					+ 10	+ 464	+ 135	+ 470	+ 135	+ 494	+ 138	+ 535	+ 152	+ 606	+ 209	+ 550	+ 401
198	— 28	+ 49	+ 276	+ 404	+ 18	+ 278	+ 198	+ 294	+ 198	+ 339	+ 202	+ 442	+ 223	+ 503	+ 289	+ 465	+ 436
					+ 10	+ 205	+ 125	+ 232	+ 125	+ 300	+ 128	+ 442	+ 140	+ 541	+ 195	+ 497	+ 364
199	—1598	+ 54	+1017	+ 498	+ 22	+1197	+ 238	+1281	+ 239	+1259	+ 247	+1178	+ 273	+1061	+ 354	+ 884	+ 560
					+ 12	+1442	+ 147	+1420	+ 147	+1396	+ 151	+1290	+ 169	+1165	+ 234	+ 954	+ 465
200	—2776	+ 66	+1838	+ 525	+ 26	+2337	+ 250	+2300	+ 252	+2271	+ 259	+2215	+ 288	+2049	+ 380	+1711	+ 611
					+ 14	+2591	+ 150	+2535	+ 150	+2477	+ 155	+2401	+ 174	+2250	+ 249	+1848	+ 510
201	—3220	+ 76	+2250	+ 603	+ 28	+2863	+ 280	+2846	+ 283	+2846	+ 291	+2789	+ 329	+2588	+ 451	+2157	+ 774
					+ 14	+3063	+ 164	+3086	+ 165	+3083	+ 169	+3021	+ 193	+2841	+ 294	+2337	+ 663
202	—3742	+ 85	+2597	+ 741	+ 31	+3338	+ 321	+3319	+ 323	+3329	+ 334	+3263	+ 378	+3004	+ 535	+2491	+ 964
					+ 15	+3537	+ 182	+3568	+ 183	+3594	+ 188	+3546	+ 217	+3308	+ 338	+2712	+ 831
203	—3745	+ 88	+2623	+ 793	+ 31	+3327	+ 335	+3304	+ 337	+3310	+ 348	+3270	+ 395	+3090	+ 563	+2598	+1026
					+ 15	+3528	+ 187	+3546	+ 188	+3565	+ 194	+3530	+ 225	+3397	+ 353	+2830	+ 882
204	—3451	+ 77	+2435	+ 595	+ 29	+3112	+ 275	+3106	+ 277	+3129	+ 285	+3049	+ 323	+2806	+ 446	+2326	+ 780
					+ 15	+3307	+ 162	+3339	+ 163	+3387	+ 167	+3309	+ 191	+3087	+ 290	+2527	+ 661
205	—3972	+ 68	+2170	+ 534	+ 27	+3028	+ 254	+2901	+ 256	+2736	+ 264	+2479	+ 296	+2189	+ 396	+1790	+ 652
					+ 14	+3484	+ 154	+3343	+ 154	+3076	+ 159	+2731	+ 180	+2416	+ 260	+1939	+ 554
206	— 253	+ 54	+ 437	+ 469	+ 21	+ 457	+ 227	+ 465	+ 227	+ 495	+ 234	+ 604	+ 261	+ 699	+ 339	+ 650	+ 535
					+ 11	+ 418	+ 140	+ 427	+ 140	+ 463	+ 144	+ 602	+ 161	+ 745	+ 225	+ 694	+ 445
207	— 924	+ 52	+ 597	+ 436	+ 20	+ 659	+ 211	+ 654	+ 211	+ 658	+ 215	+ 701	+ 240	+ 737	+ 310	+ 661	+ 479
					+ 11	+ 728	+ 132	+ 704	+ 132	+ 692	+ 136	+ 734	+ 150	+ 799	+ 208	+ 710	+ 396
208	—1704	+ 50	+ 890	+ 404	+ 18	+1208	+ 199	+1177	+ 199	+1123	+ 203	+ 941	+ 226	+ 791	+ 291	+ 643	+ 444
					+ 10	+1413	+ 127	+1376	+ 127	+1307	+ 130	+1056	+ 142	+ 873	+ 195	+ 699	+ 370
209	— 681	+ 51	+ 635	+ 363	+ 20	+ 702	+ 182	+ 709	+ 182	+ 747	+ 186	+ 862	+ 207	+ 880	+ 261	+ 768	+ 388
					+ 11	+ 678	+ 118	+ 684	+ 118	+ 734	+ 121	+ 902	+ 133	+ 956	+ 179	+ 824	+ 323
210	—2150	+ 44	+1262	+ 341	+ 17	+1717	+ 173	+1693	+ 173	+1622	+ 177	+1461	+ 195	+1164	+ 243	+ 896	+ 359
					+ 9	+1927	+ 111	+1924	+ 111	+1899	+ 114	+1661	+ 125	+1304	+ 165	+ 978	+ 296

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
211	10°07′.8	S	0.2	123°32′.0	E	0.2	Koepang	3	− 29	− 89	− 74 − 58	− 76 − 61	− 81 − 69	− 98 − 88	− 109 − 101	− 111 − 104
212	10°27′.2	S	1	123°48′.2	E	1	205	4	− 60	− 114	− 102 − 92	− 103 − 94	− 106 − 99	− 112 − 106	− 118 − 114	− 123 − 121
213	10°48′	S	3	124°10′	E	3	2240	4	− 131	− 74	− 77 − 91	− 73 − 84	− 67 − 74	− 55 − 55	− 48 − 46	− 49 − 46
214	11°10′	S	5	124°21′	E	5	840	4	− 3	− 12	− 6 − 4	− 6 − 3	− 6 − 5	− 5 − 4	− 1 + 2	0 + 4
215	10°15′	S	3	126°43′	E	3	462	3	+ 27	− 2	+ 7 + 13	+ 6 + 12	+ 4 + 8	− 1 0	− 1 0	+ 2 + 4
216	9°13′	S	3	126°37′	E	3	1543	4	− 109	− 100	− 99 − 102	− 97 − 100	− 94 − 97	− 89 − 88	− 87 − 84	− 87 − 84
217	8°54′	S	2	126°40′	E	2	490	4	− 71	− 120	− 101 − 89	− 102 − 89	− 106 − 94	− 122 − 116	− 131 − 126	− 137 − 134
218	9°19′	S	2	127°09′	E	2	2970	5	− 99	− 32	− 47 − 65	− 43 − 59	− 35 − 48	− 17 − 22	− 5 − 6	0 + 2
219	9°35′	S	2	131°04′	E	2	230	5	+ 38	+ 15	+ 24 + 29	+ 24 + 29	+ 24 + 28	+ 22 + 26	+ 20 + 24	+ 19 + 24
220	8°30′	S	2	131°00′	E	2	1393	4	− 33	− 34	− 27 − 30	− 26 − 27	− 24 − 23	− 22 − 19	− 24 − 20	− 29 − 26
221	7°58′.8	S	0.1	131°17′.7	E	0.1	Saumlaki	3	− 15	− 75	− 61 − 50	− 62 − 52	− 65 − 57	− 74 − 67	− 84 − 79	− 93 − 90
222	7°39′0	S	1	130°46′.2	E	1	480	3	− 43	− 107	− 93 − 81	− 95 − 83	− 100 − 91	− 112 − 107	− 124 − 122	− 131 − 130
223	7°05′	S	2	130°24′	E	2	4772	3	− 67	+ 18	− 4 − 27	0 − 15	+ 4 − 12	+ 18 + 8	+ 32 + 26	+ 40 + 36
224	6°18′6	S	1	130°04′0	E	1	1544	3	+ 122	+ 51	+ 40 + 60	+ 36 + 46	+ 23 + 25	+ 8 + 2	+ 8 − 2	+ 22 + 14
225	5°40′	S	2	130°12′	E	2	2995	4	+ 58	+ 40	+ 37 + 48	+ 35 + 45	+ 22 + 28	− 3 − 9	− 8 − 20	+ 8 − 3
226	5°42′	S	3	130°33′	E	3	2721	4	+ 46	+ 53	+ 14 + 19	+ 12 + 3	+ 6 − 8	+ 3 − 14	+ 24 + 7	+ 55 + 43
227	5°36′	S	3	131°08′	E	3	7330	5	− 255	− 69	− 186 − 208	− 176 − 204	− 159 − 189	− 101 − 127	− 44 − 61	− 3 − 14
228	5°39′	S	1	132°05′	E	1	525	3	− 39	− 121	− 108 − 88	− 111 − 94	− 121 − 110	− 140 − 136	− 153 − 154	− 156 − 158
229	5°37′.8	S	0.1	132°42′.9	E	0.1	Toeal	3	+ 58	− 21	− 2 + 14	− 5 + 11	− 11 + 2	− 31 − 24	− 46 − 44	− 53 − 53
230	5°35′	S	3	133°40′	E	3	3650	3	− 152	− 43	− 67 − 100	− 60 − 88	− 48 − 66	− 28 − 37	− 13 − 17	0 − 1
231	5°45′.3	S	0.1	134°12′.2	E	0.1	Dobo	3	+ 58	+ 9	+ 14 + 24	+ 12 + 20	+ 7 + 12	+ 1 + 1	+ 2 + 1	+ 8 + 7

No.	Topog	Hayford 113.7 km			I.R T=30	R=0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t+c 18-1	I.R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
211	−119	+48	+380	+293	+18	+404	+147	+421	+147	+474	+151	+625	+165	+701	+204	+631	+290
					+9	+307	+97	+331	+97	+407	+100	+591	+108	+689	+141	+619	+240
212	−152	+47	+342	+304	+18	+395	+155	+406	+155	+432	+159	+475	+175	+494	+222	+441	+326
					+10	+367	+100	+385	+100	+433	+103	+494	+112	+534	+153	+472	+276
213	−1423	+42	+541	+268	+16	+726	+137	+691	+137	+628	+141	+490	+153	+391	+188	+311	+276
					+8	+926	+86	+859	+86	+755	+89	+559	+97	+436	+125	+339	+226
214	−545	+40	+345	+252	+16	+435	+127	+433	+127	+437	+129	+416	+138	+347	+164	+276	+227
					+8	+468	+80	+465	+80	+480	+81	+462	+87	+386	+107	+300	+174
215	−295	+41	+327	+213	+16	+378	+104	+387	+104	+412	+104	+455	+112	+434	+131	+367	+169
					+8	+360	+67	+373	+67	+415	+67	+489	+73	+474	+86	+395	+128
216	−1106	+46	+648	+326	+19	+831	+164	+805	+164	+776	+168	+705	+184	+635	+232	+527	+345
					+10	+928	+104	+911	+104	+876	+107	+774	+117	+699	+153	+569	+284
217	−360	+50	+434	+361	+20	+455	+181	+463	+181	+502	+185	+640	+207	+661	+271	+580	+420
					+10	+413	+114	+414	+114	+461	+117	+665	+129	+716	+182	+623	+355
218	−1868	+45	+866	+292	+18	+1180	+146	+1140	+146	+1063	+150	+869	+164	+712	+203	+568	+294
					+9	+1429	+93	+1367	+93	+1257	+96	+981	+104	+791	+135	+618	+237
219	−123	+39	+135	+174	+25	+157	+84	+155	+84	+160	+84	+173	+91	+175	+107	+151	+137
					+7	+159	+54	+158	+54	+164	+54	+181	+59	+189	+71	+161	+104
220	−654	+44	+356	+264	+17	+452	+132	+435	+132	+412	+136	+383	+150	+356	+192	+306	+294
					+9	+537	+86	+500	+86	+459	+89	+415	+98	+391	+131	+328	+250
221	−12	+48	+277	+290	+18	+301	+151	+312	+151	+339	+155	+406	+174	+451	+228	+412	+357
					+9	+256	+96	+275	+96	+322	+99	+413	+111	+484	+155	+443	+307
222	−354	+55	+602	+332	+22	+666	+168	+683	+168	+730	+173	+829	+195	+881	+262	+785	+422
					+12	+611	+107	+637	+107	+716	+110	+857	+124	+949	+180	+841	+368
223	−2934	+61	+1638	+390	+24	+2088	+190	+2045	+192	+2006	+197	+1838	+225	+1612	+309	+1321	+524
					+13	+2397	+119	+2284	+119	+2246	+123	+2033	+140	+1780	+211	+1431	+462
224	−1581	+73	+1829	+386	+27	+2178	+196	+2221	+198	+2339	+204	+2460	+232	+2364	+326	+1997	+554
					+14	+2074	+120	+2215	+120	+2422	+124	+2629	+141	+2586	+221	+2159	+493
225	−2209	+75	+1939	+377	+29	+2204	+188	+2228	+190	+2344	+195	+2572	+224	+2523	+317	+2144	+538
					+15	+2179	+116	+2216	+116	+2382	+120	+2730	+138	+2757	+218	+2320	+487
226	−2752	+71	+2263	+349	+27	+2869	+177	+2891	+178	+2949	+182	+2943	+216	+2666	+282	+2175	+459
					+14	+2902	+111	+3062	+111	+3170	+115	+3212	+130	+2941	+194	+2365	+406
227	−4940	+63	+2678	+341	+25	+4046	+170	+3949	+170	+3774	+175	+3172	+196	+2538	+264	+1964	+427
					+13	+4344	+110	+4299	+110	+4147	+113	+3511	+127	+2802	+183	+2136	+372
228	−376	+60	+806	+327	+24	+873	+162	+908	+163	+1000	+167	+1168	+190	+1230	+261	+1091	+428
					+12	+744	+103	+807	+103	+962	+107	+1210	+122	+1328	+181	+1169	+383
229	−16	+55	+455	+292	+22	+450	+147	+473	+147	+534	+151	+712	+170	+804	+231	+730	+376
					+11	+351	+94	+379	+94	+466	+97	+715	+109	+863	+159	+782	+332
230	−2332	+45	+996	+197	+17	+1370	+95	+1302	+95	+1183	+95	+974	+102	+799	+121	+631	+163
					+9	+1736	+62	+1624	+62	+1405	+62	+1104	+67	+890	+80	+685	+126
231	−36	+44	+333	+153	+17	+390	+72	+409	+72	+454	+72	+514	+76	+493	+85	+418	+105
					+8	+326	+47	+364	+47	+447	+47	+550	+49	+541	+58	+453	+82

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km.					
											$R = 0$ Heisk.	29.05	58.1	116.2	174.3	232.4
232	4°42′	S	2	133°′38	E	2	2055	3	− 39	− 3	− 27 − 40	− 25 − 41	− 22 − 38	− 1 − 13	+ 23 + 18	+ 42 + 41
233	3°45′0	S	0.1	133°39′5	E	0.1	10	3	+ 63	+ 28	+ 47 + 54	+ 47 + 54	+ 45 + 53	+ 38 + 46	+ 31 + 37	+ 27 + 31
234	3°26′3	S	0.1	133°36′2	E	0.1	15	3	+ 41	+ 24	+ 46 + 54	+ 46 + 54	+ 45 + 54	+ 39 + 48	+ 29 + 36	+ 13 + 27
235	3°13′8	S	0.1	133°38′5	E	0.1	15	3	+ 40	+ 26	+ 49 + 56	+ 49 + 57	+ 49 + 58	+ 43 + 53	+ 33 + 41	+ 24 + 30
236	4°07′2	S	0.2	133°15′0	E	0.2	340	3	+ 103	+ 53	+ 73 + 81	+ 71 + 78	+ 67 + 70	+ 59 + 58	+ 58 + 58	+ 61 + 62
237	4°31′	S	2	132°24′	E	2	1172	3	− 30	− 52	− 45 − 41	− 45 − 41	− 46 − 44	− 49 − 46	− 54 − 52	− 60 − 60
238	4°45′1	S	0.2	131°41′7	E	0.2	812	3	+ 28	− 40	− 40 − 30	− 42 − 36	− 48 − 46	− 59 − 61	− 59 − 63	− 52 − 55
239	4°52′	S	2	131°13′	E	2	5080	3	− 87	+ 20	− 41 − 67	− 37 − 67	− 29 − 60	+ 4 − 17	+ 37 + 24	+ 62 + 54
240	4°58′	S	4	130°28′	E	4	3330	3	+ 32	+ 46	+ 15 + 19	+ 12 + 8	+ 5 − 9	+ 9 − 7	+ 27 + 13	+ 50 + 40
241	4°20′	S	3	128°29′	E	3	2128	3	+ 76	+ 48	+ 42 + 47	+ 41 + 42	+ 37 + 33	+ 38 + 35	+ 44 + 41	+ 47 + 47
242	4°13′	S	1	130°21′5	E	1	5100	4	− 27	+ 89	+ 54 + 10	+ 64 + 30	+ 80 + 60	+ 99 + 92	+ 110 + 106	+ 116 + 114
243	3°29′5	S	0.5	130°51′5	E	0.5	50	3	− 15	− 89	− 72 − 55	− 71 − 57	− 76 − 63	− 93 − 86	− 104 − 100	− 110 − 107
244	2°38′	S	2	130°54′	E	2	2065	4	− 58	− 11	+ 1 − 5	+ 4 0	+ 8 + 8	+ 15 + 18	+ 15 + 21	+ 11 + 16
245	2°17′	S	1	131°00′	E	1	90	4	+ 60	+ 19	+ 36 + 44	+ 36 + 43	+ 34 + 41	+ 33 + 39	+ 33 + 39	+ 29 + 36
246	2°12′8	S	0.1	130°21′6	E	0.1	98	3	+ 73	+ 22	+ 40 + 47	+ 39 + 46	+ 38 + 44	+ 36 + 41	+ 35 + 41	+ 30 + 36
247	2°20′	S	1	129°28′	E	1	1350	3	− 2	+ 3	+ 12 + 8	+ 14 + 11	+ 19 + 17	+ 24 + 29	+ 23 + 29	+ 17 + 22
248	2°26′	S	2	128°09′	E	2	4200	4	− 162	− 71	− 92 − 122	− 85 − 110	− 74 − 92	− 48 − 54	− 33 − 33	− 29 − 26
249	1°23′	S	2	128°23′	E	2	900	4	+ 48	+ 17	+ 32 + 36	+ 32 + 37	+ 31 + 36	+ 25 + 30	+ 20 + 23	+ 18 + 20
250	0°40′	S	2	128°43′	E	2	955	4	+ 71	+ 49	+ 58 + 61	+ 58 + 60	+ 58 + 59	+ 63 + 64	+ 68 + 72	+ 67 + 73
251	0°18′	S	3	128°48′	E	3	1960	4	+ 8	+ 38	+ 40 + 29	+ 43 + 33	+ 48 + 42	+ 63 + 62	+ 71 + 75	+ 72 + 78
252	0°38′5	S	1	129°34′	E	1	1340	4	+ 12	+ 12	+ 25 + 25	+ 26 + 27	+ 27 + 29	+ 30 + 33	+ 33 + 38	+ 32 + 38

No.	Topog	Reductions in 0.1 mgal																	
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp $A\text{-}0_2$	t + c 18-1	I.R. $T=20$	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1
232	−1500	+ 43	+ 906	+ 194	+ 16	+1274	+ 92	+1255	+ 92	+1218	+ 92	+1011	+ 96	+ 757	+ 103	+ 559	+ 117
					+ 9	+1445	+ 58	+1455	+ 58	+1424	+ 58	+1169	+ 59	+ 853	+ 65	+ 613	+ 78
233	− 6	+ 43	+ 63	+ 245	+ 16	+ 35	+ 118	+ 36	+ 118	+ 48	+ 118	+ 108	+ 128	+ 169	+ 145	+ 169	+ 185
					+ 9	+ 12	+ 76	+ 11	+ 76	+ 17	+ 76	+ 91	+ 81	+ 175	+ 98	+ 178	+ 143
234	− 29	+ 41	− 86	+ 247	+ 15	− 155	+ 119	− 156	+ 119	− 146	+ 119	− 95	+ 127	− 12	+ 146	+ 111	+ 183
					+ 8	− 183	+ 76	− 183	+ 76	− 183	+ 76	− 132	+ 80	− 24	+ 98	+ 24	+ 142
235	− 20	+ 41	− 136	+ 257	+ 14	− 207	+ 124	− 210	+ 124	− 205	+ 124	− 159	+ 133	− 74	+ 150	− 26	+ 190
					+ 8	− 227	+ 78	+ 234	+ 78	− 247	+ 78	− 196	+ 82	− 92	+ 98	− 33	+ 143
236	− 113	+ 44	+ 318	+ 246	+ 16	+ 285	+ 111	+ 302	+ 111	+ 347	+ 111	+ 424	+ 118	+ 410	+ 134	+ 345	+ 169
					+ 9	+ 255	+ 72	+ 284	+ 72	+ 363	+ 72	+ 482	+ 77	+ 469	+ 89	+ 386	+ 127
237	− 764	+ 54	+ 610	+ 322	+ 21	+ 733	+ 161	+ 731	+ 161	+ 741	+ 166	+ 744	+ 187	+ 732	+ 253	+ 640	+ 407
					+ 12	+ 759	+ 103	+ 763	+ 103	+ 786	+ 106	+ 793	+ 119	+ 797	+ 176	+ 688	+ 364
238	− 833	+ 59	+1104	+ 346	+ 23	+1320	+ 172	+1341	+ 172	+1396	+ 175	+1483	+ 198	+1421	+ 260	+1200	+ 410
					+ 13	+1287	+ 110	+1346	+ 110	+1444	+ 113	+1585	+ 126	+1553	+ 178	+1295	+ 350
239	−3543	+ 62	+2056	+ 351	+ 24	+2883	+ 175	+2840	+ 175	+2759	+ 180	+2408	+ 203	+2008	+ 271	+1593	+ 440
					+ 14	+3216	+ 110	+3223	+ 110	+3145	+ 113	+2698	+ 128	+2233	+ 185	+1737	+ 383
240	−2598	+ 68	+2025	+ 365	+ 27	+2561	+ 182	+2585	+ 183	+2659	+ 187	+2592	+ 213	+2334	+ 290	+1914	+ 480
					+ 15	+2604	+ 114	+2706	+ 114	+2876	+ 118	+2838	+ 135	+2570	+ 200	+2075	+ 426
241	−1653	+ 62	+1382	+ 493	+ 25	+1732	+ 237	+1739	+ 239	+1769	+ 245	+1734	+ 275	+1588	+ 365	+1318	+ 597
					+ 14	+1789	+ 145	+1839	+ 145	+1915	+ 150	+1885	+ 168	+1747	+ 242	+1428	+ 503
242	−3214	+ 61	+1593	+ 400	+ 24	+2187	+ 197	+2082	+ 199	+1925	+ 203	+1701	+ 230	+1515	+ 312	+1254	+ 507
					+ 14	+2711	+ 125	+2506	+ 125	+2207	+ 129	+1874	+ 145	+1667	+ 213	+1355	+ 445
243	− 38	+ 52	+ 378	+ 352	+ 20	+ 412	+ 178	+ 396	+ 178	+ 446	+ 182	+ 593	+ 202	+ 651	+ 255	+ 585	+ 381
					+ 11	+ 308	+ 115	+ 327	+ 115	+ 391	+ 118	+ 603	+ 130	+ 701	+ 174	+ 628	+ 319
244	−1199	+ 43	+ 340	+ 344	+ 17	+ 424	+ 164	+ 397	+ 164	+ 352	+ 168	+ 277	+ 180	+ 235	+ 215	+ 197	+ 295
					+ 9	+ 557	+ 107	+ 500	+ 107	+ 423	+ 110	+ 311	+ 116	+ 257	+ 147	+ 212	+ 235
245	− 86	+ 42	+ 112	+ 342	+ 16	+ 141	+ 164	+ 145	+ 164	+ 159	+ 165	+ 160	+ 176	+ 134	+ 205	+ 106	+ 269
					+ 8	+ 129	+ 102	+ 142	+ 102	+ 167	+ 102	+ 180	+ 110	+ 149	+ 132	+ 115	+ 202
246	− 23	+ 42	+ 138	+ 350	+ 16	+ 175	+ 165	+ 180	+ 165	+ 194	+ 168	+ 195	+ 180	+ 177	+ 210	+ 149	+ 289
					+ 9	+ 165	+ 106	+ 177	+ 106	+ 203	+ 107	+ 216	+ 116	+ 194	+ 140	+ 161	+ 223
247	− 882	+ 45	+ 414	+ 377	+ 18	+ 541	+ 184	+ 522	+ 184	+ 469	+ 188	+ 397	+ 204	+ 365	+ 252	+ 315	+ 358
					+ 10	+ 653	+ 117	+ 627	+ 117	+ 562	+ 120	+ 432	+ 131	+ 398	+ 169	+ 339	+ 289
248	−2448	+ 49	+1087	+ 406	+ 17	+1529	+ 198	+1466	+ 198	+1347	+ 202	+1073	+ 222	+ 860	+ 281	+ 680	+ 418
					+ 10	+1909	+ 127	+1795	+ 127	+1612	+ 130	+1219	+ 142	+ 959	+ 190	+ 740	+ 342
249	− 604	+ 49	+ 495	+ 366	+ 19	+ 575	+ 175	+ 571	+ 175	+ 579	+ 179	+ 619	+ 194	+ 628	+ 236	+ 550	+ 336
					+ 11	+ 598	+ 111	+ 589	+ 111	+ 598	+ 114	+ 652	+ 122	+ 681	+ 160	+ 593	+ 280
250	− 680	+ 46	+ 465	+ 386	+ 17	+ 608	+ 183	+ 607	+ 183	+ 605	+ 186	+ 547	+ 201	+ 457	+ 240	+ 362	+ 237
					+ 10	+ 661	+ 114	+ 668	+ 114	+ 678	+ 116	+ 615	+ 126	+ 506	+ 158	+ 394	+ 252
251	−1320	+ 44	+ 583	+ 397	+ 16	+ 799	+ 186	+ 772	+ 186	+ 711	+ 189	+ 555	+ 202	+ 431	+ 239	+ 333	+ 331
					+ 9	+ 979	+ 119	+ 939	+ 119	+ 855	+ 121	+ 639	+ 130	+ 483	+ 159	+ 364	+ 252
252	− 840	+ 45	+ 408	+ 386	+ 16	+ 513	+ 183	+ 504	+ 183	+ 489	+ 186	+ 447	+ 199	+ 382	+ 235	+ 306	+ 322
					+ 9	+ 589	+ 114	+ 568	+ 114	+ 549	+ 116	+ 497	+ 124	+ 422	+ 154	+ 331	+ 245

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
							Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
									R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
253	0°56′5 S	1	130°14′5 E	1	820	4	+ 67	+ 58	+ 77 + 78	+ 78 + 81	+ 80 + 85	+ 82 + 88	+ 79 + 86	+ 72 + 79
254	0°53′.5 S	0.0	131°14′.2 E	0.0	Sorrong	3	+ 93	+ 47	+ 71 + 80	+ 71 + 79	+ 70 + 79	+ 66 + 74	+ 59 + 67	+ 50 + 58
255	0°26′ S	1.5	131°42′ E	1.5	2510	4	— 36	+ 17	+ 26 + 14	+ 30 + 23	+ 37 + 35	+ 35 + 49	+ 46 + 51	+ 42 + 48
256	0°19′5 S	0.2	132°38′5 E	0.2	545	3	+ 119	+ 68	+ 87 + 102	+ 85 + 99	+ 79 + 89	+ 67 + 72	+ 61 + 65	+ 58 + 62
257	0°20′ N	1.5	132°39′ E	1.5	4500	3	+ 46	+ 121	+ 84 + 60	+ 88 + 64	+ 93 + 70	+ 119 + 105	+ 144 + 136	+ 161 + 159
258	1°03′2 N	0.2	131°16′5 E	0.2	1297	3	+ 113	+ 26	+ 29 + 43	+ 26 + 35	+ 19 + 22	+ 10 + 9	+ 11 + 8	+ 18 + 17
259	1°27′ N	1.5	130°46′ E	1.5	4100	4	+ 59	+ 103	+ 89 + 72	+ 93 + 79	+ 97 + 86	+ 107 + 101	+ 116 + 114	+ 123 + 123
260	2°03′ N	5	129°55′ E	5	4330	4	+ 56	+ 106	+ 83 + 65	+ 88 + 70	+ 92 + 79	+ 104 + 95	+ 121 + 116	+ 134 + 132
261	1°52′ N	2	128°48′ E	2	2080	4	+ 25	+ 14	+ 24 + 23	+ 25 + 25	+ 26 + 27	+ 27 + 29	+ 27 + 29	+ 20 + 25
262	1°43′.7 N	0.0	128°00′.7 E	0.0	Tobelo	3	+ 90	+ 5	+ 38 + 55	+ 37 + 53	+ 34 + 50	+ 18 + 32	— 3 + 6	— 20 — 13
263	2°49′ N	2	128°34′ E	2	455	6	+ 109	— 8	+ 6 + 26	+ 3 + 18	— 7 + 2	— 19 — 16	— 24 — 21	— 25 — 23
264	3°23′ N	1	129°09′ E	1	5172	4	+ 14	+ 74	+ 43 + 24	+ 48 + 28	+ 53 + 35	+ 71 + 61	+ 87 + 81	+ 95 + 94
265	4°42′ N	1.5	129°23′ E	6	5390	5	+ 29	+ 56	+ 34 + 29	+ 35 + 25	+ 34 + 21	+ 39 + 28	+ 46 + 36	+ 58 + 50
266	4°45′ N	4	128°26′ E	4	5790	5	+ 24	+ 91	+ 47 + 36	+ 48 + 34	+ 51 + 35	+ 75 + 62	+ 96 + 88	+ 111 + 106
267	4°54′ N	4	128°13′ E	4	7780	5	— 78	+ 59	— 22 — 32	— 5 — 21	+ 19 + 2	+ 56 + 44	+ 81 + 73	+ 95 + 90
268	4°33′ N	2	127°03′ E	2	980	4	— 40	— 140	— 106 — 85	— 108 — 88	— 116 — 99	— 139 — 128	— 160 — 154	— 173 — 168
269	4°23′ N	1	126°25′5 E	1	3320	4	+ 12	+ 36	+ 49 + 37	+ 53 + 46	+ 60 + 59	+ 66 + 72	+ 59 + 66	+ 42 + 48
270	4°05′ N	3	125°53′ E	3	870	4	+ 201	+ 118	+ 147 + 162	+ 145 + 160	+ 140 + 152	+ 126 + 135	+ 110 + 115	+ 95 + 94
271	2°44′.6 N	0.2	125°27′.5 E	0.2	Siao (660)	3	+ 197	+ 96	+ 114 + 134	+ 111 + 127	+ 103 + 114	+ 90 + 95	+ 81 + 84	+ 74 + 77
272	2°26′ N	2	126°14′ E	2	1582	3	— 83	— 118	— 104 — 96	— 104 — 98	— 107 — 102	— 111 — 107	— 114 — 111	— 118 — 113
273	2°09′ N	2	126°59′ E	4	2200	6	— 179	— 179	— 178 — 182	— 177 — 181	— 175 — 180	— 167 — 168	— 159 — 157	— 155 — 151

No.	Topog	Reductions in 0.1 mgal																		
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4				
		I R.	Comp $A\text{-}0_2$	t + c 18-1	I.R. $T=20$	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1			
253	— 560	+ 45	+ 213	+ 379	+ 17	+ 262	+ 181	+ 248	+ 181	+ 226	+ 185	+ 200	+ 198	+ 190	+ 237	+ 166	+ 326			
					+ 9	+ 328	+ 113	+ 299	+ 113	+ 258	+ 116	+ 216	+ 124	+ 208	+ 157	+ 178	+ 256			
254	— 31	+ 44	+ 56	+ 389	+ 17	+ 51	+ 184	+ 52	+ 184	+ 59	+ 187	+ 86	+ 201	+ 112	+ 240	+ 110	+ 332			
					+ 9	+ 35	+ 117	+ 41	+ 117	+ 47	+ 119	+ 81	+ 129	+ 119	+ 161	+ 116	+ 257			
255	—1561	+ 47	+ 568	+ 413	+ 19	+ 722	+ 198	+ 682	+ 198	+ 610	+ 202	+ 617	+ 218	+ 462	+ 264	+ 389	+ 373			
					+ 10	+ 933	+ 123	+ 843	+ 123	+ 716	+ 126	+ 570	+ 135	+ 510	+ 175	+ 422	+ 291			
256	— 519	+ 53	+ 546	+ 428	+ 21	+ 613	+ 207	+ 631	+ 207	+ 687	+ 211	+ 792	+ 231	+ 788	+ 289	+ 678	+ 426			
					+ 11	+ 552	+ 131	+ 579	+ 131	+ 674	+ 131	+ 837	+ 146	+ 855	+ 195	+ 730	+ 348			
257	—3028	+ 60	+1754	+ 466	+ 22	+2400	+ 224	+2359	+ 224	+2302	+ 228	+2023	+ 251	+1705	+ 319	+1366	+ 482			
					+ 13	+2728	+ 140	+2691	+ 140	+2631	+ 143	+2260	+ 157	+1895	+ 213	+1484	+ 394			
258	— 989	+ 65	+1298	+ 499	+ 25	+1573	+ 237	+1599	+ 237	+1663	+ 242	+1730	+ 268	+1644	+ 344	+1390	+ 528			
					+ 14	+1535	+ 145	+1615	+ 145	+1739	+ 148	+1855	+ 164	+1800	+ 229	+1497	+ 437			
259	—2574	+ 64	+1540	+ 533	+ 24	+1999	+ 251	+1958	+ 253	+1914	+ 259	+1788	+ 287	+1604	+ 372	+1326	+ 586			
					+ 14	+2275	+ 154	+2202	+ 154	+2130	+ 159	+1964	+ 177	+1767	+ 247	+1432	+ 487			
260	—2917	+ 65	+1778	+ 570	+ 25	+3252	+ 266	+2308	+ 267	+2257	+ 273	+2110	+ 302	+1856	+ 390	+1511	+ 604			
					+ 15	+2655	+ 159	+2603	+ 159	+2510	+ 164	+2328	+ 184	+2050	+ 257	+1637	+ 508			
261	—1456	+ 58	+ 956	+ 551	+ 23	+1190	+ 256	+1178	+ 256	+1161	+ 264	+1128	+ 290	+1055	+ 373	+ 898	+ 578			
					+ 13	+1306	+ 156	+1288	+ 156	+1262	+ 160	+1220	+ 179	+1154	+ 247	+ 971	+ 477			
262	— 20	+ 54	+ 298	+ 517	+ 21	+ 273	+ 243	+ 283	+ 243	+ 314	+ 249	+ 440	+ 276	+ 575	+ 351	+ 560	+ 539			
					+ 12	+ 213	+ 149	+ 225	+ 149	+ 259	+ 152	+ 415	+ 170	+ 609	+ 235	+ 595	+ 443			
263	— 636	+ 65	+1152	+ 587	+ 25	+1366	+ 273	+1399	+ 275	+1483	+ 283	+1583	+ 312	+1528	+ 408	+1304	+ 650			
					+ 14	+1240	+ 162	+1369	+ 162	+1521	+ 167	+1685	+ 188	+1657	+ 267	+1403	+ 536			
264	—3395	+ 71	+2075	+ 651	+ 27	+2779	+ 296	+2732	+ 298	+2676	+ 307	+2458	+ 342	+2185	+ 456	+1799	+ 757			
					+ 16	+3105	+ 175	+3053	+ 175	+2990	+ 180	+2702	+ 204	+2409	+ 298	+1948	+ 636			
265	—3717	+ 85	+2587	+ 771	+ 31	+3315	+ 319	+3302	+ 321	+3309	+ 331	+3219	+ 371	+2995	+ 517	+2499	+ 899			
					+ 17	+3510	+ 189	+3548	+ 190	+3585	+ 195	+3486	+ 222	+3297	+ 336	+2720	+ 773			
266	—4069	+ 80	+2582	+ 740	+ 29	+3488	+ 323	+3471	+ 325	+3431	+ 335	+3159	+ 373	+2808	+ 510	+2299	+ 872			
					+ 17	+3743	+ 187	+3769	+ 188	+3753	+ 193	+3452	+ 218	+3090	+ 325	+2497	+ 737			
267	—4938	+ 80	+2739	+ 746	+ 29	+4024	+ 324	+3855	+ 326	+3606	+ 336	+3195	+ 375	+2812	+ 513	+2297	+ 881			
					+ 17	+4272	+ 185	+4167	+ 186	+3930	+ 191	+3482	+ 216	+3092	+ 324	+2495	+ 743			
268	— 766	+ 68	+1026	+ 667	+ 25	+1108	+ 300	+1127	+ 302	+1194	+ 310	+1392	+ 346	+1489	+ 459	+1325	+ 755			
					+ 15	+1033	+ 178	+1065	+ 178	+1163	+ 183	+1430	+ 207	+1606	+ 298	+1418	+ 627			
269	—2071	+ 62	+1084	+ 683	+ 24	+1373	+ 302	+1329	+ 304	+1248	+ 312	+1157	+ 350	+1106	+ 470	+ 956	+ 788			
					+ 14	+1625	+ 179	+1538	+ 179	+1399	+ 184	+1243	+ 209	+1207	+ 304	+1031	+ 660			
270	— 640	+ 61	+ 783	+ 622	+ 23	+ 874	+ 283	+ 890	+ 285	+ 937	+ 293	+1040	+ 325	+1100	+ 429	+ 986	+ 688			
					+ 14	+ 837	+ 176	+ 861	+ 176	+ 934	+ 182	+1078	+ 205	+1186	+ 296	+1054	+ 646			
271	— 485	+ 61	+ 884	+ 545	+ 24	+1034	+ 257	+1064	+ 259	+1136	+ 266	+1241	+ 295	+1236	+ 387	+1073	+ 619			
					+ 14	+ 944	+ 156	+1019	+ 156	+1145	+ 161	+1311	+ 181	+1343	+ 255	+1152	+ 517			
272	—1089	+ 55	+ 864	+ 518	+ 22	+1030	+ 244	+1032	+ 244	+1054	+ 250	+1074	+ 275	+1033	+ 348	+ 888	+ 524			
					+ 13	+1061	+ 149	+1072	+ 149	+1113	+ 152	+1149	+ 169	+1127	+ 228	+ 955	+ 422			
273	—1522	+ 51	+ 978	+ 494	+ 19	+1267	+ 230	+1252	+ 230	+1229	+ 236	+1123	+ 256	+ 993	+ 311	+ 819	+ 448			
					+ 11	+1405	+ 139	+1394	+ 139	+1381	+ 143	+1240	+ 156	+1095	+ 200	+ 887	+ 342			

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
274	1°12′	N	1.5	127°00′	E	1.5	2749	4	+ 43	+ 87	+ 89 + 75	+ 93 + 82	+ 99 + 93	+ 111 + 112	+ 116 + 120	+ 115 + 120
275	0°47′.0	N	0.2	121°37′.0	E	0.0	Ternate	3	+ 137	+ 60	+ 83 + 97	+ 82 + 94	+ 78 + 88	+ 71 + 80	+ 63 + 70	+ 52 + 59
276	0°38′.5	S	0.0	127°23′.0	E	0.1	Laboeha	3	+ 122	+ 43	+ 65 + 82	+ 63 + 79	+ 57 + 69	+ 43 + 50	+ 33 + 38	+ 26 + 30
277	1°03′	S	1	126°43′	E	1	5010	3	— 216	— 107	— 139 — 177	— 131 — 163	— 116 — 139	— 86 — 94	— 69 — 70	— 63 — 62
278	1°20′	S	1	126°03′	E	1	2530	3	— 91	— 70	— 74 — 83	— 71 — 79	— 67 — 71	— 65 — 65	— 65 — 66	— 63 — 63
279	1°56′6	S	0.2	125°19′0	E	0.2	895	3	+ 228	+ 153	+ 165 + 182	+ 162 + 176	+ 154 + 163	+ 140 + 144	+ 131 + 131	+ 126 + 126
280	2°52′	S	2	125°08′	E	2	4800	3	+ 58	+ 128	+ 86 + 66	+ 89 + 68	+ 91 + 71	+ 106 + 89	+ 134 + 123	+ 154 + 148
281	3°32′	S	2.5	124°58′	E	2.5	5010	5	+ 29	+ 77	+ 42 + 31	+ 43 + 29	+ 42 + 26	+ 47 + 33	+ 63 + 50	+ 88 + 79
282	3°29′	S	1.5	125°43′	E	1.5	5170	4	+ 4	+ 89	+ 58 + 25	+ 66 + 38	+ 79 + 60	+ 90 + 82	+ 95 + 89	+ 101 + 98
283	3°49′.5	S	0.1	127°27′.2	E	0.1	1410	3	+ 48	+ 7	+ 26 + 40	+ 24 + 37	+ 19 + 30	+ 4 + 13	— 16 — 12	— 28 — 26
284	4°32′	S	3	126°01′	E	3	4130	4	+ 15	+ 43	+ 29 + 17	+ 31 + 22	+ 31 + 24	+ 33 + 27	+ 40 + 36	+ 44 + 42
285	5°06′	S	2	127°00′	E	2	3780	4	+ 32	+ 53	+ 42 + 32	+ 44 + 35	+ 47 + 41	+ 49 + 47	+ 46 + 43	+ 46 + 45
286	5°16′	S	1	128°00′	E	1	3546	4	+ 42	+ 37	+ 36 + 37	+ 36 + 38	+ 32 + 32	+ 22 + 20	+ 17 + 12	+ 18 + 14
287	6°19′	S	3	128°21′	E	3	4940	4	+ 22	+ 82	+ 45 + 28	+ 47 + 29	+ 48 + 31	+ 60 + 47	+ 76 + 66	+ 86 + 82
288	6°50′	S	3	127°14′	E	3	4780	3	+ 26	+ 88	+ 52 + 34	+ 55 + 37	+ 56 + 38	+ 68 + 56	+ 89 + 79	+ 104 + 99
289	6°59′	S	2	126°04′	E	2	4430	4	+ 31	+ 86	+ 52 + 35	+ 55 + 37	+ 58 + 39	+ 73 + 62	+ 86 + 77	+ 100 + 95
290	7°41′.7	S	0.1	126°30′.0	E	0.2	3850	4	+ 1	+ 48	+ 39 + 28	+ 42 + 36	+ 42 + 37	+ 42 + 37	+ 49 + 46	+ 54 + 53
291	7°20′	S	3	124°41′	E	1.5	3910	5	+ 47	+ 88	+ 55 + 45	+ 57 + 44	+ 56 + 42	+ 66 + 53	+ 83 + 75	+ 101 + 97
292	7°28′	S	3	123°24′	E	2	3490	5	+ 18	+ 63	+ 42 + 29	+ 45 + 32	+ 48 + 35	+ 59 + 51	+ 72 + 67	+ 80 + 77
293	8°08′.2	S	0.2	125°42′.8	E	0.1	1527	5	+ 50	+ 18	+ 27 + 34	+ 26 + 32	+ 23 + 28	+ 14 + 18	+ 4 + 5	0 — 1
294	8°14′.8	S	0.1	122°43′.5	E	0.2	1840	6	— 7	— 6	— 12 — 14	— 10 — 16	— 8 — 13	— 3 — 3	— 1 — 1	— 2 — 1

No.	Topog	Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-O_2	t + c 18-1	I.R. $T=20$	Comp A-O_2	t + c 18-1	Comp A-O_2	t + c 18-1	Comp A-O_2	t + c 18-1	Comp A-O_2	t + c 18-1	Comp A-O_2	t + c 18-1	Comp A-O_2	t + c 18-1
274	—1755	+ 49	+ 806	+ 458	+ 19 + 11	+1062 +1293	+ 218 + 134	+1021 +1217	+ 218 + 134	+ 949 +1103	+ 223 + 137	+ 812 + 904	+ 244 + 150	+ 703 + 776	+ 300 + 198	+ 578 + 625	+ 436 + 346
275	— 38	+ 49	+ 292	+ 466	+ 19 + 11	+ 340 + 295	+ 223 + 137	+ 351 + 324	+ 223 + 137	+ 380 + 374	+ 228 + 140	+ 428 + 445	+ 250 + 154	+ 452 + 488	+ 311 + 206	+ 406 + 436	+ 461 + 371
276	— 31	+ 52	+ 360	+ 413	+ 20 + 11	+ 382 + 292	+ 200 + 126	+ 404 + 325	+ 200 + 126	+ 461 + 418	+ 204 + 129	+ 578 + 597	+ 225 + 142	+ 615 + 664	+ 284 + 193	+ 552 + 593	+ 422 + 351
277	—2878	+ 52	+1318	+ 419	+ 21 + 12	+1878 +2344	+ 207 + 127	+1795 +2204	+ 207 + 127	+1646 +1966	+ 211 + 130	+1323 +1502	+ 234 + 145	+1083 +1206	+ 301 + 200	+ 863 + 940	+ 463 + 385
278	—1811	+ 56	+1126	+ 422	+ 23 + 13	+1408 +1588	+ 208 + 129	+1381 +1544	+ 208 + 129	+1336 +1467	+ 213 + 132	+1290 +1391	+ 235 + 146	+1226 +1339	+ 306 + 205	+1039 +1121	+ 469 + 392
279	— 804	+ 63	+1031	+ 464	+ 25 + 14	+1188 +1114	+ 225 + 139	+1216 +1176	+ 227 + 139	+1290 +1305	+ 232 + 143	+1403 +1475	+ 262 + 161	+1409 +1530	+ 349 + 236	+1224 +1314	+ 577 + 496
280	—3205	+ 63	+2006	+ 439	+ 24 + 14	+2680 +2970	+ 216 + 135	+2648 +2949	+ 218 + 135	+2627 +2922	+ 223 + 140	+2445 +2721	+ 250 + 156	+2088 +2314	+ 333 + 226	+1675 +1822	+ 541 + 467
281	—3211	+ 70	+2223	+ 443	+ 26 + 15	+2840 +3047	+ 218 + 136	+2828 +3060	+ 219 + 136	+2840 +3086	+ 224 + 140	+2758 +3003	+ 250 + 156	+2516 +2766	+ 333 + 227	+2076 +2251	+ 524 + 450
282	—3240	+ 67	+1846	+ 477	+ 25 + 15	+2446 +2872	+ 232 + 142	+2366 +2744	+ 234 + 142	+2248 +2516	+ 240 + 146	+2093 +2276	+ 271 + 166	+1937 +2124	+ 370 + 249	+1626 +1754	+ 618 + 535
283	—1183	+ 66	+1017	+ 513	+ 25 + 14	+1132 +1103	+ 247 + 148	+1147 +1129	+ 249 + 149	+1189 +1198	+ 256 + 153	+1309 +1346	+ 290 + 173	+1398 +1510	+ 395 + 261	+1255 +1343	+ 660 + 563
284	—2682	+ 69	+1785	+ 550	+ 25 + 15	+2262 +2489	+ 257 + 154	+2235 +2441	+ 259 + 154	+2227 +2421	+ 266 + 159	+2175 +2370	+ 301 + 181	+1987 +2186	+ 417 + 274	+1648 +1783	+ 718 + 613
285	—2516	+ 69	+1707	+ 533	+ 27 + 15	+2138 +2357	+ 251 + 149	+2107 +2318	+ 253 + 149	+2075 +2260	+ 260 + 154	+2025 +2172	+ 295 + 175	+1942 +2124	+ 406 + 267	+1650 +1780	+ 695 + 591
286	—2285	+ 73	+1744	+ 522	+ 27 + 15	+2075 +2176	+ 248 + 149	+2067 +2166	+ 250 + 149	+2105 +2216	+ 258 + 154	+2169 +2318	+ 293 + 176	+2104 +2298	+ 407 + 271	+1799 +1937	+ 703 + 612
287	—3323	+ 73	+2169	+ 482	+ 28 + 16	+2836 +3108	+ 232 + 141	+2807 +3093	+ 234 + 141	+2789 +3070	+ 242 + 146	+2637 +2886	+ 277 + 167	+2375 +2613	+ 385 + 258	+1986 +2126	+ 668 + 585
288	—3196	+ 68	+2037	+ 470	+ 27 + 15	+2684 +2962	+ 226 + 139	+2650 +2937	+ 228 + 139	+2630 +2913	+ 235 + 144	+2469 +2721	+ 266 + 164	+2179 +2408	+ 364 + 245	+1778 +1927	+ 613 + 528
289	—2965	+ 66	+1923	+ 430	+ 26 + 13	+2519 +2785	+ 209 + 129	+2489 +2764	+ 211 + 129	+2455 +2734	+ 217 + 134	+2278 +2491	+ 244 + 151	+2057 +2276	+ 328 + 221	+1715 +1857	+ 539 + 460
290	—2400	+ 61	+1434	+ 433	+ 24 + 13	+1780 +1987	+ 212 + 133	+1752 +1901	+ 214 + 133	+1746 +1892	+ 219 + 138	+1713 +1871	+ 247 + 154	+1560 +1714	+ 332 + 225	+1295 +1396	+ 547 + 468
291	—2642	+ 62	+1776	+ 396	+ 25 + 13	+2333 +2527	+ 200 + 125	+2317 +2534	+ 200 + 125	+2320 +2556	+ 206 + 128	+2197 +2420	+ 231 + 145	+1936 +2137	+ 318 + 209	+1579 +1711	+ 501 + 419
292	—2346	+ 58	+1440	+ 401	+ 22 + 12	+1883 +2101	+ 197 + 124	+1856 +2074	+ 197 + 124	+1825 +2035	+ 202 + 127	+1685 +1861	+ 227 + 142	+1485 +1639	+ 304 + 205	+1222 +1323	+ 483 + 418
293	— 992	+ 57	+ 874	+ 378	+ 22 + 12	+1018 +1029	+ 191 + 120	+1025 +1045	+ 192 + 120	+1048 +1080	+ 196 + 124	+1116 +1169	+ 222 + 139	+1141 +1235	+ 295 + 202	+1005 +1079	+ 472 + 411
294	—1381	+ 52	+ 952	+ 364	+ 21 + 11	+1225 +1326	+ 184 + 116	+1214 +1346	+ 184 + 116	+1185 +1317	+ 189 + 119	+1110 +1204	+ 212 + 133	+1028 +1127	+ 279 + 190	+ 873 + 940	+ 440 + 378

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
295	7°50′	S	2	120°48′	E	2	5140	5	− 121	+ 17	− 32	− 21	− 3	+ 32	+ 53	+ 65
											− 79	− 63	− 32	+ 20	+ 49	+ 63
296	8°20′.0	S	0.2	119°49′.0	E	0.2	80	6	+ 110	+ 23	+ 32	+ 30	+ 24	+ 14	+ 13	+ 16
											+ 45	+ 41	+ 31	+ 16	+ 14	+ 18
297	7°50′	S	2	118°41′	E	1	3420	6	− 100	− 7	− 23	− 17	− 6	+ 13	+ 24	+ 30
											− 51	− 39	− 21	+ 8	+ 23	+ 31
298	8°02′	S	2	117°17′	E	2	1090	6	− 44	− 43	− 32	− 31	− 28	− 25	− 28	− 35
											− 33	− 30	− 26	− 19	− 21	− 29
299	7°19′.9	S	0.3	113°51′.6	E	0.2	45	4	+ 8	− 14	+ 2	+ 3	+ 4	+ 5	+ 2	− 4
											+ 6	+ 7	+ 8	+ 11	+ 9	+ 2
300	6°51′.3	S	0.1	115°42′.5	E	0.1	60	4	+ 56	+ 26	+ 39	+ 39	+ 37	+ 33	+ 31	+ 32
											+ 45	+ 45	+ 43	+ 38	+ 34	+ 35
301	6°25′.5	S	1	116°51′	E	1	520	4	+ 41	+ 31	+ 40	+ 41	+ 42	+ 43	+ 43	+ 41
											+ 42	+ 43	+ 44	+ 47	+ 48	+ 45
302	6°25′.5	S	1	117°44′	E	2	340	4	+ 43	+ 17	+ 29	+ 29	+ 28	+ 27	+ 23	+ 18
											+ 33	+ 33	+ 33	+ 31	+ 27	+ 22
303	6°29′.2	S	0.2	118°51′.2	E	0.2	350	3	+ 47	+ 10	+ 24	+ 24	+ 21	+ 13	+ 5	+ 1
											+ 32	+ 31	+ 28	+ 18	+ 8	+ 3
304	6°19′.5	S	1	119°49′	E	1	1445	6	− 3	+ 4	+ 10	+ 11	+ 12	+ 13	+ 9	+ 5
											+ 9	+ 11	+ 12	+ 15	+ 12	+ 7
305	5°44′.1	S	0.1	120°27′.3	E	0.1	270	4	+ 71	+ 27	+ 35	+ 35	+ 35	+ 34	+ 31	+ 28
											+ 38	+ 38	+ 38	+ 38	+ 35	+ 31
306	4°45′.8	S	0.1	120°28′.6	E	0.1	20	4	+ 95	+ 58	+ 71	+ 70	+ 68	+ 65	+ 65	+ 65
											+ 78	+ 76	+ 73	+ 69	+ 68	+ 68
307	3°56′	S	1.5	120°46′	E	1.5	1683	5	− 44	+ 21	+ 25	+ 29	+ 36	+ 50	+ 58	+ 60
											+ 12	+ 18	+ 30	+ 51	+ 61	+ 66
308	3°14′	S	1.5	120°36′	E	1.5	700	5	− 48	− 12	− 2	+ 1	+ 6	+ 20	+ 26	+ 23
											− 9	− 5	+ 3	+ 23	+ 33	+ 30
309	4°03′.4	S	0.0	121°35′.0	E	0.0	Kolaka	3	+ 7	− 23	− 1	− 1	− 1	− 7	− 14	− 21
											+ 7	+ 8	+ 8	+ 1	− 7	− 15
310	5°03′	S	1	121°22′.5	E	1	2220	4	+ 27	+ 77	+ 73	+ 77	+ 83	+ 96	+ 108	+ 114
											+ 59	+ 65	+ 74	+ 93	+ 109	+ 117
311	5°58′	S	5	121°43′	E	1.5	2555	4	+ 34	+ 65	+ 58	+ 60	+ 62	+ 70	+ 79	+ 83
											+ 50	+ 53	+ 55	+ 67	+ 78	+ 84
312	5°27′.3	S	0.0	122°37′.0	E	0.0	Boeton	3	+ 69	− 7	+ 15	+ 13	+ 7	− 7	− 19	− 31
											+ 32	+ 29	+ 19	+ 2	− 13	− 26
313	6°25′	S	1	122°58′	E	1	2295	4	+ 21	+ 21	+ 24	+ 25	+ 22	+ 15	+ 17	+ 19
											+ 26	+ 28	+ 25	+ 14	+ 17	+ 20
314	5°58′	S	0.2	124°12′	E	0.2	820	4	+ 81	− 1	+ 21	+ 18	+ 8	− 16	− 34	− 43
											+ 42	+ 38	+ 23	− 9	− 32	− 43
315	6°12′	S	2.5	125°10′	E	2.5	3845	5	− 15	+ 14	+ 1	+ 4	+ 7	+ 8	+ 6	+ 7
											− 11	− 6	− 1	+ 5	+ 2	+ 4

No.	Topog	Reductions in 0.1 mgal																
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t + c 18-1	I.R. $T=20$	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
295	—3233	+ 50	+1473	+ 334	+ 20 + 11	+2150 +2696	+ 171 + 109	+2045 +2537	+ 171 + 109	+1857 +2221	+ 175 + 112	+1488 +1688	+ 195 + 125	+1218 +1353	+ 253 + 172	+ 969 +1052	+ 384 + 328
296	— 141	+ 49	+ 613	+ 353	+ 18 + 10	+ 728 + 667	+ 175 + 111	+ 748 + 715	+ 175 + 111	+ 802 + 805	+ 179 + 114	+ 885 + 947	+ 195 + 124	+ 849 + 930	+ 243 + 162	+ 716 + 773	+ 351 + 282
297	—2196	+ 44	+ 925	+ 300	+ 17 + 9	+1263 +1603	+ 148 + 95	+1201 +1483	+ 148 + 95	+1091 +1296	+ 152 + 98	+ 887 + 999	+ 166 + 104	+ 742 + 824	+ 199 + 134	+ 600 + 652	+ 278 + 223
298	— 729	+ 43	+ 326	+ 353	+ 16 + 9	+ 417 + 500	+ 177 + 111	+ 402 + 472	+ 177 + 111	+ 373 + 429	+ 181 + 114	+ 319 + 346	+ 199 + 124	+ 303 + 328	+ 246 + 162	+ 269 + 286	+ 357 + 288
299	— 49	+ 36	— 31	+ 268	+ 11 + 5	— 34 — 20	+ 129 + 83	— 39 — 26	+ 129 + 83	— 49 — 41	+ 130 + 83	— 65 — 71	+ 138 + 89	— 57 — 64	+ 158 + 103	— 43 — 48	+ 199 + 150
300	— 62	+ 37	+ 111	+ 217	+ 12 + 6	+ 117 + 99	+ 104 + 66	+ 121 + 105	+ 104 + 66	+ 135 + 125	+ 104 + 66	+ 169 + 173	+ 109 + 68	+ 183 + 198	+ 117 + 74	+ 163 + 178	+ 131 + 89
301	— 338	+ 38	+ 175	+ 226	+ 13 + 7	+ 221 + 255	+ 110 + 69	+ 213 + 244	+ 110 + 69	+ 205 + 231	+ 110 + 69	+ 187 + 203	+ 120 + 73	+ 169 + 185	+ 138 + 80	+ 143 + 154	+ 182 + 141
302	— 204	+ 40	+ 177	+ 248	+ 15 + 8	+ 209 + 216	+ 123 + 79	+ 209 + 217	+ 123 + 79	+ 210 + 218	+ 125 + 81	+ 216 + 225	+ 136 + 87	+ 222 + 240	+ 166 + 114	+ 200 + 215	+ 235 + 193
303	— 221	+ 44	+ 290	+ 257	+ 17 + 10	+ 305 + 281	+ 128 + 82	+ 309 + 286	+ 128 + 82	+ 331 + 312	+ 131 + 85	+ 398 + 406	+ 143 + 92	+ 444 + 477	+ 178 + 121	+ 407 + 435	+ 258 + 215
304	— 943	+ 47	+ 536	+ 293	+ 18 + 9	+ 652 + 725	+ 148 + 94	+ 642 + 704	+ 148 + 94	+ 624 + 685	+ 152 + 97	+ 601 + 643	+ 168 + 107	+ 585 + 636	+ 218 + 149	+ 509 + 548	+ 334 + 288
305	— 273	+ 43	+ 381	+ 292	+ 17 + 9	+ 472 + 503	+ 145 + 91	+ 470 + 504	+ 145 + 91	+ 464 + 498	+ 149 + 94	+ 463 + 490	+ 161 + 101	+ 456 + 496	+ 199 + 131	+ 398 + 426	+ 288 + 236
306	— 10	+ 37	+ 109	+ 235	+ 14 + 7	+ 127 + 102	+ 114 + 73	+ 135 + 116	+ 114 + 73	+ 153 + 150	+ 114 + 73	+ 173 + 186	+ 122 + 77	+ 162 + 180	+ 138 + 90	+ 131 + 144	+ 170 + 127
307	—1087	+ 30	+ 193	+ 211	+ 10 + 5	+ 287 + 459	+ 98 + 62	+ 252 + 396	+ 98 + 62	+ 180 + 282	+ 97 + 62	+ 40 + 74	+ 99 + 61	— 38 — 32	+ 96 + 67	— 59 — 60	+ 94 + 46
308	— 475	+ 27	— 123	+ 207	+ 8 + 4	— 90 + 19	+ 96 + 62	— 114 — 17	+ 96 + 62	— 172 — 102	+ 95 + 62	— 313 — 305	+ 98 + 64	— 374 — 400	+ 98 + 60	— 344 — 370	+ 106 + 61
309	— 4	+ 38	— 34	+ 295	+ 14 + 7	— 76 — 96	+ 144 + 91	— 78 — 100	+ 144 + 91	— 72 — 102	+ 146 + 92	— 22 — 39	+ 156 + 98	+ 14 + 12	+ 184 + 120	+ 24 + 24	+ 249 + 190
310	—1446	+ 38	+ 611	+ 299	+ 14 + 7	+ 827 +1030	+ 145 + 92	+ 792 + 969	+ 145 + 92	+ 723 + 873	+ 147 + 93	+ 588 + 679	+ 157 + 98	+ 443 + 502	+ 180 + 116	+ 329 + 363	+ 236 + 173
311	—1607	+ 48	+ 911	+ 341	+ 18 + 10	+1173 +1324	+ 174 + 111	+1153 +1295	+ 174 + 111	+1133 +1271	+ 178 + 114	+1030 +1142	+ 197 + 125	+ 891 + 985	+ 249 + 168	+ 723 + 783	+ 375 + 313
312	— 28	+ 50	+ 340	+ 401	+ 19 + 10	+ 351 + 263	+ 199 + 126	+ 371 + 296	+ 199 + 126	+ 426 + 386	+ 204 + 129	+ 537 + 548	+ 228 + 144	+ 593 + 673	+ 298 + 203	+ 537 + 575	+ 470 + 395
313	—1497	+ 56	+1038	+ 407	+ 22 + 12	+1239 +1314	+ 202 + 126	+1234 +1291	+ 202 + 126	+1256 +1321	+ 208 + 129	+1303 +1409	+ 233 + 145	+1210 +1326	+ 304 + 204	+1015 +1095	+ 480 + 405
314	— 657	+ 65	+ 947	+ 465	+ 25 + 13	+1008 + 898	+ 226 + 139	+1036 + 940	+ 228 + 139	+1129 +1078	+ 234 + 144	+1339 +1382	+ 266 + 164	+1415 +1528	+ 366 + 247	+1253 +1340	+ 622 + 542
315	—2535	+ 68	+1683	+ 491	+ 26 + 15	+2108 +2332	+ 237 + 144	+2079 +2282	+ 239 + 144	+2049 +2227	+ 245 + 149	+2003 +2154	+ 279 + 170	+1908 +2088	+ 388 + 261	+1626 +1751	+ 662 + 580

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km. R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
316	5°44′ S	2	126°02′ E	2	4130	4	+ 14	+ 37	+ 26 + 19	+ 28 + 24	+ 27 + 26	+ 26 + 25	+ 27 + 24	+ 28 + 26
317	5°07′ S	2	125°06′ E	2	3150	4	+ 53	+ 37	+ 32 + 39	+ 30 + 34	+ 23 + 20	+ 21 + 18	+ 23 + 19	+ 23 + 20
318	4°32′ S	2	124°12′ E	2	5080	4	+ 19	+ 103	+ 60 + 34	+ 65 + 40	+ 70 + 48	+ 92 + 76	+ 116 + 107	+ 132 + 128
319	3°51′.5 S	1	123°15′ E	1	1161	4	+ 95	+ 47	+ 58 + 72	+ 56 + 68	+ 48 + 56	+ 35 + 37	+ 32 + 31	+ 34 + 34
320	2°51′ S	2.5	123°43′ E	2.5	4860	4	− 11	+ 80	+ 35 + 7	+ 39 + 13	+ 44 + 20	+ 69 + 51	+ 97 + 87	+ 120 + 114
321	2°49′ S	2	122°27′ E	2	2572	4	− 47	+ 9	+ 10 − 2	+ 13 + 5	+ 17 + 12	+ 26 + 25	+ 35 + 37	+ 37 + 41
322	1°45′ S	2	122°15′ E	2	1080	4	− 21	− 6	+ 5 + 3	+ 7 + 6	+ 10 + 10	+ 15 + 19	+ 14 + 20	+ 8 + 13
323	1°25′.0 S	0.5	123°38′.0 E	0.5	60	4	+ 73	− 4	+ 20 + 34	+ 20 + 32	+ 16 + 28	+ 4 + 14	− 17 − 11	− 30 − 27
324	0°40′ S	1.5	124°36′ E	1.5	2468	4	− 183	− 173	− 183 − 187	− 181 − 188	− 181 − 189	− 173 − 179	− 158 − 159	− 149 − 147
325	0°23′.5 S	0.5	123°06′ E	0.5	2040	4	− 46	− 22	− 17 − 19	− 15 − 16	− 14 − 15	− 9 − 7	− 1 + 4	0 + 6
326	0°37′.0 S	0.5	122°09′.5 E	0.5	1010	4	+ 1	+ 21	+ 35 + 29	+ 37 + 36	+ 42 + 45	+ 40 + 45	+ 37 + 42	+ 36 + 41
327	0°45′ S	1	121°18′ E	1	1750	3	− 30	+ 20	+ 21 + 7	+ 25 + 12	+ 31 + 23	+ 43 + 41	+ 56 + 54	+ 62 + 57
328	0°35′ S	1	120°29′ E	1	1720	4	− 42	+ 8	+ 7 − 5	+ 10 0	+ 17 + 9	+ 31 + 30	+ 41 + 44	+ 44 + 48
329	0°01′ S	1.5	121°15′ E	1.5	1960	4	+ 17	+ 60	+ 61 + 50	+ 64 + 55	+ 70 + 62	+ 82 + 81	+ 93 + 96	+ 94 + 99
330	0°12′ N	1.5	122°18′ E	1.5	2325	4	− 78	− 27	− 21 − 34	− 16 − 26	− 9 − 14	+ 2 + 5	+ 4 + 10	− 3 + 4
331	0°29′.7 N	0.0	123°03′.4 E	0.0	Goron-talo	3	+ 91	+ 19	+ 41 + 54	+ 40 + 53	+ 37 + 49	+ 26 + 35	+ 14 + 21	+ 3 + 8
332	0°07′ S	1	124°00′.5 E	1	3600	4	− 107	− 31	− 57 − 81	− 52 − 77	− 43 − 64	− 13 − 21	+ 7 + 5	+ 16 + 19
333	0°25′ N	1	124°38′ E	1	1245	4	+ 117	+ 89	+ 96 + 101	+ 97 + 100	+ 96 + 98	+ 96 + 99	+ 92 + 95	+ 87 + 89
334	0°42′ N	3	125°43′ E	3	2230	4	− 83	− 77	− 75 − 78	− 73 − 75	− 72 − 74	− 70 − 70	− 66 − 64	− 66 − 63
335	1°33′ N	1	125°46′ E	3	1675	4	+ 24	+ 9	+ 18 + 18	+ 19 + 19	+ 21 + 22	+ 23 + 28	+ 18 + 22	+ 12 + 16
336	1°57′.5 N	1	125°07′ E	1	940	4	+ 136	+ 68	+ 87 + 99	+ 86 + 97	+ 81 + 91	+ 68 + 75	+ 58 + 62	+ 50 + 54

No.	Topog	Reductions in 0.1 mgal																
		Hayford 113.7 km			I.R T=30	R=0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp $A\text{-}0_2$	t+c 18-1	I.R. T=20	Comp $A\text{-}0_2$	t+c 18-1	Comp $A\text{-}0_2$	t+c 18-1	Comp $A\text{-}0_2$	t+c 18-1	Comp $A\text{-}0_2$	t+c 18-1	Comp $A\text{-}0_2$	t+c 18-1	Comp $A\text{-}0_2$	t+c 18-1
316	—2633	+71	+1802	+530	+27 +16	+2239 +2423	+250 +148	+2215 +2374	+252 +148	+2217 +2343	+259 +153	+2190 +2327	+297 +176	+2066 +2242	+414 +271	+1745 +1870	+722 +627
317	—2109	+70	+1670	+526	+26 +15	+2045 +2086	+250 +148	+2059 +2140	+252 +148	+2122 +2275	+260 +153	+2104 +2270	+297 +176	+1974 +2162	+413 +271	+1667 +1799	+718 +627
318	—3343	+63	+1979	+457	+24 +13	+2689 +3045	+224 +137	+2637 +2986	+226 +137	+2574 +2900	+231 +142	+2333 +2595	+261 +161	+1997 +2213	+352 +235	+1604 +1741	+582 +500
319	— 830	+56	+866	+386	+21 +12	+988 +927	+192 +122	+1009 +965	+192 +122	+1082 +1088	+196 +125	+1189 +1262	+216 +137	+1165 +1267	+278 +189	+996 +1073	+419 +351
320	—3149	+57	+1824	+357	+22 +12	+2488 +2843	+180 +116	+2444 +2784	+180 +116	+2390 +2713	+184 +119	+2126 +2382	+205 +131	+1785 +1981	+265 +181	+1421 +1544	+401 +345
321	—1524	+43	+604	+319	+16 +8	+782 +960	+159 +101	+752 +896	+159 +101	+708 +824	+162 +103	+601 +684	+174 +110	+477 +537	+208 +138	+374 +408	+290 +228
322	— 701	+41	+214	+298	+14 +8	+279 +358	+146 +93	+264 +332	+146 +93	+231 +284	+148 +95	+167 +189	+160 +101	+144 +157	+193 +128	+120 +130	+274 +219
323	— 63	+54	+377	+404	+22 +11	+378 +323	+199 +123	+386 +337	+200 +123	+414 +377	+204 +127	+519 +498	+227 +142	+653 +693	+295 +200	+627 +668	+458 +388
324	—1720	+51	+1138	+431	+20 +11	+1485 +1622	+210 +129	+1474 +1626	+210 +129	+1470 +1636	+214 +132	+1363 +1523	+235 +144	+1149 +1274	+296 +193	+911 +989	+445 +357
325	—1295	+44	+624	+388	+17 +9	+794 +896	+189 +117	+783 +869	+189 +117	+769 +852	+193 +120	+702 +771	+210 +129	+572 +623	+255 +166	+450 +477	+368 +287
326	— 811	+40	+287	+284	+15 +8	+325 +437	+133 +83	+299 +375	+133 +83	+256 +281	+134 +83	+259 +270	+143 +89	+271 +292	+162 +103	+243 +260	+201 +146
327	—1160	+33	+374	+251	+10 +5	+524 +699	+114 +88	+491 +643	+114 +88	+426 +540	+114 +88	+299 +354	+118 +95	+173 +202	+118 +113	+107 +119	+126 +168
328	—1151	+34	+368	+247	+11 +6	+525 +696	+121 +77	+497 +647	+121 +77	+433 +555	+121 +77	+282 +344	+129 +82	+166 +193	+143 +92	+105 +117	+176 +125
329	—1270	+36	+480	+322	+13 +7	+662 +834	+157 +98	+634 +787	+157 +98	+572 +709	+160 +100	+434 +514	+173 +107	+297 +340	+204 +132	+208 +228	+284 +215
330	—1487	+42	+528	+406	+15 +9	+698 +910	+199 +126	+657 +832	+199 +126	+582 +707	+203 +129	+449 +506	+222 +140	+373 +415	+277 +184	+307 +331	+410 +329
331	— 158	+49	+382	+451	+19 +10	+415 +376	+222 +138	+423 +387	+222 +138	+452 +430	+228 +141	+539 +551	+253 +156	+591 +634	+320 +212	+538 +576	+485 +399
332	—2408	+46	+1197	+409	+19 +10	+1694 +2018	+198 +122	+1644 +1971	+198 +122	+1546 +1842	+203 +125	+1233 +1406	+220 +135	+986 +1102	+268 +173	+774 +842	+385 +298
333	—1004	+53	+787	+444	+22 +11	+973 +1015	+215 +135	+967 +1031	+215 +135	+970 +1047	+220 +138	+952 +1021	+244 +153	+917 +1000	+318 +214	+793 +855	+494 +415
334	—1470	+52	+913	+450	+21 +12	+1147 +1268	+218 +135	+1132 +1244	+218 +135	+1117 +1226	+222 +138	+1074 +1176	+245 +153	+961 +1057	+316 +211	+797 +860	+484 +400
335	—1189	+54	+806	+482	+21 +12	+1101 +1100	+231 +140	+984 +1088	+231 +140	+960 +1056	+237 +143	+914 +974	+260 +160	+895 +973	+335 +220	+783 +842	+510 +417
336	— 744	+54	+841	+528	+23 +13	+965 +952	+249 +151	+973 +971	+251 +151	+1011 +1024	+258 +155	+1111 +1167	+286 +175	+1124 +1220	+376 +247	+982 +1055	+598 +498

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
337	1°29′.8	N	0.0	124°50′.1	E	0.0	Menado	2	+ 157	+ 50	+ 82 + 106	+ 78 + 102	+ 69 + 88	+ 43 + 53	+ 25 + 31	+ 12 + 17
338	1°18′.0	N	0.5	124°02′.0	E	0.5	1830	5	+ 75	+ 61	+ 61 + 59	+ 62 + 58	+ 66 + 62	+ 73 + 77	+ 68 + 72	+ 59 + 62
339	1°58′	N	2	123°15′	E	2	5570	4	— 21	+ 67	+ 19 — 5	+ 25 0	+ 31 + 9	+ 52 + 37	+ 79 + 69	+ 100 + 96
340	2°49′	N	1.5	122°48′	E	1.5	5178	4	+ 31	+ 75	+ 41 + 31	+ 43 + 30	+ 41 + 28	+ 45 + 33	+ 55 + 43	+ 71 + 60
341	2°34′	N	1.5	121°26′	E	1.5	5440	4	— 1	+ 77	+ 29 + 12	+ 32 + 12	+ 35 + 15	+ 50 + 34	+ 69 + 56	+ 88 + 79
342	1°23′.0	N	0.3	120°46′.5	E	0.3	725	4	+ 141	+ 87	+ 101 + 110	+ 100 + 109	+ 97 + 105	+ 87 + 94	+ 72 + 76	+ 61 + 62
343	2°06′	N	2	119°46′	E	2	5180	4	— 49	+ 48	0 — 30	+ 6 — 21	+ 11 — 12	+ 30 + 13	+ 55 + 43	+ 79 + 71
344	1°36′	N	2	119°03′	E	1	860	5	+ 69	+ 23	+ 22 + 33	+ 19 + 20	+ 12 + 13	+ 9 + 6	+ 10 + 7	+ 15 + 13
345	0°53′.5	N	0.5	119°01′.0	E	0.5	448	5	+ 106	+ 57	+ 62 + 71	+ 61 + 68	+ 56 + 60	+ 48 + 49	+ 47 + 47	+ 49 + 49
346	0°13′	N	1	119°16′.5	E	1	2432	6	— 24	+ 26	+ 16 + 3	+ 18 + 7	+ 23 + 14	+ 34 + 30	+ 43 + 41	+ 50 + 49
347	0°39′.5	S	0.0	119°44′.9	E	0.0	Dong-gala	3	+ 74	+ 40	+ 55 + 62	+ 55 + 62	+ 52 + 60	+ 43 + 48	+ 37 + 40	+ 36 + 38
348	0°42′	S	1.5	118°26′	E	1.5	2380	4	— 18	+ 39	+ 21 + 5	+ 24 + 9	+ 28 + 15	+ 41 + 31	+ 59 + 52	+ 76 + 73
349	0°51′.5	S	0.5	117°43′.0	E	0.5	100	4	+ 96	+ 59	+ 66 + 73	+ 64 + 71	+ 61 + 65	+ 54 + 55	+ 52 + 51	+ 55 + 54
350	1°15′.8	S	0.0	116°48′.1	E	0.0	Balik-papan	3	+ 19	+ 7	+ 11 + 19	+ 16 + 19	+ 16 + 20	+ 15 + 19	+ 12 + 15	+ 9 + 11
351	1°′48	S	2	117°44′	E	2	1610	4	— 1	+ 46	+ 37 + 25	+ 40 + 29	+ 44 + 36	+ 54 + 49	+ 63 + 60	+ 72 + 71
352	2°10′	S	2	118°23′	E	2	2220	4	— 30	+ 32	+ 15 — 1	+ 18 + 3	+ 23 + 9	+ 41 + 33	+ 60 + 57	+ 74 + 73
353	2°34′.5	S	0.2	118°46′.5	E	0.2	1611	4	— 12	+ 41	+ 42 + 33	+ 44 + 36	+ 49 + 43	+ 59 + 59	+ 66 + 68	+ 68 + 71
354	3°11′	S	2	118°04′	E	2	75	4	+ 85	+ 49	+ 55 + 62	+ 54 + 60	+ 50 + 54	+ 45 + 45	+ 46 + 46	+ 52 + 52
355	3°50′	S	1.5	118°40′	E	1.5	1990	4	— 45	+ 9	— 5 — 20	— 2 — 17	+ 3 — 11	+ 21 + 13	+ 39 + 35	+ 50 + 48
356	4°00′.6	S	0.0	119°37′.1	E	0.0	Pare Pare	2	+ 40	+ 18	+ 31 + 34	+ 31 + 34	+ 32 + 36	+ 34 + 39	+ 30 + 36	+ 26 + 31
357	5°07′.7	S	0.0	119°24′.4	E	0.0	Makas-sar	3	+ 48	+ 15	+ 34 + 43	+ 34 + 43	+ 33 + 42	+ 25 + 34	+ 14 + 21	+ 6 + 11

No.	Topog	Hayford 113.7 km I.R.	Hayford 113.7 km Comp A-0₂	Hayford 113.7 km t+c 18-1	I.R. T=30 / I.R. T=20	R=0 (Heisk.) Comp A-0₂	R=0 (Heisk.) t+c 18-1	29.05 Comp A-0₂	29.05 t+c 18-1	58.1 Comp A-0₂	58.1 t+c 18-1	116.2 Comp A-0₂	116.2 t+c 18-1	174.3 Comp A-0₂	174.3 t+c 18-1	232.4 Comp A-0₂	232.4 t+c 18-1
							Reductions in 0.1 mgal										
337	— 59	+ 58	+ 553	+ 519	+ 23	+ 543	+ 245	+ 577	+ 247	+ 668	+ 253	+ 896	+ 281	+ 984	+ 371	+ 886	+ 599
					+ 13	+ 403	+ 150	+ 444	+ 150	+ 578	+ 154	+ 910	+ 173	+1059	+ 246	+ 949	+ 502
338	—1461	+ 58	+1032	+ 509	+ 23	+1336	+ 246	+1319	+ 248	+1274	+ 255	+1174	+ 285	+1130	+ 378	+ 987	+ 614
					+ 12	+1459	+ 149	+1475	+ 149	+1423	+ 154	+1261	+ 173	+1231	+ 250	+1062	+ 520
339	—3593	+ 63	+2150	+ 497	+ 23	+2935	+ 239	+2875	+ 240	+2802	+ 247	+2561	+ 275	+2207	+ 362	+1774	+ 583
					+ 13	+3275	+ 145	+3224	+ 145	+3134	+ 149	+2836	+ 167	+2446	+ 237	+1927	+ 486
340	—3491	+ 76	+2430	+ 542	+ 28	+3108	+ 254	+3092	+ 256	+3097	+ 264	+3024	+ 301	+2801	+ 422	+2332	+ 736
					+ 15	+3321	+ 152	+3336	+ 153	+3348	+ 157	+3275	+ 180	+3080	+ 278	+2535	+ 648
341	—3676	+ 69	+2357	+ 472	+ 26	+3126	+ 228	+3089	+ 230	+3051	+ 236	+2872	+ 271	+2577	+ 376	+2118	+ 647
					+ 14	+3393	+ 140	+3389	+ 140	+3353	+ 145	+3143	+ 165	+2841	+ 253	+2299	+ 568
342	— 661	+ 56	+ 736	+ 413	+ 21	+ 840	+ 203	+ 846	+ 205	+ 869	+ 210	+ 944	+ 238	+1006	+ 323	+ 908	+ 533
					+ 12	+ 832	+ 127	+ 846	+ 127	+ 883	+ 131	+ 974	+ 148	+1083	+ 219	+ 972	+ 463
343	—3279	+ 56	+1941	+ 313	+ 22	+2605	+ 158	+2551	+ 158	+2492	+ 162	+2286	+ 184	+1975	+ 245	+1590	+ 391
					+ 12	+2976	+ 99	+2892	+ 99	+2797	+ 102	+2534	+ 114	+2186	+ 165	+1725	+ 338
344	— 673	+ 48	+ 820	+ 262	+ 18	+ 998	+ 132	+1024	+ 132	+1086	+ 136	+1110	+ 150	+1043	+ 199	+ 884	+ 308
					+ 10	+ 942	+ 85	+1010	+ 85	+1137	+ 88	+1196	+ 98	+1145	+ 138	+ 954	+ 268
345	— 350	+ 44	+ 548	+ 251	+ 17	+ 646	+ 127	+ 660	+ 127	+ 705	+ 131	+ 767	+ 144	+ 736	+ 186	+ 628	+ 279
					+ 9	+ 609	+ 80	+ 639	+ 80	+ 714	+ 83	+ 820	+ 90	+ 804	+ 124	+ 677	+ 237
346	—1544	+ 40	+ 784	+ 224	+ 16	+1023	+ 110	+ 997	+ 110	+ 949	+ 110	+ 831	+ 119	+ 715	+ 148	+ 581	+ 210
					+ 8	+1201	+ 70	+1159	+ 70	+1088	+ 70	+ 923	+ 77	+ 792	+ 99	+ 632	+ 172
347	— 20	+ 39	+ 128	+ 196	+ 14	+ 101	+ 95	+ 106	+ 95	+ 127	+ 95	+ 213	+ 101	+ 261	+ 115	+ 243	+ 142
					+ 8	+ 68	+ 61	+ 67	+ 61	+ 91	+ 61	+ 206	+ 65	+ 278	+ 78	+ 261	+ 109
348	—1586	+ 38	+ 850	+ 124	+ 14	+1131	+ 53	+1102	+ 53	+1062	+ 53	+ 932	+ 52	+ 756	+ 50	+ 587	+ 44
					+ 7	+1313	+ 36	+1275	+ 36	+1218	+ 36	+1050	+ 36	+ 845	+ 33	+ 639	+ 26
349	— 76	+ 38	+ 277	+ 130	+ 14	+ 307	+ 60	+ 318	+ 60	+ 352	+ 60	+ 419	+ 63	+ 429	+ 76	+ 374	+ 97
					+ 7	+ 262	+ 40	+ 282	+ 40	+ 336	+ 40	+ 437	+ 43	+ 466	+ 55	+ 405	+ 83
350	— 11	+ 32	— 12	+ 113	+ 11	— 23	+ 52	— 26	+ 52	— 26	+ 52	— 15	+ 55	+ 6	+ 66	+ 16	+ 89
					+ 5	— 27	+ 31	— 29	+ 31	— 36	+ 31	— 22	+ 33	+ 4	+ 42	+ 16	+ 71
351	—1198	+ 36	+ 573	+ 117	+ 13	+ 752	+ 50	+ 725	+ 50	+ 681	+ 50	+ 583	+ 52	+ 488	+ 57	+ 391	+ 61
					+ 6	+ 903	+ 34	+ 858	+ 34	+ 788	+ 34	+ 654	+ 35	+ 542	+ 39	+ 426	+ 49
352	—1481	+ 34	+ 681	+ 142	+ 12	+ 950	+ 67	+ 923	+ 67	+ 869	+ 67	+ 688	+ 67	+ 493	+ 72	+ 356	+ 76
					+ 6	+1144	+ 41	+1109	+ 41	+1040	+ 41	+ 800	+ 41	+ 561	+ 42	+ 391	+ 50
353	—1019	+ 33	+ 290	+ 162	+ 11	+ 394	+ 77	+ 374	+ 77	+ 325	+ 77	+ 214	+ 80	+ 144	+ 87	+ 105	+ 100
					+ 5	+ 520	+ 49	+ 482	+ 49	+ 415	+ 49	+ 254	+ 49	+ 164	+ 55	+ 116	+ 70
354	— 69	+ 37	+ 251	+ 142	+ 14	+ 290	+ 63	+ 304	+ 63	+ 341	+ 63	+ 390	+ 65	+ 372	+ 71	+ 312	+ 78
					+ 1	+ 247	+ 43	+ 271	+ 43	+ 332	+ 43	+ 418	+ 44	+ 407	+ 49	+ 337	+ 60
355	—1356	+ 35	+ 616	+ 165	+ 12	+ 865	+ 77	+ 840	+ 77	+ 788	+ 77	+ 604	+ 78	+ 424	+ 84	+ 299	+ 93
					+ 6	+1050	+ 51	+1021	+ 51	+ 957	+ 51	+ 719	+ 51	+ 502	+ 53	+ 356	+ 65
356	— 2	+ 35	— 17	+ 203	+ 12	— 15	+ 97	— 17	+ 97	— 29	+ 97	— 49	+ 103	— 32	+ 118	— 21	+ 147
					+ 6	— 2	+ 61	— 4	+ 61	— 20	+ 61	— 59	+ 64	— 38	+ 77	— 24	+ 112
357	— 10	+ 41	+ 47	+ 252	+ 16	+ 8	+ 126	+ 8	+ 126	+ 17	+ 129	+ 88	+ 140	+ 161	+ 174	+ 171	+ 247
					+ 8	— 18	+ 80	— 19	+ 80	— 18	+ 83	+ 67	+ 88	+ 165	+ 116	+ 180	+ 206

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
							Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
									$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
358	4°52′ S	1	118°22′ E	1	1795	4	+ 4	+ 46	+ 41 + 32	+ 43 + 35	+ 46 + 40	+ 54 + 50	+ 65 + 63	+ 74 + 75
359	4°50′ S	2	117°18′.5 E	1	242	4	+ 57	+ 30	+ 34 + 45	+ 35 + 46	+ 35 + 49	+ 36 + 47	+ 37 + 45	+ 39 + 45
360	4°51′.2 S	0.5	116°05′.2 E	0.5	60	4	+ 32	+ 15	+ 26 + 29	+ 26 + 29	+ 26 + 29	+ 25 + 29	+ 24 + 28	+ 23 + 26
361	5°10′ S	1	114°53′.5 E	1	30	4	+ 44	+ 27	+ 37 + 40	+ 37 + 40	+ 37 + 40	+ 37 + 40	+ 37 + 40	+ 37 + 40
362	5°28′ S	1	113°58′.5 E	1	60	4	+ 30	+ 15	+ 25 + 28	+ 25 + 28	+ 25 + 28	+ 25 + 28	+ 25 + 28	+ 25 + 29
363	6°07′ S	2	113°28′ E	2	75	4	+ 33	+ 17	+ 28 + 31	+ 28 + 31	+ 28 + 31	+ 29 + 32	+ 29 + 32	+ 30 + 33
364	6°23′ S	1	112°12′ E	1	60	4	+ 44	+ 26	+ 38 + 41	+ 38 + 41	+ 39 + 42	+ 40 + 43	+ 41 + 45	+ 41 + 45
365	5°43′ S	1	111°00′ E	1	55	4	+ 58	+ 41	+ 52 + 55	+ 52 + 55	+ 52 + 55	+ 52 + 56	+ 53 + 56	+ 53 + 57
366	5°32′ S	2	109°44′ E	2	55	5	+ 21	+ 5	+ 15 + 19	+ 15 + 19	+ 15 + 19	+ 15 + 19	+ 16 + 19	+ 17 + 20
367	5°18′ S	2	108°30′ E	2	45	4	+ 30	+ 13	+ 24 + 27	+ 24 + 27	+ 24 + 27	+ 24 + 27	+ 25 + 28	+ 26 + 29
368	5°30′ S	1.5	107°18′ E	1.5	40	4	+ 35	+ 14	+ 28 + 31	+ 28 + 31	+ 28 + 32	+ 28 + 33	+ 30 + 35	+ 31 + 36
369	5°35′.5 S	0.3	103°58′.0 E	0.3	1050	4	— 6	— 20	— 7 — 5	— 5 — 4	— 4 — 2	0 + 5	— 1 + 5	— 5 + 2
370	4°51′.1 S	0.1	103°22′.0 E	0.1	220	4	+ 21	— 15	+ 7 + 13	+ 7 + 14	+ 7 + 14	+ 6 + 14	+ 1 + 9	— 6 + 2
371	3°47′.0 S	0.0	102°14′.7 E	0.0	Ben-koelen	3	+ 58	+ 28	+ 51 + 58	+ 52 + 58	+ 52 + 60	+ 50 + 59	+ 45 + 54	+ 36 + 45
372	4°09′ S	1	101°45′ E	1	1105	4	— 46	— 57	— 38 — 37	— 37 — 34	— 35 — 30	— 34 — 26	— 39 — 31	— 48 — 41
373	4°29′ S	1.5	101°17′ E	1.5	50	5	+ 62	— 5	— 28 — 7	— 31 — 12	— 39 — 25	— 57 — 49	— 69 — 64	— 76 — 72
374	5°01′ S	2.5	100°30′ E	2.5	5890	4	— 86	0	— 34 — 65	— 26 — 57	— 19 — 41	— 2 — 15	+ 15 + 7	+ 28 + 25
375	5°47′ S	4	99°27′ E	4	4972	4	+ 50	+ 57	+ 51 + 46	+ 53 + 46	+ 50 + 44	+ 47 + 42	+ 46 + 40	+ 48 + 43
376	6°24′ S	4	98°36′ E	4	5520	4	+ 15	+ 36	+ 21 + 18	+ 27 + 18	+ 27 + 20	+ 32 + 27	+ 36 + 31	+ 36 + 33
377	5°34′ S	3	98°02′ E	3	5520	4	— 1	+ 19	+ 7 + 1	+ 11 + 3	+ 12 + 5	+ 14 + 10	+ 16 + 11	+ 16 + 13
378	4°43′ S	2	97°16′ E	2	4950	4	+ 25	+ 25	+ 23 + 20	+ 24 + 20	+ 22 + 18	+ 19 + 16	+ 17 + 14	+ 17 + 14

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		Reductions in 0.1 mgal															
		I R.	Comp A-0₂	t+c 18-1	I.R. T=20	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1
358	—1183	+ 37	+ 559	+ 168	+ 14	+ 720	+ 79	+ 699	+ 79	+ 668	+ 79	+ 585	+ 82	+ 475	+ 86	+ 372	+ 94
					+ 6	+ 847	+ 52	+ 812	+ 52	+ 770	+ 52	+ 661	+ 53	+ 532	+ 56	+ 404	+ 64
359	— 206	+ 38	+ 268	+ 169	+ 13	+ 340	+ 79	+ 336	+ 79	+ 336	+ 79	+ 323	+ 84	+ 296	+ 96	+ 248	+ 124
					+ 7	+ 273	+ 51	+ 257	+ 51	+ 226	+ 51	+ 248	+ 53	+ 260	+ 63	+ 226	+ 98
360	— 60	+ 34	+ 29	+ 162	+ 12	+ 33	+ 76	+ 34	+ 76	+ 33	+ 76	+ 35	+ 79	+ 38	+ 88	+ 35	+ 103
					+ 4	+ 35	+ 48	+ 35	+ 48	+ 36	+ 48	+ 35	+ 48	+ 41	+ 56	+ 38	+ 75
361	— 27	+ 32	+ 13	+ 147	+ 11	+ 19	+ 69	+ 18	+ 69	+ 17	+ 69	+ 16	+ 70	+ 16	+ 73	+ 14	+ 74
					+ 4	+ 19	+ 44	+ 19	+ 44	+ 18	+ 44	+ 19	+ 44	+ 18	+ 45	+ 15	+ 49
362	— 59	+ 32	+ 24	+ 148	+ 11	+ 29	+ 69	+ 29	+ 69	+ 29	+ 69	+ 27	+ 70	+ 25	+ 73	+ 22	+ 74
					+ 5	+ 35	+ 43	+ 32	+ 43	+ 32	+ 43	+ 30	+ 43	+ 28	+ 45	+ 22	+ 47
363	— 73	+ 33	+ 25	+ 170	+ 11	+ 34	+ 77	+ 33	+ 77	+ 32	+ 77	+ 28	+ 78	+ 25	+ 79	+ 19	+ 74
					+ 5	+ 39	+ 49	+ 40	+ 49	+ 37	+ 49	+ 31	+ 49	+ 28	+ 48	+ 21	+ 45
364	— 53	+ 32	+ 5	+ 193	+ 11	+ 13	+ 87	+ 12	+ 87	+ 8	+ 87	— 2	+ 88	— 12	+ 88	— 16	+ 85
					+ 4	+ 21	+ 56	+ 21	+ 56	+ 16	+ 56	+ 4	+ 56	— 12	+ 54	— 16	+ 51
365	— 52	+ 33	+ 22	+ 163	+ 11	+ 28	+ 75	+ 28	+ 75	+ 27	+ 75	+ 24	+ 76	+ 19	+ 75	+ 16	+ 72
					+ 4	+ 32	+ 47	+ 31	+ 47	+ 31	+ 47	+ 26	+ 47	+ 21	+ 46	+ 16	+ 43
366	— 61	+ 32	+ 26	+ 164	+ 11	+ 31	+ 75	+ 31	+ 75	+ 31	+ 75	+ 29	+ 77	+ 26	+ 75	+ 23	+ 71
					+ 4	+ 35	+ 45	+ 33	+ 45	+ 34	+ 45	+ 31	+ 45	+ 29	+ 44	+ 24	+ 41
367	— 52	+ 32	+ 20	+ 173	+ 11	+ 28	+ 76	+ 26	+ 76	+ 26	+ 76	+ 24	+ 76	+ 20	+ 74	+ 17	+ 67
					+ 4	+ 31	+ 48	+ 30	+ 48	+ 30	+ 48	+ 26	+ 48	+ 23	+ 44	+ 18	+ 38
368	— 41	+ 31	— 2	+ 219	+ 9	+ 4	+ 102	+ 5	+ 102	+ 2	+ 102	— 7	+ 105	— 23	+ 103	— 26	+ 102
					+ 4	+ 12	+ 63	+ 10	+ 63	+ 8	+ 63	— 2	+ 62	— 22	+ 62	— 28	+ 57
369	— 720	+ 40	+ 401	+ 419	+ 15	+ 512	+ 198	+ 499	+ 198	+ 481	+ 202	+ 429	+ 216	+ 392	+ 260	+ 330	+ 363
					+ 7	+ 583	+ 123	+ 568	+ 123	+ 543	+ 126	+ 469	+ 134	+ 430	+ 169	+ 358	+ 278
370	— 154	+ 36	+ 86	+ 390	+ 13	+ 103	+ 183	+ 101	+ 183	+ 96	+ 186	+ 97	+ 199	+ 105	+ 234	+ 98	+ 318
					+ 5	+ 115	+ 114	+ 112	+ 114	+ 103	+ 116	+ 100	+ 123	+ 116	+ 151	+ 106	+ 240
371	— 7	+ 32	— 76	+ 355	+ 11	— 106	+ 167	— 110	+ 167	— 117	+ 169	— 104	+ 181	— 81	+ 209	— 62	+ 273
					+ 4	— 99	+ 105	— 107	+ 105	— 127	+ 106	— 119	+ 113	— 91	+ 134	— 68	+ 203
372	— 728	+ 40	+ 340	+ 455	+ 15	+ 416	+ 217	+ 400	+ 217	+ 375	+ 221	+ 345	+ 242	+ 340	+ 299	+ 299	+ 434
					+ 7	+ 494	+ 134	+ 464	+ 134	+ 418	+ 137	+ 369	+ 149	+ 366	+ 196	+ 320	+ 348
373	— 53	+ 51	+ 633	+ 518	+ 20	+ 693	+ 241	+ 722	+ 241	+ 799	+ 247	+ 946	+ 272	+ 990	+ 349	+ 875	+ 534
					+ 10	+ 583	+ 149	+ 635	+ 149	+ 760	+ 152	+ 981	+ 170	+1070	+ 232	+ 939	+ 439
374	—3765	+ 66	+2197	+ 644	+ 24	+2924	+ 294	+2846	+ 296	+2770	+ 304	+2562	+ 338	+2282	+ 447	+1875	+ 725
					+ 12	+3365	+ 175	+3287	+ 175	+3118	+ 180	+2835	+ 203	+2526	+ 292	+2040	+ 605
375	—3383	+ 81	+2407	+ 822	+ 27	+3002	+ 346	+2982	+ 348	+2998	+ 359	+2986	+ 404	+2841	+ 558	+2399	+ 976
					+ 14	+3216	+ 196	+3215	+ 197	+3229	+ 203	+3216	+ 232	+3118	+ 352	+2606	+ 829
376	—3695	+ 82	+2489	+ 918	+ 29	+3232	+ 371	+3172	+ 373	+3153	+ 384	+3059	+ 433	+2857	+ 598	+2395	+1060
					+ 13	+3443	+ 207	+3438	+ 208	+3415	+ 215	+3307	+ 246	+3139	+ 374	+2601	+ 892
377	—3672	+ 82	+2490	+ 905	+ 29	+3188	+ 370	+3148	+ 372	+3131	+ 383	+3060	+ 431	+2876	+ 597	+2418	+1053
					+ 13	+3426	+ 206	+3410	+ 207	+3384	+ 214	+3303	+ 245	+3159	+ 372	+2627	+ 887
378	—3364	+ 81	+2392	+ 891	+ 27	+2989	+ 367	+2973	+ 369	+2987	+ 380	+2970	+ 426	+2820	+ 592	+2379	+1039
					+ 12	+3197	+ 205	+3194	+ 206	+3207	+ 213	+3196	+ 243	+3094	+ 368	+2583	+ 873

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R=0 Heisk.	29.05	58.1	116.2	174.3	232.4
379	3°54′	S	2	96°36′	E	2	5070	4	+ 17	+ 28	+ 20 + 15	+ 22 + 16	+ 21 + 16	+ 23 + 20	+ 25 + 22	+ 25 + 24
380	3°11′	S	1.5	97°39′	E	1.5	4220	4	+ 81	+ 72	+ 66 + 70	+ 66 + 66	+ 61 + 58	+ 56 + 52	+ 57 + 52	+ 62 + 59
381	2°34′	S	1.5	98°29′	E	1.5	5311	4	− 54	+ 26	− 13 − 35	− 7 − 31	+ 1 − 17	+ 18 + 9	+ 35 + 30	+ 45 + 43
382	1°40′.9	S	0.0	99°13′.6	E	0.0	Kan-torei B	3	+ 64	− 26	− 3 + 15	− 5 + 11	− 11 + 3	− 26 − 17	− 39 − 33	− 46 − 41
383	1°20′	S	1	99°48′	E	1	1765	4	− 57	− 20	− 15 − 23	− 12 − 19	− 7 − 11	+ 7 + 8	+ 13 + 19	+ 11 + 17
384	1°00′.1	S	0.0	100°22′.1	E	0.0	Padang	3	+ 6	− 7	+ 15 + 21	+ 15 + 22	+ 15 + 23	+ 10 + 18	+ 6 + 12	+ 1 + 8
385	1°44′.3	N	0.0	98°46′.0	E	0.0	Sibolga	3	− 6	0	+ 23 + 27	+ 24 + 29	+ 25 + 33	+ 23 + 33	+ 17 + 25	+ 9 + 17
386	1°33′	N	1	97°52′.5	E	1	705	4	− 14	− 13	+ 3 + 3	+ 4 + 6	+ 6 + 10	+ 9 + 15	+ 5 + 12	− 3 + 4
387	1°17′.7	N	0.0	97°36′.5	E	0.0	G. Sitoli	3	+ 10	− 48	− 26 − 15	− 27 − 15	− 30 − 19	− 40 − 32	− 52 − 46	− 60 − 55
388	1°21′.5	N	0.5	97°03′.0	E	0.5	488	4	+ 53	− 18	− 3 + 13	− 5 + 9	− 11 − 2	− 24 − 20	− 33 − 30	− 35 − 30
389	0°58′.5	N	1	96°31′	E	1	5280	4	− 78	+ 26	− 22 − 55	− 14 − 47	− 1 − 27	+ 28 + 15	+ 51 + 44	+ 66 + 63
390	0°20′	N	2	95°36′	E	2	4092	4	+ 80	+ 77	+ 68 + 67	+ 68 + 66	+ 63 + 60	+ 56 + 51	+ 57 + 50	+ 66 + 61
391	0°26′	S	3	94°30′	E	3	4590	4	+ 22	+ 30	+ 22 + 17	+ 24 + 18	+ 21 + 17	+ 22 + 18	+ 24 + 21	+ 25 + 24
392	0°18′	N	2	93°14′	E	2	4530	4	− 14	− 8	− 13 − 17	− 11 − 16	− 12 − 16	− 12 − 15	− 12 − 14	− 12 − 13
393	1°21′	N	2	92°18′	E	2	4410	4	− 6	− 1	− 7 − 12	− 5 − 10	− 7 − 11	− 7 − 9	− 6 − 8	− 5 − 5
394	2°52′	N	1	92°01′	E	1	4180	4	+ 11	+ 24	+ 16 + 8	+ 19 + 11	+ 19 + 13	+ 21 + 18	+ 22 + 19	+ 24 + 24
395	3°39′	N	1	92°43′	E	1	4390	4	− 15	+ 8	− 9 − 18	− 7 − 16	− 8 − 16	− 5 − 12	+ 1 − 5	+ 9 + 6
396	4°06′	N	1	93°06′	E	1	4480	4	− 57	− 20	− 37 − 52	− 33 − 45	− 31 − 39	− 28 − 33	− 23 − 28	− 17 − 19
397	4°33′	N	1	93°32′	E	1	1380	4	+ 50	− 30	− 18 + 2	− 22 − 6	− 33 − 26	− 49 − 50	− 52 − 55	− 50 − 51
398	5°12′	N	2	94°12′	E	2	2555	4	− 130	− 118	− 118 − 121	− 115 − 119	− 114 − 117	− 111 − 111	− 110 − 109	− 110 − 108
399	6°13′	N	1.5	96°02′	E	1.5	1095	4	+ 31	+ 24	+ 24 + 24	+ 25 + 24	+ 25 + 22	+ 29 + 28	+ 35 + 35	+ 39 + 40

No.	Topog	Reductions in 0.1 mgal															
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t + c 18-1	I.R. $T=20$	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
379	—3390	+ 78	+2340	+ 864	+ 27	+2969	+ 362	+2945	+ 364	+2944	+ 375	+2886	+ 419	+2704	+ 579	+2269	+1007
					+ 12	+3197	+ 200	+3185	+ 201	+3178	+ 206	+3115	+ 236	+2966	+ 357	+2459	+ 844
380	—2960	+ 75	+2231	+ 746	+ 26	+2756	+ 328	+2758	+ 330	+2803	+ 340	+2810	+ 380	+2661	+ 521	+2241	+ 888
					+ 12	+2881	+ 186	+2914	+ 186	+2990	+ 192	+3022	+ 218	+2915	+ 327	+2427	+ 749
381	—3508	+ 63	+2030	+ 619	+ 23	+2783	+ 289	+2720	+ 291	+2631	+ 299	+2422	+ 335	+2144	+ 445	+1756	+ 737
					+ 11	+3131	+ 174	+3087	+ 174	+2940	+ 179	+2664	+ 201	+2364	+ 294	+1903	+ 622
382	— 13	+ 45	+ 429	+ 442	+ 17	+ 453	+ 214	+ 473	+ 214	+ 527	+ 218	+ 656	+ 238	+ 723	+ 299	+ 654	+ 438
					+ 8	+ 362	+ 133	+ 399	+ 133	+ 484	+ 136	+ 667	+ 148	+ 778	+ 199	+ 700	+ 356
383	—1158	+ 32	+ 394	+ 359	+ 11	+ 548	+ 174	+ 522	+ 174	+ 466	+ 177	+ 322	+ 190	+ 219	+ 227	+ 159	+ 310
					+ 4	+ 706	+ 110	+ 662	+ 110	+ 582	+ 112	+ 382	+ 119	+ 249	+ 149	+ 175	+ 241
384	— 18	+ 27	— 135	+ 262	+ 7	— 200	+ 120	— 201	+ 120	— 195	+ 121	— 154	+ 126	— 117	+ 132	— 90	+ 148
					+ 3	— 216	+ 78	— 224	+ 78	— 232	+ 78	— 180	+ 80	— 130	+ 84	— 100	+ 97
385	— 18	+ 22	— 293	+ 228	+ 6	— 382	+ 107	— 396	+ 107	— 409	+ 107	— 392	+ 111	— 333	+ 115	— 265	+ 125
					+ 2	— 381	+ 68	— 399	+ 68	— 442	+ 68	— 439	+ 70	— 370	+ 72	— 293	+ 78
386	— 469	+ 31	+ 105	+ 325	+ 10	+ 134	+ 160	+ 119	+ 160	+ 93	+ 163	+ 58	+ 175	+ 63	+ 207	+ 65	+ 285
					+ 4	+ 193	+ 101	+ 167	+ 101	+ 120	+ 103	+ 62	+ 110	+ 66	+ 138	+ 67	+ 221
387	— 8	+ 37	+ 197	+ 353	+ 13	+ 179	+ 174	+ 186	+ 174	+ 212	+ 178	+ 302	+ 193	+ 376	+ 236	+ 354	+ 337
					+ 7	+ 133	+ 113	+ 142	+ 113	+ 175	+ 116	+ 291	+ 126	+ 400	+ 161	+ 378	+ 275
388	— 355	+ 45	+ 615	+ 407	+ 17	+ 690	+ 199	+ 713	+ 199	+ 775	+ 203	+ 882	+ 224	+ 904	+ 285	+ 793	+ 423
					+ 8	+ 614	+ 128	+ 655	+ 128	+ 761	+ 131	+ 923	+ 145	+ 980	+ 193	+ 851	+ 325
389	—3454	+ 52	+1881	+ 480	+ 20	+2646	+ 230	+2563	+ 230	+2427	+ 235	+2112	+ 262	+1804	+ 340	+1457	+ 535
					+ 10	+3075	+ 141	+2996	+ 141	+2788	+ 144	+2354	+ 160	+1998	+ 226	+1581	+ 449
390	—2777	+ 68	+2112	+ 629	+ 25	+2585	+ 292	+2581	+ 294	+2622	+ 302	+2656	+ 339	+2528	+ 457	+2131	+ 759
					+ 12	+2718	+ 173	+2728	+ 173	+2785	+ 178	+2851	+ 202	+2770	+ 300	+2307	+ 646
391	—3104	+ 71	+2172	+ 784	+ 25	+2735	+ 338	+2715	+ 340	+2722	+ 351	+2683	+ 393	+2516	+ 539	+2111	+ 929
					+ 13	+2945	+ 191	+2935	+ 192	+2936	+ 197	+2897	+ 226	+2758	+ 337	+2287	+ 780
392	—3066	+ 71	+2137	+ 800	+ 24	+2684	+ 344	+2663	+ 346	+2668	+ 357	+2633	+ 399	+2481	+ 545	+2088	+ 933
					+ 12	+2891	+ 193	+2876	+ 194	+2876	+ 199	+2837	+ 229	+2718	+ 338	+2262	+ 780
393	—2972	+ 68	+2085	+ 773	+ 25	+2619	+ 337	+2599	+ 339	+2603	+ 350	+2567	+ 390	+2416	+ 529	+2035	+ 901
					+ 12	+2825	+ 191	+2809	+ 192	+2807	+ 198	+2769	+ 224	+2649	+ 333	+2200	+ 753
394	—2815	+ 62	+1923	+ 699	+ 23	+2429	+ 313	+2399	+ 315	+2389	+ 323	+2336	+ 361	+2194	+ 487	+1850	+ 813
					+ 12	+2656	+ 182	+2618	+ 182	+2594	+ 187	+2522	+ 212	+2406	+ 313	+1999	+ 673
395	—2971	+ 61	+2047	+ 638	+ 23	+2597	+ 293	+2576	+ 295	+2574	+ 303	+2513	+ 339	+2333	+ 454	+1953	+ 756
					+ 11	+2812	+ 175	+2798	+ 175	+2793	+ 180	+2723	+ 204	+2560	+ 298	+2113	+ 638
396	—2890	+ 58	+1883	+ 584	+ 22	+2392	+ 272	+2351	+ 274	+2325	+ 282	+2264	+ 315	+2111	+ 420	+1774	+ 689
					+ 11	+2662	+ 163	+2596	+ 163	+2530	+ 168	+2451	+ 190	+2317	+ 276	+1915	+ 584
397	—1087	+ 53	+1301	+ 531	+ 20	+1505	+ 252	+1542	+ 254	+1651	+ 262	+1782	+ 290	+1719	+ 383	+1466	+ 609
					+ 10	+1410	+ 152	+1489	+ 152	+1681	+ 156	+1899	+ 177	+1876	+ 252	+1578	+ 512
398	—1641	+ 42	+1026	+ 457	+ 17	+1280	+ 221	+1262	+ 221	+1247	+ 226	+1191	+ 251	+1102	+ 324	+ 928	+ 502
					+ 9	+1414	+ 136	+1386	+ 136	+1368	+ 139	+1295	+ 154	+1208	+ 216	+1000	+ 416
399	— 747	+ 30	+ 524	+ 259	+ 11	+ 674	+ 129	+ 671	+ 129	+ 671	+ 130	+ 619	+ 141	+ 531	+ 168	+ 431	+ 230
					+ 6	+ 729	+ 82	+ 732	+ 82	+ 747	+ 82	+ 687	+ 89	+ 589	+ 112	+ 467	+ 183

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
400	6°26′	N	2	96°38′	E	2	1305	4	− 9	− 1	− 3 − 5	− 2 − 3	− 1 − 2	+ 2 + 2	+ 10 + 10	+ 17 + 19
401	5°35′	N	2	97°20′	E	2	300	4	− 4	− 19	− 13 − 12	− 13 − 12	− 13 − 12	− 11 − 9	− 7 − 5	− 5 − 1
402	3°51′.5	N	0.0	98°41′.5	E	0.0	Belawan	2	− 1	− 4	+ 4 + 5	+ 5 + 5	+ 7 + 7	+ 11 + 14	+ 15 + 18	+ 15 + 20
403	3°25′.7	N	0.5	99°42′.3	E	0.5	40	4	+ 19	+ 14	+ 21 + 21	+ 21 + 21	+ 21 + 22	+ 24 + 25	+ 28 + 30	+ 32 + 34
404	2°45′.8	N	0.5	101°09′.4	E	0.5	40	4	+ 25	+ 23	+ 29 + 29	+ 29 + 30	+ 30 + 30	+ 32 + 33	+ 34 + 36	+ 37 + 39
405	2°12′.3	N	0.3	102°03′.7	E	0.3	40	5	+ 18	+ 16	+ 23 + 23	+ 24 + 24	+ 24 + 25	+ 26 + 27	+ 27 + 29	+ 28 + 30
406	1°09′.3	N	0.0	103°54′.0	E	0.0	P. Samboe	3	+ 26	+ 18	+ 24 + 25	+ 24 + 26	+ 25 + 26	+ 25 + 26	+ 25 + 27	+ 25 + 27
407	1°19′.3	N	0.5	105°07′.5	E	0.5	50	4	+ 21	+ 14	+ 19 + 21	+ 20 + 21	+ 20 + 21	+ 20 + 22	+ 20 + 22	+ 21 + 22
408	0°45′	N	1	106°21′	E	1	50	5	+ 34	+ 25	+ 31 + 33	+ 31 + 33	+ 31 + 33	+ 31 + 33	+ 31 + 33	+ 31 + 33
409	0°41′.1	N	0.2	107°24′.8	E	0.2	50	4	+ 30	+ 21	+ 29 + 31	+ 29 + 31	+ 29 + 31	+ 29 + 31	+ 28 + 30	+ 28 + 30
410	0°25′.5	S	1	107°33′.5	E	1	50	4	+ 41	+ 32	+ 38 + 40	+ 38 + 40	+ 38 + 40	+ 38 + 40	+ 38 + 40	+ 39 + 41
411	0°50′	S	1	106°54′.5	E	1	40	4	+ 33	+ 24	+ 31 + 32	+ 31 + 33	+ 31 + 33	+ 31 + 33	+ 31 + 33	+ 31 + 33
412	1°14′.0	S	0.5	106°00′.0	E	0.5	30	4	+ 30	+ 19	+ 26 + 28	+ 27 + 28	+ 27 + 29	+ 27 + 29	+ 27 + 29	+ 27 + 29
413	1°37′.1	S	0.3	105°08′.5	E	0.3	30	3	+ 46	+ 34	+ 43 + 44	+ 43 + 44	+ 43 + 45	+ 43 + 45	+ 44 + 46	+ 44 + 45
414	2°59′.4	S	0.1	104°46′.2	E	0.1	Palembang	3	+ 53	+ 37	+ 47 + 50	+ 47 + 50	+ 47 + 50	+ 48 + 51	+ 49 + 52	+ 50 + 54
415	3°31′	S	1	106°41′.5	E	1	20	4	+ 46	+ 30	+ 39 + 42	+ 39 + 42	+ 39 + 42	+ 39 + 43	+ 40 + 43	+ 40 + 43
416	3°09′.7	S	0.5	107°23′.9	E	0.5	30	4	+ 35	+ 22	+ 31 + 33	+ 31 + 34	+ 31 + 34	+ 31 + 34	+ 31 + 34	+ 31 + 33
417	2°44′.3	S	0.0	107°36′.2	E	0.0	T. Pandan	3	+ 27	+ 14	+ 22 + 25	+ 22 + 25	+ 22 + 25	+ 22 + 24	+ 21 + 24	+ 21 + 23
418	2°19′.1	S	0.7	108°39′.3	E	0.7	40	4	+ 41	+ 34	+ 40 + 41	+ 40 + 41	+ 40 + 42	+ 41 + 43	+ 42 + 43	+ 42 + 44
419	3°00′	S	1.5	109°06′	E	1.5	25	4	+ 19	+ 7	+ 15 + 17	+ 15 + 17	+ 15 + 17	+ 15 + 17	+ 15 + 17	+ 16 + 18
420	3°43′	S	1	109°20′	E	1	40	4	+ 31	+ 19	+ 27 + 29	+ 27 + 29	+ 27 + 30	+ 28 + 30	+ 28 + 30	+ 28 + 30

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t + c 18·1	I.R. T=20	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1
400	— 876	+ 28	+ 546	+ 219	+ 10	+ 698	+ 108	+ 689	+ 108	+ 681	+ 108	+ 638	+ 116	+ 539	+ 133	+ 434	+ 171
					+ 5	+ 758	+ 68	+ 745	+ 68	+ 736	+ 68	+ 693	+ 73	+ 589	+ 88	+ 465	+ 127
401	— 203	+ 23	+ 147	+ 182	+ 7	+ 200	+ 90	+ 199	+ 90	+ 198	+ 90	+ 172	+ 94	+ 127	+ 101	+ 92	+ 113
					+ 2	+ 226	+ 55	+ 224	+ 55	+ 226	+ 55	+ 197	+ 55	+ 145	+ 62	+ 100	+ 75
402	— 10	+ 19	— 106	+ 131	+ 5	— 105	+ 56	— 110	+ 56	— 125	+ 55	— 169	+ 54	— 195	+ 44	— 181	+ 26
					+ 1	— 81	+ 36	— 87	+ 36	— 107	+ 36	— 170	+ 33	— 209	+ 24	— 196	0
403	— 36	+ 20	— 28	+ 90	+ 6	— 17	+ 31	— 18	+ 31	— 23	+ 30	— 45	+ 25	— 71	+ 11	— 75	— 24
					+ 1	— 5	+ 20	— 7	+ 20	— 12	+ 20	— 38	+ 15	— 76	+ 2	— 80	— 37
404	— 36	+ 22	— 34	+ 72	+ 6	— 31	+ 25	— 34	+ 25	— 41	+ 25	— 61	+ 20	— 72	+ 9	— 68	— 17
					+ 1	— 21	+ 13	— 25	+ 13	— 32	+ 13	— 58	+ 9	— 77	0	— 73	— 30
405	— 33	+ 23	— 46	+ 75	+ 6	— 51	+ 26	— 55	+ 26	— 63	+ 26	— 75	+ 22	— 78	+ 15	— 69	— 3
					+ 1	— 38	+ 17	— 48	+ 17	— 59	+ 17	— 77	+ 16	— 84	+ 9	— 76	— 12
406	— 16	+ 25	— 4	+ 76	+ 7	— 3	+ 29	— 3	+ 29	— 5	+ 29	— 5	+ 29	— 4	+ 26	— 3	+ 20
					+ 2	0	+ 21	— 1	+ 21	— 3	+ 21	— 8	+ 21	— 8	+ 18	— 6	+ 13
407	— 49	+ 26	+ 16	+ 81	+ 8	+ 23	+ 34	+ 20	+ 34	+ 20	+ 34	+ 16	+ 34	+ 13	+ 34	+ 12	+ 33
					+ 2	+ 27	+ 22	+ 25	+ 22	+ 24	+ 22	+ 18	+ 22	+ 15	+ 22	+ 13	+ 22
408	— 44	+ 26	+ 24	+ 81	+ 8	+ 31	+ 37	+ 30	+ 37	+ 30	+ 37	+ 31	+ 37	+ 28	+ 39	+ 23	+ 43
					+ 2	+ 33	+ 20	+ 31	+ 20	+ 32	+ 20	+ 32	+ 20	+ 31	+ 21	+ 26	+ 25
409	— 48	+ 26	+ 21	+ 87	+ 8	+ 13	+ 39	+ 10	+ 39	+ 10	+ 39	+ 15	+ 39	+ 18	+ 41	+ 16	+ 43
					+ 2	+ 16	+ 24	+ 12	+ 24	+ 8	+ 24	+ 14	+ 24	+ 19	+ 25	+ 17	+ 28
410	— 44	+ 27	+ 21	+ 86	+ 8	+ 29	+ 37	+ 27	+ 37	+ 27	+ 37	+ 27	+ 37	+ 24	+ 38	+ 20	+ 37
					+ 3	+ 31	+ 24	+ 30	+ 24	+ 31	+ 24	+ 27	+ 24	+ 26	+ 25	+ 21	+ 25
411	— 46	+ 28	+ 16	+ 91	+ 8	+ 21	+ 39	+ 22	+ 39	+ 21	+ 39	+ 19	+ 39	+ 18	+ 39	+ 16	+ 38
					+ 3	+ 25	+ 25	+ 23	+ 25	+ 21	+ 25	+ 22	+ 25	+ 19	+ 25	+ 16	+ 24
412	— 27	+ 27	+ 9	+ 98	+ 8	+ 13	+ 42	+ 12	+ 42	+ 10	+ 42	+ 8	+ 42	+ 9	+ 43	+ 7	+ 42
					+ 3	+ 14	+ 27	+ 14	+ 27	+ 12	+ 27	+ 9	+ 27	+ 9	+ 27	+ 8	+ 27
413	— 24	+ 29	0	+ 113	+ 8	+ 2	+ 47	0	+ 47	— 1	+ 47	— 4	+ 47	— 5	+ 46	— 4	+ 41
					+ 3	+ 4	+ 33	+ 4	+ 33	0	+ 33	— 2	+ 33	— 5	+ 31	— 4	+ 27
414	+ 4	+ 29	— 14	+ 145	+ 9	— 15	+ 61	— 15	+ 61	— 16	+ 61	— 19	+ 59	— 24	+ 53	— 22	+ 37
					+ 4	— 13	+ 38	— 13	+ 38	— 15	+ 38	— 20	+ 35	— 25	+ 31	— 24	+ 11
415	— 14	+ 30	+ 4	+ 143	+ 10	+ 8	+ 65	+ 7	+ 65	+ 5	+ 65	+ 5	+ 66	+ 2	+ 67	+ 2	+ 67
					+ 3	+ 9	+ 41	+ 8	+ 41	+ 8	+ 41	+ 4	+ 41	+ 1	+ 42	0	+ 42
416	— 27	+ 29	+ 3	+ 126	+ 9	+ 2	+ 57	+ 1	+ 57	0	+ 57	+ 1	+ 57	+ 2	+ 58	+ 3	+ 59
					+ 3	+ 4	+ 37	+ 2	+ 37	+ 1	+ 37	— 1	+ 37	+ 1	+ 37	+ 3	+ 39
417	— 6	+ 29	— 2	+ 110	+ 9	— 5	+ 49	— 5	+ 49	— 4	+ 49	+ 2	+ 49	+ 6	+ 50	+ 5	+ 50
					+ 3	— 8	+ 32	— 8	+ 32	— 6	+ 32	+ 2	+ 32	+ 5	+ 32	+ 6	+ 33
418	— 39	+ 29	+ 5	+ 75	+ 9	+ 12	+ 31	+ 11	+ 31	+ 9	+ 31	+ 1	+ 31	— 3	+ 28	— 4	+ 26
					+ 3	+ 17	+ 18	+ 15	+ 18	+ 11	+ 18	+ 3	+ 18	— 3	+ 18	— 5	+ 14
419	— 25	+ 30	+ 12	+ 98	+ 9	+ 16	+ 41	+ 16	+ 41	+ 17	+ 41	+ 14	+ 41	+ 12	+ 41	+ 8	+ 39
					+ 3	+ 19	+ 28	+ 18	+ 28	+ 19	+ 28	+ 17	+ 28	+ 13	+ 28	+ 10	+ 26
420	— 45	+ 31	+ 16	+ 117	+ 9	+ 22	+ 51	+ 21	+ 51	+ 21	+ 51	+ 19	+ 51	+ 17	+ 52	+ 15	+ 52
					+ 3	+ 24	+ 35	+ 23	+ 35	+ 21	+ 35	+ 22	+ 35	+ 19	+ 35	+ 16	+ 36

Reductions in 0.1 mgal

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
							Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
									R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
421	4°02′ S	2	110°30′ E	2	35	4	+ 35	+ 24	+ 32 + 34	+ 32 + 34	+ 32 + 34	+ 32 + 34	+ 32 + 34	+ 33 + 31
422	4°22′ S	2	111°22′ E	2	50	4	+ 31	+ 20	+ 28 + 30	+ 28 + 30	+ 28 + 30	+ 28 + 30	+ 28 + 31	+ 29 + 31
423	4°44′ S	1.5	112°26′ E	1.5	60	4	+ 41	+ 30	+ 38 + 40	+ 38 + 40	+ 38 + 40	+ 39 + 41	+ 39 + 41	+ 40 + 42
424	5°37′.9 S	0.5	112°33′.7 E	0.5	65	4	+ 21	+ 6	+ 16 + 19	+ 16 + 19	+ 16 + 19	+ 16 + 19	+ 17 + 19	+ 17 + 20
425	1°15′.8 N	0.0	103°50′.7 E	0.0	Singa-pore	3	+ 35	+ 29	+ 36 + 37	+ 37 + 38	+ 37 + 39	+ 38 + 39	+ 38 + 39	+ 37 + 39
426	48°20′ N	1.5	7°52′ W	1.5		4	+ 6	— 45	— 27 — 17	— 28 — 18	— 30 — 21	— 38 — 31	— 50 — 44	— 61 — 57
427	47°44′ N	1.5	9°21′ W	1.5	3650	4	— 75	— 16	— 34 — 55	— 29 — 49	— 21 — 33	— 10 — 14	— 5 — 8	— 3 — 4
428	46°21′ N	1	12°49′ W	1	4040	8	+ 70	+ 83	+ 71 + 67	+ 72 + 66	+ 70 + 64	+ 67 + 62	+ 67 + 60	+ 75 + 71
429	44°34′ N	1	16°37′ W	1	3780	4	+ 52	+ 37	+ 42 + 45	+ 43 + 44	+ 39 + 39	+ 33 + 33	+ 29 + 29	+ 26 + 27
430	43°58′ N	1	17°48′ W	2	4550	4	+ 19	+ 30	+ 25 + 20	+ 27 + 22	+ 25 + 22	+ 24 + 21	+ 26 + 23	+ 28 + 27
431	43°14′ N	2	19°36′ W	2	4100	3	+ 47	+ 46	+ 48 + 46	+ 49 + 47	+ 47 + 43	+ 47 + 45	+ 47 + 46	+ 46 + 47
432	42°18′ N	2	20°30′ W	2	3700	5	+ 45	+ 40	+ 42 + 40	+ 44 + 40	+ 43 + 39	+ 45 + 45	+ 44 + 44	+ 42 + 44
433	40°45′ N	1	22°09′ W	1	4290	4	+ 9	+ 25	+ 20 + 11	+ 22 + 15	+ 23 + 17	+ 25 + 23	+ 29 + 26	+ 33 + 33
434	39°55′ N	1.5	23°00′ W	1.5	4110	4	+ 15	+ 27	+ 21 + 15	+ 24 + 17	+ 24 + 19	+ 24 + 21	+ 26 + 23	+ 31 + 32
435	39°07′ N	1	23°50′ W	1	3900	3	+ 36	+ 48	+ 45 + 39	+ 47 + 41	+ 47 + 42	+ 51 + 48	+ 55 + 54	+ 59 + 62
436	38°21′ N	1	24°32′ W	1	3480	3	— 6	+ 9	+ 11 + 4	+ 14 + 8	+ 16 + 12	+ 22 + 22	+ 26 + 28	+ 24 + 28
437	37°43′.93 N	0.01	25°40′.60 W	0.01	P. Del-gada	4	+ 149	+ 18	+ 54 + 80	+ 51 + 74	+ 42 + 59	+ 24 + 35	+ 9 + 18	— 4 + 4
438	37°16′ N	1	26°06′ W	1	2440	4	+ 11	— 4	+ 15 + 18	+ 16 + 19	+ 15 + 20	+ 13 + 19	+ 7 + 13	— 1 + 5
439	35°58′ N	1.5	27°20′ W	1.5	3530	4	+ 25	+ 33	+ 32 + 27	+ 34 + 30	+ 35 + 31	+ 35 + 33	+ 39 + 37	+ 44 + 45
440	35°03′ N	1.5	28°06′ W	1.5	3260	3	+ 35	+ 26	+ 31 + 32	+ 31 + 32	+ 28 + 29	+ 23 + 22	+ 23 + 20	+ 25 + 26
441	35°27′ N	1.5	29°07′ W	1.5	3600	4	+ 30	+ 42	+ 41 + 34	+ 44 + 37	+ 45 + 41	+ 52 + 45	+ 50 + 48	+ 53 + 54

No.	Topog	Reductions in 0.1 mgal Hayford 113.7 km I R.	Comp A-0_2	t+c 18-1	I.R $T=30$ I.R. $T=20$	R=0 (Heisk.) Comp A-0_2	t+c 18-1	29.05 Comp A-0_2	t+c 18-1	58.1 Comp A-0_2	t+c 18-1	116.2 Comp A-0_2	t+c 18-1	174.3 Comp A-0_2	t+c 18-1	232.4 Comp A-0_2	t+c 18-1
421	— 41	+ 31	+ 16	+ 108	+ 9 + 3	+ 20 + 22	+ 46 + 31	+ 19 + 21	+ 46 + 31	+ 21 + 21	+ 46 + 31	+ 19 + 22	+ 46 + 31	+ 18 + 19	+ 46 + 31	+ 14 + 16	+ 43 + 29
422	— 50	+ 31	+ 19	+ 111	+ 10 + 3	+ 27 + 31	+ 47 + 31	+ 25 + 28	+ 47 + 31	+ 25 + 27	+ 47 + 31	+ 24 + 25	+ 47 + 31	+ 20 + 22	+ 47 + 30	+ 18 + 18	+ 44 + 29
423	— 59	+ 31	+ 23	+ 113	+ 10 + 3	+ 28 + 33	+ 48 + 30	+ 29 + 33	+ 48 + 30	+ 28 + 32	+ 48 + 30	+ 26 + 30	+ 48 + 30	+ 24 + 26	+ 47 + 29	+ 18 + 21	+ 45 + 28
424	— 60	+ 33	+ 26	+ 150	+ 11 + 5	+ 31 + 34	+ 66 + 43	+ 30 + 33	+ 66 + 43	+ 33 + 34	+ 66 + 43	+ 32 + 36	+ 67 + 43	+ 28 + 31	+ 66 + 44	+ 23 + 25	+ 65 + 41
425	— 13	+ 24	— 32	+ 77	+ 7 + 2	— 39 — 34	+ 31 + 21	— 41 — 37	+ 31 + 21	— 45 — 46	+ 31 + 21	— 50 — 53	+ 30 + 21	— 45 — 49	+ 26 + 18	— 36 — 41	+ 20 + 11
426	— 135	+ 22	+ 265	+ 360	+ 9 + 5	+ 275 + 246	+ 181 + 116	+ 280 + 254	+ 181 + 116	+ 300 + 283	+ 185 + 119	+ 362 + 364	+ 206 + 131	+ 417 + 446	+ 269 + 182	+ 388 + 414	+ 411 + 346
427	—2505	+ 35	+1430	+ 447	+ 14 + 8	+1863 +2157	+ 218 + 134	+1813 +2098	+ 220 + 134	+1722 +1940	+ 225 + 139	+1581 +1725	+ 253 + 156	+1454 +1595	+ 338 + 226	+1222 +1320	+ 546 + 465
428	—2863	+ 51	+2077	+ 605	+ 20 + 11	+2551 +2714	+ 281 + 167	+2537 +2723	+ 283 + 167	+2551 +2734	+ 291 + 172	+2544 +2732	+ 327 + 194	+2424 +2655	+ 441 + 289	+2053 +2218	+ 734 + 622
429	—2683	+ 56	+1998	+ 781	+ 21 + 11	+2424 +2554	+ 336 + 184	+2418 +2564	+ 338 + 185	+2446 +2607	+ 349 + 192	+2465 +2643	+ 392 + 221	+2353 +2576	+ 537 + 330	+1996 +2156	+ 924 + 769
430	—3107	+ 56	+2166	+ 780	+ 21 + 11	+2688 +2893	+ 335 + 188	+2667 +2870	+ 337 + 189	+2673 +2872	+ 348 + 196	+2646 +2852	+ 389 + 222	+2488 +2726	+ 528 + 330	+2091 +2265	+ 902 + 749
431	—2781	+ 54	+1957	+ 781	+ 20 + 11	+2418 +2594	+ 336 + 191	+2403 +2583	+ 338 + 192	+2417 +2608	+ 349 + 199	+2377 +2562	+ 389 + 225	+2242 +2456	+ 521 + 329	+1892 +2044	+ 876 + 725
432	—2591	+ 51	+1827	+ 765	+ 20 + 12	+2268 +2437	+ 330 + 188	+2252 +2437	+ 332 + 188	+2250 +2444	+ 339 + 194	+2191 +2360	+ 380 + 220	+2074 +2270	+ 510 + 321	+1754 +1894	+ 847 + 699
433	—2892	+ 52	+1948	+ 735	+ 20 + 11	+2443 +2674	+ 324 + 187	+2413 +2637	+ 326 + 187	+2403 +2613	+ 334 + 192	+2338 +2528	+ 371 + 216	+2184 +2396	+ 489 + 312	+1839 +1986	+ 796 + 651
434	—2814	+ 51	+1918	+ 721	+ 21 + 11	+2411 +2621	+ 319 + 185	+2387 +2597	+ 321 + 185	+2375 +2569	+ 329 + 190	+2343 +2529	+ 363 + 213	+2206 +2417	+ 477 + 305	+1858 +2007	+ 771 + 629
435	—2645	+ 49	+1771	+ 704	+ 20 + 11	+2221 +2427	+ 315 + 182	+2195 +2400	+ 317 + 182	+2187 +2383	+ 324 + 187	+2122 +2304	+ 358 + 210	+1965 +2157	+ 468 + 296	+1642 +1774	+ 753 + 605
436	—2330	+ 44	+1448	+ 693	+ 18 + 10	+1829 +2041	+ 310 + 182	+1799 +1996	+ 312 + 182	+1770 +1952	+ 320 + 187	+1678 +1829	+ 353 + 209	+1540 +1689	+ 455 + 292	+1292 +1394	+ 721 + 583
437	— 63	+ 41	+ 647	+ 680	+ 16 + 9	+ 693 + 570	+ 302 + 178	+ 726 + 628	+ 304 + 178	+ 810 + 771	+ 311 + 183	+ 959 + 992	+ 342 + 204	+1005 +1087	+ 438 + 281	+ 893 + 958	+ 683 + 550
438	—1538	+ 39	+1005	+ 646	+ 15 + 8	+1194 +1285	+ 292 + 173	+1184 +1273	+ 294 + 173	+1179 +1264	+ 301 + 178	+1172 +1254	+ 330 + 197	+1138 +1242	+ 422 + 271	+ 982 +1057	+ 657 + 529
439	—2411	+ 47	+1636	+ 647	+ 18 + 10	+2025 +2209	+ 294 + 174	+2005 +2182	+ 296 + 174	+1994 +2164	+ 304 + 179	+1956 +2118	+ 334 + 200	+1825 +2000	+ 429 + 278	+1534 +1653	+ 671 + 549
440	—2255	+ 52	+1619	+ 675	+ 20 + 10	+1977 +2092	+ 303 + 181	+1970 +2091	+ 305 + 181	+1989 +2119	+ 313 + 186	+2011 +2164	+ 349 + 209	+1905 +2096	+ 452 + 296	+1613 +1738	+ 724 + 601
441	—2457	+ 50	+1632	+ 654	+ 20 + 11	+2035 +2238	+ 294 + 176	+2008 +2207	+ 296 + 176	+1986 +2163	+ 305 + 181	+1885 +2097	+ 335 + 204	+1804 +1979	+ 435 + 286	+1520 +1638	+ 691 + 574

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
							Anomalies in milligal. Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km.							
442	35°51′ N	1	30°19′ W	2	3270	3	+ 33	+ 42	+ 43	+ 45	+ 46	+ 49	+ 51	+ 54
									+ 38	+ 40	+ 41	+ 48	+ 51	+ 56
443	36°12′ N	1	31°18′ W	2	2910	3	+ 21	+ 24	+ 27	+ 30	+ 31	+ 33	+ 35	+ 37
									+ 24	+ 27	+ 29	+ 33	+ 36	+ 40
444	36°37′ N	1	32°23′ W	1	2520	6	+ 50	+ 41	+ 49	+ 51	+ 51	+ 52	+ 54	+ 54
									+ 48	+ 50	+ 51	+ 53	+ 56	+ 58
445	37°08′ N	1.5	33°37′ W	1.5	1750	6	+ 48	+ 2	+ 25	+ 24	+ 21	+ 14	+ 8	+ 2
									+ 34	+ 33	+ 28	+ 20	+ 13	+ 7
446	37°38′ N	1.5	34°44′ W	1.5	2990	3	+ 28	+ 22	+ 30	+ 32	+ 32	+ 34	+ 33	+ 32
									+ 29	+ 30	+ 31	+ 35	+ 36	+ 36
447	38°04′ N	1.5	36°04′ W	1.5	3740	6	+ 27	+ 30	+ 31	+ 32	+ 32	+ 33	+ 36	+ 38
									+ 26	+ 28	+ 28	+ 31	+ 35	+ 40
448	39°07′ N	1.5	36°09′ W	1.5	4170	7	+ 35	+ 44	+ 44	+ 46	+ 46	+ 46	+ 47	+ 48
									+ 38	+ 41	+ 43	+ 45	+ 45	+ 49
449	39°57′ N	1.5	35°36′ W	1.5	4620	3	+ 15	+ 37	+ 27	+ 29	+ 29	+ 34	+ 41	+ 48
									+ 18	+ 19	+ 20	+ 28	+ 37	+ 47
450	40°57′ N	1.5	34°55′ W	1.5	4290	5	+ 27	+ 37	+ 32	+ 35	+ 34	+ 33	+ 36	+ 41
									+ 26	+ 29	+ 29	+ 29	+ 32	+ 40
451	41°57′ N	1.5	34°19′ W	1.5	4100	7	+ 35	+ 43	+ 41	+ 43	+ 42	+ 42	+ 44	+ 47
									+ 35	+ 37	+ 38	+ 40	+ 42	+ 47
452	42°15′ N	2	33°19′ W	2	4010	3	+ 42	+ 52	+ 49	+ 52	+ 52	+ 53	+ 56	+ 59
									+ 43	+ 46	+ 47	+ 51	+ 55	+ 60
453	42°15′ N	1.5	31°51′ W	1.5	3130	3	+ 9	0	+ 8	+ 9	+ 7	+ 6	+ 6	+ 4
									+ 8	+ 8	+ 7	+ 7	+ 8	+ 7
454	42°10′ N	1	30°25′ W	1	2820	3	+ 33	+ 19	+ 31	+ 31	+ 30	+ 30	+ 29	+ 23
									+ 32	+ 33	+ 31	+ 32	+ 32	+ 28
455	42°06′ N	1.5	29°12′ W	1.5	2470	2	+ 34	+ 4	+ 20	+ 19	+ 16	+ 14	+ 12	+ 5
									+ 28	+ 26	+ 20	+ 17	+ 16	+ 10
456	42°00′ N	1.5	27°52′ W	1.5	2670	4	+ 34	+ 23	+ 33	+ 33	+ 32	+ 32	+ 33	+ 30
									+ 32	+ 33	+ 33	+ 34	+ 35	+ 33
457	41°47′ N	1.5	26°37′ W	2	3120	6	+ 42	+ 43	+ 48	+ 49	+ 49	+ 49	+ 51	+ 53
									+ 46	+ 47	+ 47	+ 48	+ 51	+ 55
458	41°08′ N	1.5	25°18′ W	1.5	3640	3	+ 39	+ 49	+ 52	+ 54	+ 54	+ 54	+ 55	+ 56
									+ 45	+ 50	+ 52	+ 53	+ 55	+ 58
459	40°30′ N	1	24°09′ W	1	4050	3	+ 24	+ 41	+ 36	+ 39	+ 39	+ 42	+ 46	+ 49
									+ 27	+ 31	+ 33	+ 40	+ 45	+ 50
460	39°03′ N	1.5	22°00 W	1.5	4410	3	+ 4	+ 17	+ 8	+ 10	+ 9	+ 14	+ 19	+ 23
									+ 3	+ 3	+ 1	+ 10	+ 16	+ 25
461	37°58 N	1.5	21°53′ W	1.5	3720	7	+ 51	+ 48	+ 49	+ 50	+ 49	+ 45	+ 44	+ 44
									+ 46	+ 47	+ 47	+ 44	+ 42	+ 44
462	36°59 N	3	21°45′ W	2	4120	7	+ 43	+ 43	+ 44	+ 45	+ 44	+ 42	+ 42	+ 41
									+ 40	+ 41	+ 41	+ 41	+ 40	+ 41

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t + c 18-1	I.R. T = 20	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
442	—2210	+ 47	+1461	+ 616	+ 19	+1814	+ 280	+1793	+ 282	+1774	+ 289	+1715	+ 318	+1601	+ 406	+1346	+ 632
					+ 10	+1977	+ 169	+1963	+ 169	+1942	+ 174	+1859	+ 193	+1755	+ 265	+1452	+ 518
443	—1992	+ 47	+1309	+ 610	+ 19	+1631	+ 275	+1601	+ 277	+1584	+ 283	+1541	+ 311	+1431	+ 395	+1204	+ 603
					+ 10	+1778	+ 165	+1753	+ 165	+1727	+ 170	+1671	+ 189	+1568	+ 258	+1297	+ 491
444	—1736	+ 45	+1171	+ 613	+ 18	+1443	+ 277	+1429	+ 277	+1423	+ 285	+1387	+ 311	+1285	+ 392	+1078	+ 593
					+ 10	+1572	+ 166	+1554	+ 166	+1546	+ 170	+1506	+ 189	+1406	+ 254	+1165	+ 475
445	—1223	+ 48	+ 985	+ 648	+ 18	+1148	+ 290	+1151	+ 292	+1176	+ 299	+1215	+ 327	+1183	+ 418	+1018	+ 644
					+ 10	+1181	+ 174	+1188	+ 174	+1234	+ 179	+1296	+ 198	+1288	+ 273	+1097	+ 522
446	—2055	+ 50	+1383	+ 678	+ 20	+1710	+ 305	+1692	+ 307	+1680	+ 315	+1634	+ 346	+1542	+ 447	+1289	+ 703
					+ 10	+1858	+ 181	+1843	+ 181	+1832	+ 186	+1770	+ 208	+1671	+ 291	+1390	+ 575
447	—2572	+ 55	+1768	+ 718	+ 20	+2199	+ 318	+2181	+ 320	+2177	+ 328	+2126	+ 363	+1981	+ 478	+1666	+ 775
					+ 11	+2383	+ 187	+2365	+ 187	+2364	+ 192	+2303	+ 215	+2173	+ 309	+1798	+ 638
448	—2874	+ 59	+1954	+ 770	+ 22	+2429	+ 335	+2402	+ 337	+2394	+ 345	+2363	+ 384	+2224	+ 511	+1876	+ 844
					+ 11	+2645	+ 192	+2614	+ 192	+2591	+ 197	+2546	+ 222	+2436	+ 324	+2025	+ 698
449	—3172	+ 58	+2136	+ 757	+ 22	+2706	+ 329	+2682	+ 331	+2675	+ 339	+2588	+ 377	+2384	+ 503	+1987	+ 830
					+ 11	+2940	+ 192	+2925	+ 192	+2917	+ 197	+2812	+ 223	+2621	+ 322	+2151	+ 692
450	—2938	+ 58	+2038	+ 746	+ 22	+2537	+ 325	+2513	+ 327	+2515	+ 336	+2483	+ 373	+2327	+ 496	+1955	+ 821
					+ 11	+2742	+ 191	+2720	+ 191	+2715	+ 196	+2684	+ 222	+2552	+ 321	+2111	+ 686
451	—2799	+ 57	+1933	+ 731	+ 21	+2400	+ 322	+2378	+ 324	+2376	+ 333	+2337	+ 370	+2193	+ 492	+1845	+ 814
					+ 11	+2607	+ 186	+2579	+ 186	+2570	+ 191	+2524	+ 217	+2403	+ 314	+1994	+ 675
452	—2703	+ 53	+1838	+ 717	+ 21	+2292	+ 319	+2266	+ 321	+2258	+ 329	+2207	+ 365	+2059	+ 481	+1726	+ 784
					+ 11	+2500	+ 185	+2468	+ 185	+2450	+ 190	+2389	+ 213	+2256	+ 308	+1865	+ 647
453	—2173	+ 50	+1517	+ 699	+ 20	+1856	+ 311	+1844	+ 313	+1850	+ 321	+1827	+ 357	+1713	+ 467	+1445	+ 758
					+ 11	+1991	+ 183	+1987	+ 183	+1994	+ 188	+1973	+ 211	+1875	+ 302	+1558	+ 627
454	—1889	+ 45	+1301	+ 682	+ 17	+1590	+ 305	+1582	+ 307	+1584	+ 315	+1556	+ 349	+1459	+ 456	+1230	+ 739
					+ 10	+1712	+ 181	+1701	+ 181	+1713	+ 186	+1684	+ 209	+1595	+ 297	+1324	+ 604
455	—1546	+ 44	+1139	+ 665	+ 17	+1370	+ 300	+1373	+ 302	+1395	+ 310	+1391	+ 343	+1308	+ 445	+1109	+ 706
					+ 10	+1424	+ 177	+1444	+ 177	+1492	+ 182	+1499	+ 205	+1431	+ 288	+1194	+ 580
456	—1848	+ 43	+1270	+ 647	+ 18	+1560	+ 292	+1548	+ 294	+1545	+ 302	+1513	+ 333	+1415	+ 430	+1193	+ 680
					+ 10	+1683	+ 173	+1673	+ 173	+1672	+ 178	+1637	+ 200	+1550	+ 279	+1289	+ 560
457	—2125	+ 44	+1439	+ 629	+ 18	+1766	+ 284	+1749	+ 286	+1748	+ 293	+1714	+ 324	+1602	+ 415	+1349	+ 652
					+ 10	+1909	+ 171	+1896	+ 171	+1892	+ 176	+1856	+ 196	+1755	+ 272	+1454	+ 534
458	—2410	+ 47	+1594	+ 666	+ 19	+1962	+ 300	+1940	+ 302	+1927	+ 310	+1895	+ 344	+1778	+ 447	+1498	+ 716
					+ 11	+2153	+ 179	+2111	+ 179	+2087	+ 184	+2050	+ 207	+1948	+ 293	+1617	+ 592
459	—2726	+ 51	+1815	+ 695	+ 20	+2275	+ 311	+2247	+ 313	+2233	+ 321	+2166	+ 357	+2015	+ 469	+1688	+ 764
					+ 11	+2501	+ 181	+2460	+ 181	+2436	+ 186	+2348	+ 209	+2208	+ 301	+1824	+ 630
460	—3054	+ 55	+2105	+ 760	+ 22	+2657	+ 330	+2639	+ 332	+2641	+ 342	+2550	+ 380	+2364	+ 514	+1977	+ 866
					+ 12	+2857	+ 188	+2864	+ 189	+2880	+ 194	+2765	+ 219	+2594	+ 324	+2139	+ 686
461	—2813	+ 56	+2011	+ 776	+ 22	+2480	+ 336	+2459	+ 338	+2464	+ 348	+2465	+ 386	+2336	+ 524	+1973	+ 888
					+ 12	+2663	+ 190	+2650	+ 191	+2644	+ 196	+2651	+ 221	+2560	+ 329	+2133	+ 740
462	—2866	+ 57	+2020	+ 789	+ 21	+2499	+ 341	+2478	+ 343	+2483	+ 354	+2459	+ 394	+2324	+ 534	+1964	+ 905
					+ 11	+2687	+ 194	+2676	+ 195	+2677	+ 200	+2647	+ 226	+2547	+ 336	+2122	+ 757

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	Anomalies in milligal. Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. $R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
463	35°50′	N	1.5	21°38′	W	1.5	5130	3	− 16	+ 8	− 5 − 13	− 2 − 11	− 3 − 11	+ 1 − 4	+ 8 + 3	+ 13 + 11
464	34°45′	N	1.5	21°32′	W	1.5	5320	3	− 7	+ 15	+ 3 − 3	+ 6 − 2	+ 5 − 3	+ 5 − 1	+ 8 + 2	+ 14 + 10
465	33°42′	N	2	21°30′	W	2	5470	4	− 23	+ 3	− 12 − 19	− 10 − 18	− 10 − 18	− 6 − 12	0 − 6	+ 7 + 3
466	33°22′	N	1.5	20°16′	W	1.5	5040	3	− 6	+ 12	+ 4 − 4	+ 6 − 2	+ 5 − 1	+ 6 + 1	+ 9 + 4	+ 13 + 10
467	33°04′	N	1	19°06′	W	2.5	4000	3	+ 47	+ 41	+ 44 + 43	+ 45 + 43	+ 42 + 41	+ 40 + 39	+ 38 + 37	+ 37 + 37
468	32°48′	N	1	17°56′	W	2.5	3250	7	+ 80	+ 59	+ 76 + 81	+ 77 + 82	+ 75 + 80	+ 66 + 71	+ 56 + 59	+ 47 + 54
469	32°37′.74	N	0.02	16°54′.79	W	0.02	Funchal	3	+ 231	+ 65	+ 104 + 141	+ 98 + 130	+ 83 + 107	+ 48 + 60	+ 24 + 29	+ 10 + 13
469a	32°39′.8	N		16°54′.25	W	—	510	5	+ 334	+ 136	+ 175 + 217	+ 168 + 204	+ 150 + 177	+ 115 + 127	+ 91 + 97	+ 76 + 80
469b	32°43′.1	N		16°54′.8	W	—	1530	5	+ 376	+ 78	+ 111 + 152	+ 104 + 140	+ 88 + 114	+ 53 + 65	+ 30 + 35	+ 14 + 19
470	32°50′	N	1.5	15°54′	W	1.5	4070	5	− 6	+ 16	+ 20 + 9	+ 23 + 17	+ 26 + 23	+ 26 + 28	+ 20 + 22	+ 14 + 16
471	33°04′	N	1.5	14°51′	W	1.5	4220	4	0	+ 25	+ 14 + 4	+ 17 + 8	+ 17 + 9	+ 21 + 16	+ 26 + 22	+ 30 + 29
472	33°20′	N	1.5	13°50′	W	1.5	4520	3	− 43	− 9	− 18 − 32	− 14 − 23	− 13 − 18	− 17 − 20	− 17 − 22	− 14 − 16
473	34°22′	N	1	13°27′	W	1	4420	5	− 18	+ 17	− 2 − 14	0 − 11	+ 1 − 10	+ 6 0	+ 14 + 8	+ 21 + 18
474	35°25′	N	1	13°07′	W	1	4940	3	− 16	+ 37	+ 15 − 4	+ 19 + 4	+ 22 + 10	+ 29 + 21	+ 40 + 34	+ 48 + 45
475	36°30′	N	1	12°42′	W	1	2790	3	+ 119	+ 98	+ 94 + 99	+ 93 + 94	+ 88 + 85	+ 86 + 82	+ 88 + 83	+ 90 + 86
476	37°28′	N	1	12°20′	W	1	5190	4	− 57	+ 1	− 31 − 47	− 28 − 44	− 26 − 42	− 16 − 28	+ 1 − 7	+ 15 + 9
477	38°30′	N	1	12°00′	W	1	4890	4	− 34	+ 12	− 17 − 30	− 15 − 29	− 15 − 30	− 8 − 19	+ 5 − 5	+ 18 + 12
478	39°22′	N	1	11°32′	W	1	4440	4	− 33	+ 4	− 21 − 30	− 20 − 31	− 21 − 33	− 14 − 23	− 3 − 10	+ 8 + 3
479	40°42′	N	1	12°11′	W	1	5360	6	− 25	+ 31	0 − 15	+ 3 − 12	+ 6 − 9	+ 17 + 8	+ 27 + 19	+ 35 + 30
480	41°49′	N	1	12°38′	W	1	5360	4	− 7	+ 46	+ 18 + 3	+ 22 + 6	+ 25 + 10	+ 38 + 30	+ 47 + 41	+ 52 + 48
481	42°37′	N	1	11°54′	W	1	890	3	+ 123	− 4	+ 20 + 44	+ 17 + 37	+ 6 + 22	− 21 − 14	− 42 − 40	− 50 − 50

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp $A\text{-}0_2$	t + c 18-1	I.R. $T = 20$	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1
463	—3446	+ 59	+2340	+ 809	+ 23	+2965	+ 347	+2937	+ 349	+2931	+ 360	+2848	+ 401	+2641	+ 546	+2203	+ 931
					+ 12	+3206	+ 195	+3189	+ 196	+3178	+ 202	+3087	+ 230	+2901	+ 341	+2388	+ 778
464	—3591	+ 63	+2484	+ 825	+ 23	+3121	+ 350	+3089	+ 352	+3087	+ 363	+3041	+ 405	+2863	+ 552	+2403	+ 951
					+ 12	+3344	+ 197	+3333	+ 198	+3330	+ 204	+3282	+ 233	+3144	+ 346	+2611	+ 796
465	—3687	+ 64	+2518	+ 841	+ 23	+3202	+ 355	+3170	+ 357	+3161	+ 368	+3078	+ 413	+2866	+ 564	+2398	+ 969
					+ 12	+3431	+ 200	+3426	+ 201	+3420	+ 208	+3330	+ 237	+3149	+ 351	+2606	+ 813
466	—3416	+ 61	+2355	+ 820	+ 22	+2951	+ 348	+2925	+ 350	+2926	+ 361	+2874	+ 403	+2699	+ 550	+2266	+ 943
					+ 12	+3184	+ 195	+3164	+ 196	+3156	+ 202	+3100	+ 231	+2961	+ 341	+2457	+ 787
467	—2805	+ 57	+2016	+ 794	+ 21	+2479	+ 340	+2464	+ 342	+2478	+ 353	+2466	+ 393	+2341	+ 534	+1976	+ 910
					+ 11	+2647	+ 192	+2645	+ 193	+2660	+ 199	+2652	+ 225	+2562	+ 334	+2135	+ 757
468	—2242	+ 53	+1627	+ 772	+ 20	+1925	+ 333	+1914	+ 335	+1927	+ 346	+1975	+ 385	+1938	+ 521	+1669	+ 882
					+ 11	+2036	+ 188	+2027	+ 188	+2036	+ 194	+2101	+ 220	+2113	+ 325	+1795	+ 693
469	— 231	+ 52	+1121	+ 722	+ 19	+1153	+ 318	+1213	+ 320	+1359	+ 328	+1662	+ 367	+1768	+ 500	+1571	+ 840
					+ 11	+ 928	+ 182	+1039	+ 182	+1264	+ 187	+1708	+ 213	+1911	+ 317	+1684	+ 703
469a	+ 243	+ 50	+ 959	+ 723	+ 19	+1010	+ 319	+1080	+ 321	+1246	+ 330	+1561	+ 371	+1666	+ 502	+1475	+ 848
					+ 11	+ 737	+ 183	+ 865	+ 184	+1133	+ 188	+1603	+ 214	+1796	+ 321	+1581	+ 705
469b	+1287	+ 50	+ 919	+ 723	+ 19	+1022	+ 319	+1089	+ 321	+1247	+ 330	+1553	+ 371	+1652	+ 502	+1466	+ 848
					+ 11	+ 755	+ 183	+ 878	+ 184	+1137	+ 188	+1596	+ 216	+1780	+ 329	+1570	+ 706
470	—2606	+ 48	+1651	+ 692	+ 19	+2026	+ 310	+1987	+ 312	+1955	+ 320	+1913	+ 358	+1846	+ 483	+1584	+ 810
					+ 11	+2272	+ 179	+2188	+ 179	+2123	+ 184	+2050	+ 210	+2015	+ 308	+1706	+ 673
471	—2852	+ 49	+1907	+ 642	+ 19	+2401	+ 292	+2372	+ 294	+2359	+ 302	+2286	+ 338	+2117	+ 459	+1769	+ 768
					+ 10	+2633	+ 173	+2596	+ 173	+2573	+ 178	+2478	+ 203	+2323	+ 297	+1911	+ 647
472	—2900	+ 50	+1915	+ 597	+ 20	+2349	+ 277	+2391	+ 279	+2292	+ 287	+2294	+ 323	+2183	+ 436	+1848	+ 734
					+ 11	+2610	+ 165	+2521	+ 165	+2464	+ 170	+2464	+ 193	+2391	+ 286	+1994	+ 622
473	—2994	+ 50	+2004	+ 593	+ 20	+2536	+ 277	+2511	+ 279	+2496	+ 287	+2406	+ 324	+2217	+ 437	+1850	+ 734
					+ 11	+2776	+ 164	+2749	+ 164	+2730	+ 169	+2613	+ 192	+2436	+ 286	+1999	+ 623
474	—3164	+ 49	+1997	+ 589	+ 19	+2560	+ 274	+2515	+ 276	+2481	+ 284	+2375	+ 321	+2153	+ 435	+1776	+ 732
					+ 10	+2876	+ 162	+2796	+ 162	+2729	+ 167	+2592	+ 191	+2369	+ 285	+1922	+ 625
475	—2160	+ 48	+1733	+ 586	+ 19	+2121	+ 273	+2126	+ 275	+2164	+ 283	+2152	+ 320	+2015	+ 436	+1695	+ 735
					+ 10	+2186	+ 162	+2243	+ 162	+2324	+ 167	+2328	+ 191	+2222	+ 285	+1849	+ 628
476	—3441	+ 50	+2222	+ 585	+ 19	+2889	+ 273	+2854	+ 275	+2829	+ 283	+2688	+ 320	+2403	+ 435	+1970	+ 736
					+ 10	+3172	+ 162	+3139	+ 162	+3111	+ 167	+2948	+ 191	+2646	+ 286	+2136	+ 631
477	—3355	+ 51	+2263	+ 581	+ 20	+2893	+ 270	+2873	+ 272	+2869	+ 280	+2758	+ 317	+2517	+ 432	+2084	+ 732
					+ 11	+3137	+ 162	+3131	+ 162	+3133	+ 167	+3004	+ 191	+2768	+ 286	+2259	+ 630
478	—3139	+ 50	+2142	+ 581	+ 20	+2726	+ 273	+2709	+ 275	+2711	+ 283	+2608	+ 320	+2379	+ 436	+1971	+ 736
					+ 10	+2941	+ 161	+2950	+ 161	+2960	+ 166	+2840	+ 190	+2617	+ 286	+2135	+ 632
479	—3555	+ 54	+2318	+ 628	+ 20	+3000	+ 289	+2961	+ 291	+2928	+ 300	+2774	+ 339	+2548	+ 467	+2127	+ 805
					+ 10	+3275	+ 167	+3246	+ 168	+3212	+ 172	+3016	+ 198	+2801	+ 301	+2304	+ 689
480	—3559	+ 55	+2294	+ 677	+ 21	+2989	+ 303	+2948	+ 305	+2904	+ 315	+2732	+ 355	+2502	+ 496	+2086	+ 866
					+ 11	+3277	+ 174	+3248	+ 175	+3196	+ 180	+2975	+ 206	+2749	+ 315	+2260	+ 743
481	—3877	+ 52	+1448	+ 651	+ 21	+1592	+ 296	+1623	+ 298	+1717	+ 306	+1952	+ 345	+2027	+ 475	+1778	+ 810
					+ 11	+1480	+ 172	+1558	+ 172	+1698	+ 177	+2028	+ 203	+2196	+ 304	+1911	+ 687

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, T = 30 km. Lower line: Airy, T = 20 km.					
											R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
482	43°47′	N	1.5	11°34′	W	1.5	5060	4	− 65	− 3	− 34 − 55	− 29 − 51	− 22 − 38	− 8 − 17	+ 3 − 3	+ 12 + 10
483	44°42′	N	1.5	10°25′	W	1.5	4960	8	+ 11	+ 61	+ 39 + 22	+ 42 + 28	+ 44 + 33	+ 46 + 38	+ 53 + 45	+ 61 + 57
484	45°34′	N	1	09°19′	W	1	4830	4	+ 5	+ 58	+ 29 + 13	+ 32 + 15	+ 34 + 21	+ 38 + 29	+ 43 + 33	+ 53 + 45
485	46°42′	N	1	07°54′	W	1	4600	3	− 18	+ 43	+ 9 − 8	+ 11 − 5	+ 12 − 4	+ 20 + 7	+ 35 + 24	+ 53 + 45
486	47°44′	N	1	06°36′	W	1	—	3	+ 44	− 9	+ 9 + 21	+ 8 + 20	+ 3 + 14	− 12 − 5	− 24 − 20	− 33 − 31
487	50°42′	N	0.1	00°35′	W	0.1	38	4	− 3	− 3	0 0	+ 1 + 1	+ 1 + 2	+ 3 + 2	+ 7 + 3	+ 14 + 4
488	48°08′	N	2	07°18′	W	2	170	3	+ 42	− 6	+ 14 + 24	+ 13 + 23	+ 11 + 21	+ 1 + 10	− 12 − 5	− 24 − 20
489	47°34′	N	2	08°19′	W	2	2340	4	0	+ 1	− 3 − 5	− 3 − 5	− 3 − 7	− 3 − 5	− 1 − 2	0 − 1
490	46°49′	N	2	09°30′	W	2	4220	4	+ 7	+ 40	+ 14 + 7	+ 15 + 5	+ 14 + 2	+ 16 + 6	+ 25 + 16	+ 37 + 31
491	46°02′	N	1	10°50′	W	1	4790	5	− 54	− 20	− 41 − 50	− 39 − 48	− 40 − 48	− 39 − 44	− 37 − 41	− 32 − 35
492	45°21′	N	2	11°50′	W	2	4865	3	+ 4	+ 38	+ 19 + 25	+ 22 + 35	+ 22 + 60	+ 27 + 58	+ 29 + 47	+ 29 + 40
493	44°40′	N	3	12°50′	W	3	3740	3	+ 77	+ 63	+ 69 + 73	+ 70 + 73	+ 66 + 70	+ 56 + 59	+ 47 + 53	+ 44 + 52
494	43°45′	N	2	13°25′	W	2	4420	3	+ 68	+ 80	+ 70 + 67	+ 70 + 65	+ 68 + 62	+ 67 + 62	+ 72 + 67	+ 76 + 7[illegible]
495	43°09′	N	1	14°05′	W	1	5360	6	− 50	− 10	− 37 − 45	− 34 − 45	− 34 − 45	− 28 − 37	− 18 − 25	− 8 − 12
496	42°20′	N	2	14°44′	W	2	5295	4	− 10	+ 16	0 − 6	+ 2 − 6	+ 1 − 7	+ 1 − 6	+ 4 − 6	+ 11 + 5
497	41°29′	N	1	15°22′	W	1	5350	6	− 9	+ 25	+ 8 − 2	+ 12 + 2	+ 14 + 5	+ 19 + 15	+ 22 + 19	+ 22 + 2[illegible]
498	40°40′	N	1	15°58′	W	1	3680	4	+ 50	+ 19	+ 36 + 34	+ 36 + 39	+ 31 + 35	+ 18 + 20	+ 7 + 7	0 − 1
499	39°48′	N	2	16°20′	W	2	3650	4	+ 27	− 6	+ 11 + 18	+ 12 + 17	+ 6 + 13	− 8 − 5	− 18 − 18	− 26 − 25
500	38°56′	N	3	16°43′	W	3	5290	4	+ 9	+ 37	+ 21 + 14	+ 24 + 15	+ 24 + 16	+ 27 + 23	+ 31 + 26	+ 35 + 32
501	38°02′	N	3	17°04′	W	3	5515	3	− 23	+ 12	− 9 − 17	− 6 − 15	− 5 − 14	+ 2 − 4	+ 7 + 2	+ 17 + 9
502	37°09′	N	2	17°25′	W	2	4850	3	+ 8	+ 20	+ 13 + 8	+ 15 + 9	+ 12 + 7	+ 9 + 4	+ 11 + 7	+ 16 + 13

No.	Topog	Hayford 113.7 km I.R.	Hayford 113.7 km Comp A-0₂	Hayford 113.7 km t+c 18-1	I.R T=30 / I.R. T=20	R=0 (Heisk.) Comp A-0₂	R=0 (Heisk.) t+c 18-1	29.05 Comp A-0₂	29.05 t+c 18-1	58.1 Comp A-0₂	58.1 t+c 18-1	116.2 Comp A-0₂	116.2 t+c 18-1	174.3 Comp A-0₂	174.3 t+c 18-1	232.4 Comp A-0₂	232.4 t+c 18-1
482	—3406	+48	+2120	+619	+19	+2794	+285	+2741	+287	+2661	+295	+2486	+330	+2257	+446	+1873	+743
					+10	+3126	+166	+3091	+166	+2954	+171	+2716	+194	+2483	+287	+2026	+617
483	—3220	+49	+2113	+562	+19	+2659	+265	+2622	+267	+2601	+275	+2541	+312	+2358	+426	+1969	+728
					+10	+2946	+157	+2879	+157	+2824	+162	+2755	+185	+2589	+280	+2130	+623
484	—3306	+50	+2224	+509	+19	+2815	+244	+2781	+246	+2754	+253	+2675	+289	+2508	+407	+2104	+710
					+11	+3075	+147	+3058	+148	+2998	+152	+2890	+174	+2750	+271	+2278	+626
485	—3111	+42	+2040	+418	+17	+2619	+207	+2591	+209	+2579	+215	+2470	+243	+2228	+332	+1835	+554
					+10	+2872	+129	+2846	+129	+2827	+132	+2699	+150	+2451	+227	+1989	+483
486	— 188	+25	+366	+331	+10	+360	+167	+372	+167	+414	+171	+543	+194	+601	+256	+546	+402
					+6	+302	+106	+314	+106	+369	+109	+551	+121	+645	+173	+584	+344
487	— 27	+6	— 15	+36	+2	— 23	+15	— 25	+15	— 27	+12	— 31	— 1	— 33	— 44	— 29	— 120
					0	— 17	+10	— 20	+6	— 28	+10	— 32	+10	— 36	+5	— 32	— 6
488	— 126	+22	+240	+347	+9	+223	+175	+229	+175	+246	+179	+325	+200	+393	+261	+376	+402
					+4	+194	+111	+197	+111	+219	+114	+316	+126	+419	+176	+400	+339
489	—1660	+33	+1200	+417	+13	+1472	+208	+1465	+210	+1466	+215	+1433	+242	+1333	+323	+1125	+525
					+7	+1578	+129	+1577	+129	+1589	+133	+1550	+149	+1460	+217	+1213	+448
490	—2981	+48	+2086	+517	+17	+2644	+248	+2630	+250	+2641	+257	+2581	+292	+2385	+400	+1986	+679
					+9	+2825	+151	+2840	+151	+2862	+156	+2802	+177	+2619	+266	+2150	+586
491	—3263	+54	+2226	+645	+21	+2821	+291	+2797	+293	+2801	+303	+2751	+343	+2593	+481	+2178	+848
					+10	+3042	+167	+3028	+168	+3020	+173	+2957	+197	+2817	+305	+2336	+729
492	—3266	+55	+2169	+708	+21	+2781	+311	+2755	+313	+2742	+324	+2650	+366	+2481	+514	+2087	+905
					+11	+2864	+177	+2764	+178	+2516	+183	+2508	+211	+2501	+326	+2117	+779
493	—2652	+55	+2000	+740	+21	+2386	+323	+2375	+325	+2402	+336	+2463	+377	+2405	+522	+2059	+904
					+11	+2503	+181	+2504	+182	+2527	+188	+2606	+215	+2553	+326	+2127	+762
494	—3123	+55	+2202	+746	+21	+2761	+326	+2751	+328	+2766	+339	+2734	+379	+2548	+519	+2128	+893
					+12	+2943	+183	+2956	+184	+2979	+190	+2958	+216	+2796	+325	+2306	+745
495	—3631	+58	+2421	+756	+22	+3147	+327	+3122	+329	+3113	+340	+3012	+380	+2772	+518	+2306	+885
					+12	+3380	+184	+3379	+185	+3379	+191	+3271	+217	+3047	+324	+2500	+737
496	—3604	+61	+2483	+797	+24	+3142	+342	+3114	+344	+3116	+355	+3075	+398	+2900	+544	+2434	+935
					+12	+3365	+189	+3362	+190	+3360	+197	+3327	+226	+3210	+337	+2668	+779
497	—3516	+59	+2290	+827	+23	+2971	+351	+2929	+353	+2903	+364	+2806	+409	+2622	+565	+2202	+981
					+12	+3241	+193	+3197	+194	+3161	+201	+3034	+230	+2874	+348	+2386	+799
498	—2629	+60	+2035	+839	+23	+2397	+353	+2393	+355	+2429	+366	+2519	+411	+2470	+569	+2117	+993
					+12	+2578	+195	+2536	+196	+2561	+203	+2681	+232	+2700	+352	+2290	+832
499	—2640	+61	+2052	+852	+23	+2419	+357	+2413	+359	+2453	+370	+2550	+416	+2495	+576	+2136	+1007
					+12	+2520	+196	+2529	+197	+2567	+204	+2710	+233	+2725	+356	+2308	+844
500	—3568	+62	+2391	+837	+23	+3076	+352	+3045	+354	+3033	+365	+2951	+410	+2764	+561	+2320	+963
					+12	+3314	+196	+3300	+196	+3283	+204	+3187	+233	+3034	+348	+2519	+805
501	—3677	+62	+2430	+839	+23	+3161	+353	+3125	+355	+3107	+366	+2998	+411	+2793	+562	+2341	+963
					+12	+3407	+196	+3392	+197	+3370	+204	+3243	+233	+3069	+347	+2541	+805
502	—3333	+61	+2331	+826	+23	+2913	+349	+2894	+351	+2908	+362	+2901	+404	+2728	+551	+2294	+938
					+12	+3122	+195	+3119	+196	+3124	+203	+3126	+231	+2993	+342	+2486	+781

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											$R=0$ Heisk.	29.05	58.1	116.2	174.3	232 4
503	36°18′	N	1	17°25′	W	1	5040	3	− 26	+ 4	− 14 − 23	− 11 − 21	− 11 − 20	− 4 − 9	+ 1 0	+ 6 + 8
504	35°21′	N	1	17°25′	W	1	4400	3	+ 11	+ 18	+ 20 + 13	+ 23 + 19	+ 22 + 21	+ 19 + 19	+ 16 + 16	+ 15 + 16
505	34°26′	N	1	17°25′	W	1	4260	2	− 5	+ 6	+ 9 + 1	+ 12 + 8	+ 13 + 11	+ 11 + 12	+ 8 + 9	+ 6 + 9
506	33°16′	N	1.5	17°26′	W	1.5	3705	2	+ 13	+ 8	+ 16 + 14	+ 18 + 17	+ 19 + 18	+ 19 + 24	+ 14 + 18	+ 6 + 11
507	31°49′	N	2	16°45′	W	3	4370	3	− 13	+ 6	− 4 − 12	− 1 − 9	− 1 − 8	+ 3 0	+ 7 + 5	+ 9 + 10
508	30°56′	N	2	16°42′	W	3	4430	4	− 19	+ 1	− 9 − 17	− 7 − 14	− 7 − 13	− 7 − 11	− 3 − 7	+ 1 0
509	30°01′	N	1.5	16°34′	W	1.5	3775	3	− 13	− 8	− 12 − 13	− 10 − 12	− 12 − 15	− 14 − 16	− 13 − 17	− 10 − 11
510	29°09′	N	2	16°19′	W	2	3760	4	− 45	− 15	− 26 − 38	− 23 − 34	− 21 − 29	− 13 −17	− 6 − 7	− 6 − 4
511	28°06′	N	1	16°00′	W	1	2525	4	+ 51	+ 50	+ 73 + 78	+ 74 + 84	+ 72 + 85	+ 54 + 64	+ 39 + 43	+ 31 + 34
512	27°20′	N	1	15°37′	W	1	3150	3	− 45	− 6	− 19 − 30	− 16 − 27	− 12 − 21	− 4 − 8	+ 4 + 2	+ 11 + 11
513	26°26′	N	1.5	14°59′	W	1.5	1190	3	− 31	− 45	− 40 − 36	− 40 − 36	− 41 − 39	− 44 − 43	− 43 − 42	− 41 − 39
514	24°42′	N	1.5	16°21′	W	1.5	75	4	− 1	− 70	− 50 − 40	− 51 − 41	− 53 − 45	− 62 − 55	− 70 − 64	− 76 − 72
515	24°54′	N	1.5	17°08′	W	1.5	2580	4	− 55	− 34	− 35 − 42	− 34 − 38	− 32 − 36	− 28 − 29	− 24 − 24	− 22 − 21
516	25°06′	N	1.5	17°57′	W	1.5	3105	3	− 9	0	− 1 − 4	0 − 3	0 − 3	+ 1 − 1	+ 4 + 3	+ 7 + 8
517	23°52′	N	1.5	18°53′	W	1.5	3135	7	− 7	− 3	− 4 − 6	− 3 − 6	− 4 − 6	− 4 − 6	− 2 − 4	+ 1 + 1
518	23°38′	N	1.5	19°13′	W	1.5	3380	6	+ 5	+ 10	+ 9 + 7	+ 10 + 8	+ 10 + 7	+ 9 + 7	+ 11 + 9	+ 12 + [illegible]
519	21°52′	N	1	22°03′	W	1	4650	5	− 12	+ 4	− 1 − 11	+ 1 − 8	+ 1 − 8	+ 5 − 5	+ 12 − 3	+ 12 + 2
520	19°51′	N	1	23°23′	W	1	4340	4	− 2	+ 8	+ 5 − 1	+ 7 + 2	+ 7 + 3	+ 9 + 7	+ 12 + 11	+ 13 + 15
521	19°23′	N	1	23°42′	W	1	4140	3	− 5	− 6	− 2 − 6	+ 1 − 3	0 − 3	− 1 − 2	0 0	0 + 1
522	18°52′	N	1	23°58′	W	1	3925	4	− 1	− 4	+ 1 − 3	+ 2 − 3	+ 2 − 1	+ 1 + 1	+ 2 + 2	+ 3 + 4
523	17°22′	N	0.5	24°47′	W	0.5	3280	3	+ 20	+ 11	+ 28 + 25	+ 30 + 28	+ 33 + 33	+ 33 + 39	+ 25 + 29	+ 15 + 19

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0₂	t+c 18-1	I.R. T=20	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1	Comp A-0₂	t+c 18-1
503	—3405	+ 58	+2246	+ 806	+ 22 + 12	+2917 +3165	+ 344 + 194	+2888 +3147	+ 346 + 195	+2876 +3131	+ 357 + 202	+2765 +2990	+ 397 + 228	+2573 +2796	+ 536 + 336	+2162 +2302	+ 900 + 748
504	—2920	+ 57	+1982	+ 813	+ 21 + 11	+2461 +2694	+ 345 + 195	+2431 +2638	+ 347 + 196	+2428 +2609	+ 358 + 203	+2420 +2603	+ 399 + 229	+2305 +2522	+ 540 + 338	+1951 +2107	+ 911 + 759
505	—2786	+ 53	+1832	+ 787	+ 20 + 11	+2284 +2525	+ 343 + 193	+2252 +2456	+ 345 + 193	+2235 +2412	+ 354 + 200	+2209 +2374	+ 395 + 227	+2107 +2307	+ 525 + 327	+1790 +1929	+ 868 + 707
506	—2510	+ 52	+1704	+ 804	+ 21 + 12	+2113 +2297	+ 344 + 193	+2089 +2268	+ 346 + 194	+2077 +2245	+ 357 + 201	+2030 +2158	+ 397 + 227	+1948 +2111	+ 535 + 335	+1661 +1776	+ 898 + 741
507	—2965	+ 54	+1977	+ 743	+ 21 + 11	+2524 +2753	+ 325 + 187	+2498 +2730	+ 327 + 187	+2487 +2712	+ 335 + 192	+2407 +2609	+ 374 + 218	+2237 +2451	+ 506 + 321	+1874 +2025	+ 846 + 704
508	—2999	+ 55	+2030	+ 712	+ 21 + 12	+2561 +2783	+ 316 + 184	+2536 +2755	+ 318 + 184	+2531 +2736	+ 326 + 189	+2490 +2695	+ 364 + 215	+2327 +2550	+ 493 + 316	+1953 +2112	+ 822 + 689
509	—2628	+ 51	+1854	+ 670	+ 21 + 12	+2291 +2439	+ 304 + 180	+2275 +2428	+ 306 + 180	+2283 +2448	+ 314 + 185	+2269 +2441	+ 350 + 208	+2142 +2346	+ 468 + 305	+1806 +1948	+ 775 + 647
510	—2539	+ 44	+1581	+ 614	+ 18 + 9	+2051 +2287	+ 284 + 169	+2019 +2249	+ 286 + 169	+1983 +2194	+ 294 + 174	+1872 +2048	+ 328 + 197	+1695 +1865	+ 437 + 286	+1410 +1521	+ 717 + 600
511	—1558	+ 41	+1001	+ 525	+ 18 + 9	+1075 +1128	+ 249 + 152	+1060 +1070	+ 251 + 152	+1076 +1050	+ 258 + 157	+1221 +1247	+ 287 + 175	+1286 +1381	+ 374 + 248	+1145 +1219	+ 595 + 498
512	—2130	+ 37	+1265	+ 438	+ 16 + 8	+1636 +1843	+ 214 + 133	+1607 +1807	+ 214 + 133	+1568 +1746	+ 218 + 136	+1463 +1605	+ 242 + 150	+1311 +1442	+ 310 + 207	+1080 +1168	+ 474 + 395
513	— 827	+ 26	+ 615	+ 330	+ 11 + 6	+ 738 + 769	+ 164 + 104	+ 737 + 770	+ 164 + 104	+ 750 + 793	+ 168 + 107	+ 760 + 822	+ 181 + 116	+ 710 + 780	+ 224 + 149	+ 598 + 643	+ 318 + 258
514	— 71	+ 26	+ 329	+ 405	+ 11 + 6	+ 356 + 327	+ 195 + 123	+ 365 + 341	+ 195 + 123	+ 385 + 375	+ 199 + 126	+ 451 + 465	+ 217 + 136	+ 478 + 516	+ 267 + 178	+ 429 + 460	+ 382 + 311
515	—1714	+ 33	+1027	+ 443	+ 14 + 7	+1290 +1440	+ 214 + 136	+1271 +1404	+ 214 + 136	+1250 +1377	+ 218 + 140	+1187 +1295	+ 241 + 152	+1081 +1185	+ 308 + 208	+ 903 + 975	+ 466 + 387
516	—2047	+ 42	+1374	+ 537	+ 17 + 9	+1696 +1839	+ 253 + 153	+1682 +1824	+ 255 + 153	+1676 +1819	+ 262 + 158	+1641 +1779	+ 289 + 177	+1524 +1670	+ 375 + 246	+1282 +1383	+ 588 + 488
517	—2169	+ 46	+1504	+ 580	+ 18 + 9	+1848 +1988	+ 272 + 164	+1837 +1982	+ 274 + 164	+1840 +1985	+ 282 + 169	+1812 +1960	+ 312 + 190	+1698 +1860	+ 406 + 268	+1431 +1542	+ 649 + 542
518	—2320	+ 48	+1599	+ 619	+ 20 + 10	+1973 +2122	+ 285 + 172	+1959 +2113	+ 287 + 172	+1957 +2118	+ 295 + 177	+1931 +2088	+ 329 + 200	+1808 +1982	+ 434 + 286	+1525 +1644	+ 706 + 596
519	—3154	+ 61	+2145	+ 793	+ 23 + 12	+2681 +2936	+ 342 + 194	+2654 +2912	+ 344 + 195	+2649 +2899	+ 355 + 201	+2565 +2844	+ 396 + 227	+2359 +2711	+ 535 + 338	+1979 +2254	+ 909 + 750
520	—2946	+ 59	+1980	+ 806	+ 22 + 11	+2507 +2732	+ 347 + 195	+2481 +2701	+ 349 + 196	+2475 +2687	+ 359 + 201	+2417 +2616	+ 399 + 228	+2255 +2474	+ 530 + 331	+1894 +2045	+ 881 + 722
521	—2811	+ 60	+1945	+ 813	+ 22 + 11	+2411 +2617	+ 345 + 195	+2387 +2589	+ 347 + 195	+2384 +2575	+ 355 + 200	+2354 +2540	+ 394 + 226	+2214 +2425	+ 528 + 329	+1865 +2015	+ 875 + 721
522	—2707	+ 59	+1880	+ 800	+ 21 + 11	+2327 +2517	+ 341 + 197	+2313 +2500	+ 343 + 197	+2310 +2494	+ 351 + 203	+2272 +2453	+ 390 + 228	+2137 +2339	+ 518 + 329	+1801 +1944	+ 843 + 698
523	—2252	+ 56	+1480	+ 810	+ 21 + 10	+1808 +1993	+ 346 + 196	+1782 +1964	+ 348 + 196	+1747 +1906	+ 357 + 202	+1703 +1822	+ 397 + 229	+1660 +1824	+ 521 + 327	+1434 +1562	+ 849 + 694

Reductions in 0.1 mgal

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. $R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
524	16°53′.34 N	0.02	24°59′.88 W	0.02	S. Vincent	2	+ 257	+ 85	+ 133 + 171	+ 127 + 161	+ 112 + 139	+ 78 + 91	+ 58 + 63	+ 46 + 53
524a	16°53′.04 N		24°59′.77 W		— 5	5	+ 284	+ 112	+ 160 + 196	+ 154 + 188	+ 141 + 168	+ 105 + 120	+ 93 + 90	+ 72 + 79
524b	16°53′.00 N		24°57′.89 W		—220	5	+ 307	+ 110	+ 156 + 192	+ 150 + 183	+ 136 + 162	+ 103 + 117	+ 92 + 89	+ 71 + 78
524c	16°49′.70 N		25°04′.75 W		—10	5	+ 266	+ 89	+ 136 + 170	+ 131 + 162	+ 118 + 143	+ 85 + 98	+ 74 + 70	+ 53 + 60
525	16°28′ N	1.5	25°46′ W	1.5	4255	3	— 39	— 28	— 22 — 33	— 18 — 25	— 16 — 21	— 11 — 10	— 11 — 9	— 15 — 11
526	15°39′ N	2	27°16′ W	2	4810	3	+ 12	+ 15	+ 17 + 13	+ 19 + 14	+ 17 + 13	+ 17 + 15	+ 20 + 17	+ 22 + 22
527	14°57′ N	1.5	28°16′ W	1.5	5280	3	— 3	+ 4	+ 1 — 3	+ 3 — 3	+ 3 — 3	+ 6 + 2	+ 9 + 5	+ 13 + 11
528	14°08′ N	1	29°23′ W	1	5480	3	— 9	— 9	— 8 — 10	— 6 — 11	— 7 — 13	— 7 — 11	— 5 — 9	— [illegible] — 5
529	13°19′ N	1	30°45′ W	2	5740	3	— 17	— 8	— 14 — 15	— 12 — 17	— 13 — 19	— 11 — 16	— 6 — 11	+ 1 — 4
530	12°28′ N	1	32°10′ W	1	5845	3	— 21	— 10	— 18 — 19	— 16 — 21	— 17 — 23	— 15 — 20	— 10 — 15	— 4 — 9
531	11°26′ N	1	33°32′ W	1	5650	3	— 22	— 10	— 16 — 19	— 13 — 19	— 12 — 18	— 9 — 14	— 7 — 11	— 3 — 6
532	10°00′ N	1.5	33°50′ W	1	5520	4	— 24	— 33	— 22 — 24	— 19 — 23	— 22 — 23	— 25 — 24	— 27 — 28	— 30 — 29
533	8°39′ N	1.5	34°08′ W	1	4710	4	— 27	— 26	— 22 — 26	— 20 — 26	— 22 — 26	— 21 — 23	— 18 — 19	— 14 — 14
534	6°57′ N	5	34°24′ W	2	2825	6	+ 22	— 29	— 2 + 9	0 + 6	— 7 — 6	— 16 — 17	— 21 — 23	— 26 — 27
535	7°24′ N	3	32°58′ W	1.5	2600	3	+ 48	— 9	+ 10 + 22	+ 9 + 18	+ 2 + 7	— 7 — 5	— 10 — 9	— 11 — 8
536	8°14′ N	2	31°40′ W	2	4795	3	— 2	0	+ 6 0	+ 8 + 6	+ 7 + 4	+ 7 + 6	+ 9 + 8	+ 10 + 12
537	8°56′ N	2	30°37′ W	2	5270	3	— 32	— 40	— 30 — 32	— 28 — 31	— 31 — 32	— 33 — 33	— 35 — 36	— 37 — 36
538	9°40′ N	1.5	29°08′ W	1	5410	3	— 28	— 26	— 27 — 29	— 25 — 30	— 26 — 32	— 25 — 30	— 23 — 27	— 20 — 23
539	10°25′ N	1.5	27°38′ W	1.5	5700	3	— 22	— 16	— 19 — 21	— 17 — 22	— 18 — 24	— 18 — 22	— 15 — 20	— 12 — 15
540	11°21′ N	1.5	25°42′ W	1.5	5355	4	— 10	— 5	— 7 — 9	— 5 — 10	— 7 — 12	— 7 — 10	— 4 — 8	— 1 — 3
541	11°53′ N	1	24°31′ W	1	5155	4	— 1	+ 8	+ 6 + 3	+ 8 + 2	+ 6 + 1	+ 7 + 3	+ 10 + 6	+ 13 + 12

No.	Topog	Hayford 113.7 km			I.R T=30	R=0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t+c 18-1	I.R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
524	— 142	+ 57	+1002	+ 800	+ 21	+1023	+ 342	+1077	+ 344	+1221	+ 352	+1525	+ 390	+1623	+ 503	+1439	+ 794
					+ 10	+ 803	+ 194	+ 895	+ 194	+1115	+ 201	+1565	+ 224	+1754	+ 315	+1540	+ 634
524a	— 110	+ 57	+ 977	+ 799	+ 21	+ 990	+ 341	+1043	+ 343	+1172	+ 351	+1486	+ 389	+1498	+ 502	+1421	+ 793
					+ 10	+ 785	+ 194	+ 869	+ 194	+1062	+ 201	+1520	+ 224	+1725	+ 315	+1521	+ 632
524b	+ 109	+ 57	+1004	+ 799	+ 21	+1044	+ 341	+1095	+ 343	+1227	+ 351	+1520	+ 389	+1517	+ 502	+1433	+ 793
					+ 10	+ 833	+ 194	+ 925	+ 194	+1129	+ 201	+1562	+ 224	+1747	+ 315	+1537	+ 633
524c	— 117	+ 57	+1028	+ 799	+ 21	+1058	+ 341	+1106	+ 343	+1230	+ 351	+1518	+ 389	+1518	+ 502	+1433	+ 793
					+ 10	+ 878	+ 194	+ 954	+ 194	+1138	+ 201	+1561	+ 224	+1748	+ 315	+1535	+ 634
525	—2817	+ 61	+1804	+ 846	+ 23	+2271	+ 353	+2232	+ 355	+2205	+ 363	+2109	+ 404	+1979	+ 534	+1673	+ 879
					+ 12	+2540	+ 200	+2468	+ 200	+2422	+ 206	+2280	+ 232	+2168	+ 334	+1804	+ 721
526	—3302	+ 72	+2290	+ 914	+ 24	+2856	+ 373	+2836	+ 375	+2842	+ 386	+2796	+ 429	+2629	+ 574	+2209	+ 970
					+ 13	+3074	+ 207	+3066	+ 208	+3066	+ 215	+3017	+ 243	+2882	+ 356	+2393	+ 801
527	—3616	+ 76	+2500	+ 971	+ 26	+3166	+ 387	+3137	+ 389	+3127	+ 400	+3056	+ 446	+2863	+ 606	+2401	+1032
					+ 13	+3388	+ 213	+3391	+ 214	+3379	+ 221	+3303	+ 250	+3147	+ 372	+2608	+ 854
528	—3701	+ 80	+2596	+1024	+ 28	+3266	+ 400	+3240	+ 402	+3244	+ 413	+3197	+ 460	+3007	+ 630	+2524	+1087
					+ 13	+3474	+ 219	+3484	+ 220	+3497	+ 227	+3454	+ 257	+3306	+ 386	+2746	+ 901
529	—3957	+ 82	+2752	+1038	+ 30	+3496	+ 403	+3472	+ 405	+3471	+ 416	+3401	+ 467	+3178	+ 636	+2657	+1108
					+ 13	+3708	+ 219	+3725	+ 220	+3738	+ 227	+3675	+ 258	+3497	+ 389	+2895	+ 922
530	—4043	+ 86	+2816	+1034	+ 30	+3577	+ 403	+3554	+ 405	+3558	+ 416	+3485	+ 467	+3262	+ 639	+2729	+1118
					+ 14	+3789	+ 221	+3811	+ 222	+3824	+ 229	+3757	+ 261	+3583	+ 384	+2970	+ 934
531	—3866	+ 84	+2657	+1008	+ 28	+3381	+ 399	+3343	+ 401	+3322	+ 412	+3252	+ 459	+3055	+ 628	+2562	+1084
					+ 13	+3604	+ 218	+3616	+ 219	+3589	+ 226	+3517	+ 256	+3362	+ 385	+2791	+ 900
532	—3244	+ 80	+2279	+ 974	+ 28	+2808	+ 387	+2775	+ 389	+2797	+ 400	+2778	+ 446	+2645	+ 605	+2237	+1036
					+ 14	+3016	+ 212	+3003	+ 213	+3003	+ 220	+2985	+ 249	+2896	+ 371	+2422	+ 859
533	—3217	+ 75	+2216	+ 912	+ 27	+2770	+ 371	+2750	+ 373	+2754	+ 384	+2702	+ 426	+2530	+ 566	+2122	+ 942
					+ 14	+2990	+ 207	+2980	+ 208	+2978	+ 215	+2919	+ 241	+2774	+ 351	+2297	+ 772
534	—2096	+ 71	+1665	+ 868	+ 25	+1964	+ 362	+1973	+ 364	+2041	+ 373	+2087	+ 415	+2011	+ 544	+1712	+ 892
					+ 13	+2008	+ 204	+2035	+ 204	+2149	+ 211	+2231	+ 238	+2195	+ 340	+1845	+ 726
535	—2222	+ 73	+1845	+ 871	+ 26	+2215	+ 361	+2221	+ 363	+2281	+ 373	+2334	+ 415	+2227	+ 546	+1889	+ 896
					+ 14	+2262	+ 202	+2304	+ 203	+2407	+ 209	+2498	+ 236	+2435	+ 340	+2038	+ 731
536	—3200	+ 75	+2184	+ 925	+ 27	+2721	+ 376	+2697	+ 378	+2697	+ 389	+2652	+ 433	+2488	+ 576	+2089	+ 960
					+ 14	+2958	+ 208	+2925	+ 209	+2912	+ 216	+2865	+ 243	+2727	+ 355	+2261	+ 786
537	—3304	+ 79	+2327	+ 973	+ 28	+2870	+ 390	+2847	+ 392	+2858	+ 403	+2837	+ 449	+2700	+ 610	+2281	+1040
					+ 13	+3080	+ 214	+3069	+ 215	+3070	+ 222	+3048	+ 251	+2958	+ 373	+2471	+ 859
538	—3699	+ 82	+2595	+1001	+ 27	+3270	+ 395	+3246	+ 397	+3247	+ 408	+3187	+ 455	+2999	+ 622	+2516	+1078
					+ 13	+3478	+ 217	+3491	+ 218	+3504	+ 225	+3454	+ 255	+3297	+ 382	+2737	+ 896
539	—3770	+ 82	+2638	+ 995	+ 27	+3321	+ 392	+3297	+ 394	+3297	+ 405	+3246	+ 452	+3052	+ 623	+2560	+1081
					+ 13	+3528	+ 216	+3542	+ 217	+3555	+ 224	+3505	+ 254	+3357	+ 383	+2788	+ 903
540	—3633	+ 78	+2539	+ 962	+ 25	+3189	+ 388	+3167	+ 390	+3169	+ 401	+3124	+ 448	+2936	+ 615	+2462	+1053
					+ 13	+3400	+ 213	+3406	+ 214	+3415	+ 221	+3373	+ 251	+3225	+ 375	+2676	+ 875
541	—3555	+ 75	+2455	+ 932	+ 26	+3080	+ 379	+3057	+ 381	+3064	+ 392	+3015	+ 437	+2827	+ 595	+2369	+1016
					+ 13	+3298	+ 209	+3298	+ 210	+3304	+ 217	+3256	+ 246	+3103	+ 365	+2573	+ 843

Reductions in 0.1 mgal

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
							Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
									R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
542	12°42′ N	1	22°48′ W	1	4880	4	− 19	− 19	− 17	− 16	− 17	− 19	− 19	− 19
									− 21	− 20	− 21	− 20	− 21	− 19
543	13°22′ N	2	21°43′ W	1	4640	4	+ 1	+ 8	+ 4	+ 6	+ 5	+ 5	+ 7	+ 10
									− 1	0	0	+ 2	+ 4	+ 8
544	13°56′ N	1	20°28′ W	1	4360	5	− 18	− 2	− 10	− 8	− 9	− 9	− 5	0
									− 17	− 15	− 15	− 13	− 9	− 2
545	14°24′ N	1	19°04′ W	1	3545	3	− 5	+ 4	− 1	0	− 1	− 1	+ 2	+ 7
									− 6	− 5	− 5	− 5	− 2	+ 6
546	14°35′ N	1	18°08′ W	1	2380	6	+ 19	+ 42	+ 50	+ 51	+ 50	+ 46	+ 45	+ 44
									+ 50	+ 54	+ 52	+ 48	+ 47	+ 46
547	14°40′.44 N	0.01	17°25′.67 W	0.01	Dakar	2	+ 105	+ 25	+ 43	+ 41	+ 37	+ 26	+ 17	+ 9
									+ 59	+ 55	+ 48	+ 35	+ 24	+ 15
547a	14°44′.65 N		17°08′.58 W		−21	5	+ 60	− 4	+ 19	+ 18	+ 15	+ 4	− 6	− 15
									+ 31	+ 30	+ 25	+ 14	+ 1	− 10
548	12°24′ N	1	17°25′ W	1	60	3	+ 46	− 46	− 30	− 31	− 33	− 41	− 48	− 53
									− 22	− 23	− 26	− 35	− 44	− 50
549	11°33′ N	1.5	17°30′ W	1.5	300?	4	− 15	− 74	− 60	− 59	− 60	− 64	− 68	− 74
									− 55	− 54	− 55	− 59	− 64	− 69
550	10°35′ N	1.5	17°04′ W	1.5	170	3	+ 18	− 52	− 21	− 22	− 24	− 35	− 49	− 65
									− 8	− 9	− 11	− 23	− 39	− 57
551	9°57′ N	1.5	16°29′ W	1.5	350	3	+ 44	− 7	+ 22	+ 22	+ 20	+ 13	+ 1	− 16
									+ 33	+ 33	+ 32	+ 25	+ 11	− 7
552	9°09′ N	1	15°26′ W	2	450	3	+ 36	− 30	− 18	− 18	− 20	− 25	− 28	− 30
									− 11	− 11	− 14	− 21	− 24	− 26
553	7°57′ N	1	15°49′ W	2	4390	4	− 14	+ 25	+ 2	+ 4	+ 4	+ 11	+ 27	+ 44
									− 10	− 8	− 8	0	+ 19	+ 41
554	7°15′ N	1	16°03′ W	1	4680	4	− 4	+ 22	+ 8	+ 10	+ 8	+ 9	+ 13	+ 23
									0	+ 1	+ 1	+ 3	+ 7	+ 18
555	6°41′ N	1	16°15′ W	2	4890	3	− 4	+ 17	+ 8	+ 9	+ 8	+ 8	+ 10	+ 14
									+ 4	+ 6	+ 7	+ 23	+ 22	+ 23
556	5°44′ N	1	16°35′ W	2	4990	3	− 9	+ 7	− 2	+ 1	0	0	+ 2	+ 5
									− 9	− 7	− 6	− 5	− 3	+ 1
557	4°49′ N	1	16°55′ W	2	4980	4	− 16	− 6	− 10	− 8	− 10	− 11	− 10	− 8
									− 15	− 14	− 15	− 14	− 13	− 10
558	3°58′ N	1	16°55′ W	1.5	5020	2	− 7	+ 5	− 2	0	0	+ 2	+ 5	+ 8
									− 6	− 7	− 6	− 2	+ 2	+ 7
559	3°09′ N	1	17°04′ W	1.5	4905	3	− 13	− 9	− 10	− 8	− 9	− 10	− 8	− 7
									− 15	− 14	− 13	− 12	− 11	− 8
560	2°12′ N	1	17°18′ W	1.5	5130	3	− 32	− 31	− 27	− 25	− 27	− 28	− 28	− 28
									− 31	− 30	− 31	− 30	− 31	− 30
561	1°14′ N	1	17°40′ W	1	5070	3	− 8	+ 27	+ 21	+ 30	+ 39	+ 42	+ 42	+ 37
									+ 2	+ 15	+ 35	+ 43	+ 41	+ 38

No.	Topog	Hayford 113.7 km I R.	Hayford 113.7 km Comp $A\text{-}0_2$	Hayford 113.7 km t + c 18-1	I.R T=30 / I.R. T=20	R=0 (Heisk) Comp $A\text{-}0_2$	R=0 (Heisk) t + c 18-1	29.05 Comp $A\text{-}0_2$	29.05 t + c 18-1	58.1 Comp $A\text{-}0_2$	58.1 t + c 18-1	116.2 Comp $A\text{-}0_2$	116.2 t + c 18-1	174.3 Comp $A\text{-}0_2$	174.3 t + c 18-1	232.4 Comp $A\text{-}0_2$	232.4 t + c 18-1
						Reductions in 0.1 mgal											
542	-3169	+ 69	+2235	+ 863	+ 24	+2767	+ 360	+2748	+ 362	+2753	+ 373	+2724	+ 417	+2577	+ 566	+2173	+ 964
					+ 12	+2977	+ 201	+2965	+ 202	+2964	+ 209	+2931	+ 238	+2823	+ 351	+2353	+ 805
543	-3099	+ 66	+2170	+ 796	+ 24	+2701	+ 344	+2679	+ 346	+2683	+ 358	+2643	+ 396	+2483	+ 535	+2088	+ 902
					+ 13	+2911	+ 194	+2899	+ 195	+2897	+ 200	+2851	+ 225	+2724	+ 335	+2260	+ 753
544	-3020	+ 61	+2083	+ 714	+ 23	+2603	+ 317	+2581	+ 319	+2583	+ 328	+2535	+ 367	+2367	+ 494	+1983	+ 834
					+ 12	+2813	+ 182	+2799	+ 183	+2795	+ 187	+2741	+ 213	+2597	+ 316	+2145	+ 700
545	-2402	+ 52	+1685	+ 576	+ 21	+2075	+ 269	+2059	+ 271	+2061	+ 278	+2033	+ 310	+1902	+ 409	+1600	+ 665
					+ 11	+2235	+ 161	+2226	+ 161	+2228	+ 166	+2199	+ 187	+2086	+ 270	+1725	+ 559
546	-1783	+ 41	+1030	+ 484	+ 16	+1223	+ 231	+1212	+ 231	+1222	+ 236	+1234	+ 263	+1163	+ 340	+ 989	+ 526
					+ 8	+1326	+ 142	+1285	+ 142	+1303	+ 145	+1326	+ 161	+1273	+ 225	+1065	+ 440
547	- 36	+ 33	+ 391	+ 412	+ 12	+ 428	+ 218	+ 444	+ 218	+ 485	+ 222	+ 569	+ 243	+ 602	+ 301	+ 540	+ 443
					+ 7	+ 367	+ 126	+ 399	+ 126	+ 467	+ 129	+ 589	+ 141	+ 649	+ 189	+ 578	+ 350
547a	+ 8	+ 30	+ 209	+ 391	+ 12	+ 200	+ 191	+ 211	+ 191	+ 239	+ 195	+ 315	+ 223	+ 376	+ 263	+ 353	+ 378
					+ 7	+ 150	+ 122	+ 164	+ 122	+ 207	+ 125	+ 311	+ 135	+ 399	+ 177	+ 376	+ 309
548	- 139	+ 36	+ 574	+ 446	+ 14	+ 674	+ 213	+ 679	+ 213	+ 696	+ 217	+ 755	+ 238	+ 763	+ 301	+ 670	+ 449
					+ 8	+ 679	+ 135	+ 685	+ 135	+ 711	+ 138	+ 794	+ 151	+ 827	+ 203	+ 720	+ 370
549	- 638	+ 38	+ 703	+ 483	+ 15	+ 840	+ 228	+ 836	+ 228	+ 839	+ 233	+ 853	+ 256	+ 833	+ 324	+ 722	+ 494
					+ 8	+ 886	+ 140	+ 880	+ 140	+ 890	+ 143	+ 911	+ 157	+ 906	+ 212	+ 776	+ 395
550	- 127	+ 36	+ 266	+ 522	+ 13	+ 262	+ 245	+ 267	+ 245	+ 285	+ 251	+ 365	+ 277	+ 434	+ 351	+ 409	+ 532
					+ 7	+ 233	+ 149	+ 236	+ 149	+ 258	+ 153	+ 358	+ 171	+ 461	+ 228	+ 436	+ 432
551	- 226	+ 32	+ 196	+ 506	+ 13	+ 190	+ 239	+ 199	+ 239	+ 209	+ 244	+ 251	+ 270	+ 305	+ 340	+ 295	+ 517
					+ 7	+ 184	+ 145	+ 186	+ 145	+ 192	+ 148	+ 247	+ 164	+ 325	+ 221	+ 314	+ 418
552	- 420	+ 34	+ 615	+ 433	+ 13	+ 735	+ 207	+ 737	+ 207	+ 753	+ 211	+ 791	+ 229	+ 761	+ 284	+ 653	+ 409
					+ 7	+ 752	+ 129	+ 758	+ 129	+ 782	+ 132	+ 844	+ 143	+ 831	+ 186	+ 703	+ 327
553	-2954	+ 53	+1970	+ 546	+ 20	+2513	+ 257	+2492	+ 259	+2487	+ 266	+2394	+ 293	+2151	+ 378	+1762	+ 594
					+ 11	+2744	+ 155	+2725	+ 155	+2719	+ 160	+2624	+ 178	+2370	+ 247	+1909	+ 488
554	-3160	+ 63	+2179	+ 654	+ 26	+2717	+ 299	+2697	+ 301	+2701	+ 310	+2656	+ 347	+2488	+ 478	+2086	+ 782
					+ 14	+2928	+ 175	+2916	+ 176	+2916	+ 180	+2869	+ 205	+2729	+ 305	+2260	+ 666
555	-3291	+ 68	+2273	+ 736	+ 24	+2829	+ 323	+2809	+ 325	+2816	+ 335	+2774	+ 375	+2612	+ 517	+2196	+ 894
					+ 11	+3013	+ 185	+2999	+ 186	+2979	+ 191	+2791	+ 218	+2690	+ 330	+2249	+ 762
556	-3415	+ 70	+2370	+ 820	+ 25	+2969	+ 347	+2943	+ 349	+2944	+ 360	+2898	+ 404	+2725	+ 555	+2290	+ 965
					+ 13	+3200	+ 197	+3184	+ 198	+3172	+ 204	+3126	+ 233	+2989	+ 350	+2482	+ 816
557	-3428	+ 72	+2393	+ 863	+ 26	+2984	+ 361	+2961	+ 363	+2968	+ 374	+2931	+ 419	+2764	+ 576	+2324	+ 993
					+ 13	+3205	+ 199	+3195	+ 200	+3195	+ 207	+3162	+ 236	+3032	+ 356	+2520	+ 830
558	-3501	+ 73	+2419	+ 885	+ 26	+3054	+ 367	+3032	+ 369	+3027	+ 380	+2956	+ 425	+2769	+ 582	+2320	+1001
					+ 13	+3272	+ 203	+3282	+ 204	+3271	+ 211	+3193	+ 240	+3039	+ 359	+2517	+ 835
559	-3358	+ 74	+2348	+ 896	+ 26	+2931	+ 371	+2909	+ 373	+2907	+ 384	+2867	+ 429	+2702	+ 584	+2273	+1002
					+ 13	+3154	+ 206	+3145	+ 207	+3134	+ 214	+3090	+ 243	+2964	+ 362	+2463	+ 831
560	-3232	+ 73	+2245	+ 900	+ 25	+2786	+ 372	+2766	+ 374	+2772	+ 385	+2737	+ 429	+2582	+ 583	+2175	+ 987
					+ 13	+3003	+ 209	+2989	+ 210	+2989	+ 217	+2951	+ 246	+2845	+ 361	+2374	+ 821
561	-3504	+ 72	+2183	+ 899	+ 26	+2819	+ 371	+2722	+ 373	+2620	+ 384	+2549	+ 427	+2422	+ 578	+2056	+ 976
					+ 13	+3182	+ 206	+3055	+ 207	+2852	+ 214	+2740	+ 243	+2650	+ 356	+2220	+ 807

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R=0 Heisk.	29.05	58.1	116.2	174.3	232.4
562	0°17′ N	1	18°05′ W	2	3570	4	+ 58	+ 56	+ 57 + 53	+ 59 + 54	+ 57 + 53	+ 58 + 55	+ 63 + 62	+ 68 + 68
563	0°13′ S	1	18°17′ W	2	7300	4	— 172	— 80	— 117 — 141	— 95 — 118	— 77 — 90	— 60 — 66	— 50 — 52	— 43 — 42
564	0°41′ S	1	18°29′ W	2	4260	3	+ 14	— 8	+ 14 + 12	+ 16 + 13	+ 14 + 12	+ 12 + 9	+ 15 + 14	+ 19 + 21
565	1°16′ S	1	19°00′ W	2	4170	3	— 8	— 21	— 9 — 11	— 7 — 9	— 8 — 9	— 9 — 8	— 12 — 10	— 16 — 13
566	2°08′ S	2	19°34′ W	3	5030	4	— 27	— 11	— 14 — 24	— 9 — 21	— 6 — 12	— 2 — 4	+ 1 — 1	+ 3 + 4
567	2°59′ S	2	20°07′ W	2	5210	4	— 34	— 24	— 29 — 33	— 27 — 33	— 29 — 35	— 28 — 33	— 21 — 25	— 13 — 15
568	3°36′ S	2	20°51′ W	2	5240	3	— 16	— 12	— 13 — 15	— 10 — 15	— 12 — 17	— 13 — 16	— 11 — 15	— 8 — 10
569	3°54′ S	2	21°52′ W	2	5230	3	— 28	— 26	— 24 — 26	— 23 — 26	— 24 — 28	— 26 — 29	— 25 — 29	— 24 — 26
570	4°12′ S	2	22°53′ W	2	5020	3	— 8	— 16	— 11 — 10	— 12 — 13	— 18 — 22	— 21 — 25	— 17 — 21	— 12 — 15
571	4°28′ S	1.15	23°49′ W	1.5	5500	3	— 29	— 27	— 28 — 28	— 27 — 31	— 30 — 35	— 30 — 34	— 27 — 31	— 22 — 25
572	5°00′ S	1	25°30′ W	1	4570	2	— 3	— 35	— 18 — 10	— 20 — 14	— 29 — 30	— 37 — 39	— 40 — 43	— 40 — 43
573	5°27′ S	1	26°50′ W	1	5600	3	— 24	— 16	— 20 — 23	— 17 — 24	— 16 — 23	— 12 — 16	— 9 — 13	— 8 — 11
574	5°56′ S	1	28°22′ W	1	5380	2	— 24	— 26	— 26 — 27	— 25 — 28	— 27 — 32	— 28 — 32	— 26 — 30	— 24 — 27
575	6°22′ S	1	29°41′ W	1	5280	2	— 22	— 25	— 22 — 23	— 20 — 24	— 23 — 27	— 24 — 27	— 23 — 27	— 21 — 23
576	6°50′ S	1	31°11′ W	1	5125	3	— 35	— 25	— 29 — 32	— 27 — 32	— 29 — 35	— 29 — 33	— 27 — 31	— 24 — 27
577	7°19′ S	1	32°54′ W	1	4775	2	— 33	— 8	— 16 — 28	— 10 — 22	— 12 — 17	— 13 — 18	— 10 — 15	— 2 — 5
578	7°41′ S	1	33°59′ W	1	3750	4	— 98	— 55	— 56 — 75	— 45 — 64	— 45 — 52	— 38 — 38	— 36 — 35	— 37 — 37
579	8°04′.03 S	0.01	34°52′.35 W	0.01	Pernamb.	2	+ 15	— 55	— 22 — 7	— 23 — 8	— 26 — 11	— 37 — 24	— 53 — 42	— 67 — 59
579a	8°11′.3 S	—	35°00′.0 W	—	—30	5	+ 32	— 32	0 + 13	0 + 13	— 2 + 11	— 10 + 3	— 23 — 11	— 38 — 29
579b	8°09′.8 S	—	35°16′.3 W	—	—146	5	+ 15	— 49	— 17 — 5	— 17 — 5	— 18 — 6	— 23 — 10	— 35 — 23	— 51 — 41
580	10°03′ S	1.5	35°49′ W	1.5	445	3	— 26	— 75	— 56 — 49	— 55 — 48	— 56 — 48	— 62 — 53	— 70 — 63	— 78 — 72

No.	Topog	Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t + c 18·1	I.R. $T=20$	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1
562	—3065	+ 70	+2134	+ 879	+ 25	+2686	+ 364	+2666	+ 366	+2670	+ 377	+2624	+ 418	+2431	+ 556	+2028	+ 916
					+ 13	+2894	+ 205	+2887	+ 206	+2889	+ 213	+2845	+ 239	+2668	+ 345	+2197	+ 751
563	—4230	+ 69	+2372	+ 872	+ 24	+3298	+ 360	+3078	+ 362	+2888	+ 371	+2680	+ 413	+2440	+ 544	+2027	+ 889
					+ 13	+3706	+ 204	+3474	+ 204	+3189	+ 216	+2917	+ 238	+2682	+ 339	+2193	+ 723
564	—2960	+ 70	+2070	+ 876	+ 25	+2569	+ 364	+2552	+ 366	+2563	+ 375	+2543	+ 417	+2372	+ 550	+1983	+ 904
					+ 14	+2766	+ 205	+2749	+ 205	+2753	+ 212	+2754	+ 239	+2601	+ 342	+2144	+ 736
565	—2819	+ 72	+1967	+ 907	+ 24	+2432	+ 372	+2412	+ 374	+2412	+ 385	+2378	+ 429	+2257	+ 574	+1915	+ 964
					+ 13	+2628	+ 207	+2607	+ 208	+2602	+ 215	+2558	+ 243	+2471	+ 352	+2066	+ 794
566	—3355	+ 73	+2223	+ 901	+ 26	+2831	+ 367	+2783	+ 369	+2739	+ 380	+2656	+ 422	+2486	+ 563	+2090	+ 938
					+ 14	+3107	+ 207	+3068	+ 208	+2980	+ 215	+2870	+ 241	+2726	+ 352	+2261	+ 772
567	—3559	+ 78	+2463	+ 918	+ 27	+3106	+ 375	+3083	+ 377	+3089	+ 388	+3036	+ 432	+2822	+ 580	+2352	+ 970
					+ 14	+3326	+ 207	+3328	+ 208	+3335	+ 215	+3288	+ 244	+3100	+ 357	+2556	+ 800
568	—3563	+ 80	+2493	+ 948	+ 27	+3117	+ 385	+3093	+ 387	+3100	+ 398	+3063	+ 444	+2887	+ 601	+2426	+1026
					+ 14	+3329	+ 211	+3330	+ 212	+3339	+ 219	+3304	+ 248	+3170	+ 370	+2636	+ 849
569	—3565	+ 81	+2493	+ 976	+ 28	+3110	+ 390	+3091	+ 392	+3097	+ 403	+3067	+ 450	+2895	+ 614	+2433	+1060
					+ 14	+3320	+ 214	+3322	+ 215	+3332	+ 222	+3310	+ 252	+3178	+ 378	+2645	+ 882
570	—3550	+ 84	+2554	+ 991	+ 29	+3161	+ 394	+3163	+ 396	+3212	+ 407	+3193	+ 454	+2987	+ 620	+2496	+1068
					+ 14	+3342	+ 217	+3363	+ 218	+3450	+ 225	+3453	+ 255	+3282	+ 382	+2715	+ 888
571	—3717	+ 84	+2619	+ 994	+ 28	+3286	+ 395	+3271	+ 397	+3288	+ 408	+3239	+ 455	+3043	+ 623	+2550	+1067
					+ 14	+3482	+ 215	+3504	+ 216	+3542	+ 223	+3502	+ 253	+3346	+ 379	+2777	+ 883
572	—3250	+ 85	+2467	+1017	+ 30	+2972	+ 397	+2987	+ 399	+3071	+ 410	+3103	+ 457	+2961	+ 628	+2499	+1090
					+ 15	+3087	+ 220	+3128	+ 221	+3272	+ 228	+3339	+ 258	+3251	+ 388	+2720	+ 910
573	—3816	+ 85	+2623	+1025	+ 30	+3345	+ 400	+3309	+ 402	+3290	+ 413	+3200	+ 464	+3001	+ 634	+2520	+1108
					+ 15	+3571	+ 220	+3578	+ 221	+3561	+ 228	+3459	+ 260	+3299	+ 390	+2741	+ 925
574	—3690	+ 85	+2617	+1012	+ 30	+3284	+ 399	+3266	+ 401	+3277	+ 412	+3236	+ 463	+3046	+ 632	+2558	+1101
					+ 15	+3483	+ 219	+3497	+ 220	+3530	+ 227	+3495	+ 258	+3350	+ 387	+2785	+ 918
575	—3639	+ 86	+2568	+1013	+ 31	+3211	+ 398	+3192	+ 400	+3206	+ 411	+3170	+ 458	+2988	+ 628	+2510	+1088
					+ 15	+3414	+ 218	+3425	+ 219	+3448	+ 226	+3423	+ 255	+3284	+ 385	+2730	+ 904
576	—3558	+ 82	+2474	+ 907	+ 29	+3096	+ 372	+3076	+ 374	+3085	+ 385	+3038	+ 431	+2857	+ 591	+2398	+1025
					+ 15	+3310	+ 205	+3310	+ 206	+3325	+ 213	+3281	+ 242	+3138	+ 365	+2606	+ 856
577	—3231	+ 74	+2175	+ 732	+ 27	+2711	+ 323	+2671	+ 325	+2656	+ 333	+2637	+ 370	+2478	+ 496	+2077	+ 821
					+ 15	+2978	+ 189	+2920	+ 189	+2860	+ 194	+2843	+ 219	+2719	+ 320	+2248	+ 686
578	—2477	+ 58	+1385	+ 601	+ 23	+1760	+ 278	+1645	+ 280	+1643	+ 287	+1535	+ 316	+1425	+ 407	+1202	+ 638
					+ 13	+2063	+ 169	+1952	+ 169	+1828	+ 174	+1666	+ 195	+1563	+ 275	+1296	+ 561
579	— 17	+ 45	+ 171	+ 501	+ 19	+ 134	+ 237	+ 141	+ 237	+ 165	+ 242	+ 260	+ 264	+ 351	+ 326	+ 346	+ 474
					+ 10	+ 87	+ 144	+ 93	+ 144	+ 117	+ 147	+ 240	+ 161	+ 368	+ 212	+ 367	+ 376
579a	+ 24	+ 41	+ 76	+ 497	+ 18	+ 44	+ 233	+ 46	+ 233	+ 56	+ 238	+ 114	+ 259	+ 189	+ 317	+ 202	+ 457
					+ 9	+ 18	+ 143	+ 19	+ 143	+ 28	+ 146	+ 94	+ 159	+ 195	+ 207	+ 212	+ 361
579b	+ 154	+ 39	— 45	+ 491	+ 16	— 78	+ 230	— 78	+ 230	— 75	+ 235	— 40	+ 254	+ 23	+ 309	+ 52	+ 441
					+ 8	— 103	+ 141	— 99	+ 141	— 99	+ 144	— 68	+ 157	+ 15	+ 200	+ 53	+ 343
580	— 354	+ 44	+ 375	+ 429	+ 19	+ 423	+ 209	+ 420	+ 209	+ 422	+ 213	+ 460	+ 232	+ 483	+ 289	+ 435	+ 419
					+ 10	+ 448	+ 130	+ 436	+ 130	+ 429	+ 133	+ 470	+ 145	+ 520	+ 191	+ 467	+ 340

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R=0 Heisk.	29.05	58.1	116 2	174.3	232.4
581	10°40′	S	1	35°18′	W	2	3705	4	−29	+15	+1 −15	+5 −10	+9 −3	+22 +17	+32 +30	+39 +39
582	11°26′	S	1	34°42′	W	1	4385	3	−29	−3	−16 −26	−14 −24	−13 −21	−11 −16	−6 −10	+3 0
583	12°58′	S	1	35°22′	W	2	4340	3	−23	+1	−11 −19	−8 −17	−9 −17	−9 −15	−4 −10	+1 −3
584	14°33′	S	1.5	35°55′	W	1	4530	3	−52	−28	−43 −52	−40 −50	−41 −48	−39 −44	−36 −41	−31 −36
585	15°02′	S	1.5	37°03′	W	1.5	4200	3	−40	−5	−26 −37	−24 −35	−25 −35	−23 −31	−13 −22	+1 −5
586	15°26′	S	1.5	37°59′	W	2	3305	4	−74	+10	−7 −32	−1 −17	+3 −9	+15 +9	+25 +21	+33 +31
587	15°44′	S	1	38°41′	W	1	800	3	+1	−21	−5 +2	−5 +3	−7 +1	−15 −9	−25 −21	−31 −58
588	19°13′	S	1	38°49′	W	1	—	3	+12	−30	−10 −2	−10 −3	−11 −3	−15 −8	−22 −15	−29 −23
589	20°42′	S	1.5	39°24′	W	1.5	2130	2	−47	−11	−13 −22	−10 −17	−7 −14	+3 0	+13 +13	+18 +20
590	21°12′	S	2	39°50′	W	2	1600	3	−35	−12	−7 −12	−5 −9	−2 −4	+2 +3	+6 +7	+8 +10
591	22°53′.72	S	0.01	43°10′.80	W	0.01	Rio d. J.	2	−31	−24	−12 −12	−11 −11	−9 −8	−6 −3	−4 +1	−5 +1
591a	22°33′	S	—	43°09′	W	—	−825	5	+30	−43	−33 −26	−34 −28	−35 −30	−33 −28	−33 −27	−35 −29
591b	22°06′.8	S	—	43°12′.6	W	—	−268	5	−29	−22	−5 −3	−4 −2	−3 +2	−1 +6	−3 +4	−5 +1
591c	21°13′.4	S	—	43°46′.1	W	—	−1120	5	+32	−9	+13 +23	+13 +22	+11 +22	+5 +15	−2 +7	−10 −2
591d	22°53′.70	S	—	43°13′.40	W	—	−28	5	−32	−26	−15 −14	−14 −13	−13 −11	−10 −6	−7 −3	−8 −3
592	23°28′	S	1	43°04′	W	1	115	3	−13	−31	−21 −18	−21 −18	−21 −18	−21 −18	−21 −18	−21 −18
593	24°3′	S	1	42°54′	W	2	710	3	−21	−38	−30 −27	−30 −27	−30 −28	−33 −30	−34 −32	−35 −33
594	24°40′	S	1	42°46′	W	2	2050	3	−66	−44	−46 −53	−43 −50	−43 −46	−38 −39	−33 −33	−30 −29
595	25°34′	S	1	42°34′	W	1.5	2190	3	−31	−28	−30 −32	−29 −31	−30 −33	−29 −31	−26 −27	−21 −22
596	27°47′	S	1	44°32′	W	1	3180	3	−46	−23	−33 −34	−32 −32	−32 −30	−30 −15	−24 −11	−15 −5
597	28°51′	S	1.5	45°28′	W	1.5	3245	3	−29	−5	−12 −19	−11 −17	−11 −16	−9 −13	−3 −7	+3 +2

No.	Topog	Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t + c 18·1	I.R. $T=20$	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1	Comp A-0_2	t + c 18·1
581	−2499	+ 56	+1485	+ 520	+ 23	+1935	+ 245	+1896	+ 245	+1846	+ 251	+1691	+ 280	+1507	+ 360	+1244	+ 556
					+ 12	+2196	+ 150	+2148	+ 150	+2069	+ 153	+1861	+ 171	+1661	+ 238	+1345	+ 463
582	−3008	+ 70	+2035	+ 645	+ 27	+2557	+ 296	+2529	+ 298	+2519	+ 306	+2458	+ 341	+2290	+ 456	+1916	+ 750
					+ 14	+2788	+ 175	+2766	+ 175	+2736	+ 180	+2661	+ 203	+2511	+ 297	+2070	+ 631
583	−3017	+ 71	+2066	+ 645	+ 28	+2579	+ 285	+2555	+ 287	+2556	+ 294	+2511	+ 333	+2348	+ 455	+1969	+ 776
					+ 16	+2785	+ 172	+2769	+ 172	+2762	+ 177	+2717	+ 202	+2575	+ 299	+2129	+ 674
584	−3082	+ 73	+2132	+ 642	+ 28	+2668	+ 291	+2644	+ 293	+2637	+ 302	+2582	+ 340	+2422	+ 469	+2032	+ 815
					+ 15	+2895	+ 170	+2877	+ 171	+2856	+ 175	+2789	+ 199	+2654	+ 303	+2201	+ 703
585	−2879	+ 65	+1974	+ 495	+ 26	+2477	+ 238	+2454	+ 240	+2454	+ 246	+2402	+ 276	+2213	+ 370	+1839	+ 603
					+ 15	+2686	+ 145	+2667	+ 145	+2666	+ 150	+2606	+ 168	+2435	+ 245	+1991	+ 518
586	−2610	+ 51	+1345	+ 379	+ 22	+1724	+ 189	+1672	+ 189	+1621	+ 193	+1480	+ 216	+1319	+ 278	+1088	+ 430
					+ 14	+2060	+ 120	+1908	+ 120	+1824	+ 123	+1629	+ 136	+1452	+ 191	+1179	+ 367
587	− 540	+ 43	+ 402	+ 319	+ 18	+ 420	+ 159	+ 421	+ 159	+ 436	+ 163	+ 506	+ 179	+ 558	+ 225	+ 507	+ 330
					+ 10	+ 416	+ 103	+ 409	+ 103	+ 423	+ 106	+ 517	+ 115	+ 601	+ 153	+ 842	+ 277
588	− 19	+ 37	+ 73	+ 326	+ 16	+ 65	+ 159	+ 67	+ 159	+ 75	+ 161	+ 103	+ 174	+ 136	+ 206	+ 134	+ 278
					+ 9	+ 51	+ 102	+ 55	+ 102	+ 61	+ 103	+ 96	+ 111	+ 143	+ 137	+ 142	+ 218
589	−1410	+ 41	+ 686	+ 321	+ 17	+ 892	+ 156	+ 869	+ 156	+ 838	+ 158	+ 728	+ 169	+ 594	+ 201	+ 467	+ 277
					+ 10	+1047	+ 100	+1004	+ 100	+ 964	+ 101	+ 821	+ 108	+ 663	+ 134	+ 510	+ 216
590	−1085	+ 40	+ 523	+ 288	+ 17	+ 648	+ 139	+ 630	+ 139	+ 602	+ 140	+ 548	+ 151	+ 483	+ 180	+ 401	+ 240
					+ 10	+ 756	+ 89	+ 723	+ 89	+ 679	+ 89	+ 603	+ 97	+ 533	+ 119	+ 432	+ 190
591	− 7	+ 25	− 216	+ 125	+ 10	− 244	+ 50	− 253	+ 50	− 268	+ 49	− 297	+ 46	− 308	+ 33	− 274	+ 9
					+ 4	− 222	+ 31	− 233	+ 31	− 263	+ 31	− 309	+ 27	− 334	+ 16	− 298	− 16
591a	+ 912	+ 25	− 332	+ 125	+ 10	− 343	+ 51	− 337	+ 51	− 325	+ 50	− 336	+ 47	− 332	+ 36	− 288	+ 13
					+ 4	− 387	+ 32	− 364	+ 32	− 345	+ 32	− 361	+ 28	− 363	+ 19	− 311	− 11
591b	+ 300	+ 21	− 472	+ 78	+ 8	− 572	+ 26	− 586	+ 26	− 596	+ 24	− 604	+ 17	− 563	− 9	− 473	− 77
					+ 3	− 576	+ 11	− 589	+ 11	− 626	+ 9	− 657	+ 3	− 616	− 19	− 515	− 83
591c	+1261	+ 18	− 889	+ 20	+ 4	−1058	− 12	−1062	− 12	−1039	− 15	− 965	− 27	− 865	− 61	− 719	− 131
					+ 0	−1154	− 12	−1149	− 12	−1148	− 15	−1071	− 22	− 956	− 54	− 783	− 137
591d	+ 23	+ 25	− 225	+ 121	+ 10	− 253	+ 48	− 260	+ 48	− 272	+ 47	− 300	+ 44	− 310	+ 30	− 274	+ 4
					+ 4	− 241	+ 30	− 245	+ 30	− 272	+ 30	− 314	+ 26	− 336	+ 14	− 298	− 19
592	− 84	+ 32	+ 60	+ 173	+ 13	+ 72	+ 79	+ 70	+ 79	+ 69	+ 79	+ 69	+ 82	+ 66	+ 86	+ 58	+ 93
					+ 6	+ 76	+ 52	+ 74	+ 52	+ 73	+ 52	+ 75	+ 52	+ 74	+ 56	+ 62	+ 62
593	− 499	+ 42	+ 384	+ 242	+ 18	+ 453	+ 119	+ 449	+ 119	+ 454	+ 121	+ 470	+ 131	+ 454	+ 161	+ 391	+ 226
					+ 10	+ 476	+ 76	+ 472	+ 76	+ 476	+ 78	+ 499	+ 83	+ 495	+ 108	+ 420	+ 187
594	−1368	+ 46	+ 797	+ 308	+ 19	+ 999	+ 154	+ 978	+ 154	+ 952	+ 158	+ 894	+ 172	+ 802	+ 216	+ 667	+ 319
					+ 11	+1128	+ 99	+1095	+ 99	+1058	+ 102	+ 980	+ 111	+ 883	+ 147	+ 722	+ 268
595	−1524	+ 52	+1057	+ 389	+ 22	+1295	+ 194	+1289	+ 194	+1291	+ 198	+1266	+ 219	+1165	+ 283	+ 976	+ 426
					+ 13	+1392	+ 125	+1383	+ 125	+1400	+ 128	+1374	+ 141	+1279	+ 192	+1054	+ 362
596	−2198	+ 58	+1472	+ 441	+ 25	+1825	+ 217	+1811	+ 218	+1806	+ 222	+1760	+ 249	+1620	+ 327	+1350	+ 511
					+ 15	+1927	+ 135	+1912	+ 135	+1885	+ 139	+1722	+ 155	+1616	+ 218	+1337	+ 437
597	−2193	+ 60	+1441	+ 455	+ 25	+1778	+ 223	+1761	+ 224	+1755	+ 228	+1713	+ 256	+1577	+ 335	+1318	+ 529
					+ 15	+1941	+ 138	+1917	+ 138	+1908	+ 142	+1863	+ 158	+1732	+ 223	+1422	+ 449

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal Free Air	Hayf. 113.7	Upper line: Airy, T = 30 km. Lower line: Airy, T = 20 km. R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
598	28°53′	S	1.5	46°19′	W	1.5	2535	4	— 33	— 15	— 17 — 24	— 16 — 20	— 14 — 19	— 11 — 13	— 8 — 9	— 6 — 6
599	28°55′	S	1.5	47°09′	W	1.5	1255	3	— 9	— 12	— 4 — 2	— 3 — 1	— 3 — 1	— 5 — 2	— 7 — 4	— 9 — 6
600	28°59′	S	1	48°05′	W	1	105	3	+ 25	— 11	+ 2 + 6	+ 2 + 6	+ 1 + 6	— 3 + 4	— 4 + 1	— 6 — 2
601	31°22′	S	1.5	49°41′	W	1.5	475	3	+ 24	— 3	+ 6 + 8	+ 6 + 8	+ 6 + 8	+ 6 + 9	+ 5 + 8	+ 4 + 7
602	34°07′	S	1.5	52°39′	W	1.5	60	5?	— 24	— 58	— 41 — 35	— 41 — 35	— 42 — 35	— 44 — 37	— 50 — 43	— 56 — 51
603	34°54′.19	S	0.01	56°13′.13	W	0.01	Monte-video	2	+ 23	+ 10	+ 19 + 22	+ 19 + 22	+ 19 + 22	+ 18 + 22	+ 19 + 22	+ 19 + 22
604	34°35′.26	S	0.01	58°21′.84	W	0.01	B. Ayres	1	— 5	— 11	— 5 — 3	— 5 — 3	— 4 — 3	— 4 — 2	— 3 — 2	— 2 — 1
604a	34°54′.53	S	—	57°55′.90	W	—	—11	8	+ 43	+ 34	+ 40 + 42	+ 40 + 42	+ 41 + 42	+ 41 + 43	+ 42 + 44	+ 43 + 45
604b	34°34′.19	S	—	58°26′.25	W	—	—12	8	— 5	— 13	— 6 — 5	— 6 — 5	— 6 — 5	— 5 — 4	— 5 — 3	— 3 — 3
605	38°02′.19	S	0.02	57°32′.12	W	0.02	Mar. d. P.	1	+ 29	+ 10	+ 22 + 25	+ 22 + 26	+ 22 + 26	+ 22 + 26	+ 22 + 26	+ 21 + 26
605a	37°39′.8	S	—	57°39′.5	W	—	—29	5	+ 15	— 6	+ 7 + 10	+ 7 + 10	+ 6 + 10	+ 6 + 10	+ 5 + 9	+ 4 + 8
605b	38°16′.9	S	—	57°50′.4	W	—	— 2	5	+ 8	— 11	+ 2 + 5	+ 2 + 6	+ 2 + 6	+ 2 + 6	+ 1 + 5	0 + 4
606	37°40′	S	1	54°51′	W	2	670	5	+ 6	— 22	— 4 + 2	— 3 + 3	— 3 + 4	— 7 + 1	— 13 — 7	— 21 — 16
607	37°40′	S	1	53°55′	W	2	1495	5	+ 1	— 24	— 16 — 14	— 15 — 14	— 13 — 12	— 15 — 12	— 17 — 14	— 19 — 16
608	37°44′	S	1	52°51′	W	1	3785	4	— 1	+ 24	+ 12 + 4	+ 14 + 6	+ 15 + 6	+ 23 + 18	+ 32 + 30	+ 39 + 39
609	37°53′	S	1	51°44′	W	1	4410	5	— 15	+ 6	— 5 — 11	— 3 — 10	— 4 — 10	— 4 — 8	0 — 5	+ 7 + 4
610	37°36′	S	1	50°23′	W	1	4940	4	— 3	+ 19	+ 6 — 1	+ 8 0	+ 7 — 1	+ 8 + 3	+ 13 + 8	+ 18 + 16
611	37°28′	S	1	48°39′	W	1	5095	3	— 8	+ 4	— 4 — 8	— 2 — 8	— 4 — 9	— 4 — 8	— 1 — 5	+ 3 0
612	36°51′	S	1	47°09′	W	1	5085	3	— 22	— 14	— 17 — 21	— 15 — 20	— 17 — 22	— 18 — 21	— 17 — 20	— 15 — 17
613	36°10′	S	1.5	45°36′	W	1.5	4960	4	+ 3	+ 12	+ 8 + 4	+ 10 + 5	+ 8 + 4	+ 8 + 6	+ 10 + 8	+ 12 + 12
614	35°36′	S	1.5	44°25′	W	1.5	4865	4	— 7	— 1	0 — 4	+ 1 — 3	— 1 — 4	— 2 — 5	— 1 — 4	0 — 1

Reductions in 0.1 mgal

No.	Topog	Hayford 113.7 km I.R.	Hayford 113.7 km Comp $A\text{-}0_2$	Hayford 113.7 km t+c 18-1	I.R. $T=30$ / I.R. $T=20$	R = 0 (Heisk.) Comp $A\text{-}0_2$	R = 0 (Heisk.) t+c 18-1	29.05 Comp $A\text{-}0_2$	29.05 t+c 18-1	58.1 Comp $A\text{-}0_2$	58.1 t+c 18-1	116.2 Comp $A\text{-}0_2$	116.2 t+c 18-1	174.3 Comp $A\text{-}0_2$	174.3 t+c 18-1	232.4 Comp $A\text{-}0_2$	232.4 t+c 18-1
598	−1703	+ 53	+1070	+ 399	+ 21	+1326	+ 199	+1306	+ 199	+1292	+ 203	+1238	+ 227	+1142	+ 294	+ 958	+ 454
					+ 14	+1469	+ 126	+1435	+ 126	+1417	+ 129	+1347	+ 142	+1249	+ 199	+1035	+ 385
599	− 896	+ 46	+ 553	+ 328	+ 20	+ 657	+ 165	+ 650	+ 165	+ 647	+ 169	+ 647	+ 186	+ 617	+ 234	+ 528	+ 346
					+ 12	+ 709	+ 106	+ 694	+ 106	+ 694	+ 109	+ 696	+ 120	+ 673	+ 160	+ 568	+ 289
600	− 95	+ 38	+ 161	+ 259	+ 16	+ 184	+ 128	+ 184	+ 128	+ 188	+ 129	+ 215	+ 140	+ 204	+ 161	+ 181	+ 212
					+ 10	+ 191	+ 81	+ 190	+ 81	+ 192	+ 81	+ 211	+ 87	+ 222	+ 104	+ 194	+ 161
601	− 441	+ 43	+ 382	+ 288	+ 18	+ 466	+ 142	+ 462	+ 142	+ 459	+ 146	+ 448	+ 158	+ 424	+ 190	+ 364	+ 267
					+ 11	+ 504	+ 89	+ 498	+ 89	+ 494	+ 92	+ 483	+ 98	+ 463	+ 125	+ 391	+ 213
602	− 38	+ 39	+ 52	+ 282	+ 16	+ 50	+ 141	+ 52	+ 141	+ 55	+ 143	+ 69	+ 154	+ 93	+ 184	+ 94	+ 247
					+ 9	+ 47	+ 90	+ 45	+ 90	+ 50	+ 91	+ 64	+ 98	+ 96	+ 121	+ 99	+ 195
603	− 3	+ 34	− 23	+ 123	+ 14	− 26	+ 58	− 26	+ 58	− 26	+ 58	− 25	+ 60	− 27	+ 56	− 22	+ 53
					+ 7	− 28	+ 35	− 27	+ 35	− 28	+ 35	− 27	+ 35	− 30	+ 34	− 26	+ 30
604	− 3	+ 33	− 32	+ 65	+ 12	− 36	+ 25	− 39	+ 25	− 42	+ 25	− 46	+ 24	− 47	+ 17	− 41	+ 6
					+ 7	− 35	+ 15	− 38	+ 15	− 42	+ 15	− 48	+ 15	− 51	+ 19	− 45	− 3
604a	+ 11	+ 33	− 18	+ 67	+ 13	− 22	+ 26	− 24	+ 26	− 26	+ 26	− 31	+ 25	− 35	+ 18	− 30	+ 8
					+ 7	− 22	+ 17	− 22	+ 17	− 26	+ 17	− 32	+ 17	− 37	+ 11	− 33	− 1
604b	+ 12	+ 33	− 32	+ 65	+ 12	− 37	+ 25	− 37	+ 25	− 39	+ 25	− 44	+ 23	− 42	+ 16	− 38	+ 6
					+ 7	− 38	+ 17	− 37	+ 17	− 40	+ 17	− 44	+ 16	− 46	+ 10	− 41	− 3
605	− 3	+ 36	− 19	+ 175	+ 14	− 22	+ 82	− 23	+ 82	− 24	+ 82	− 26	+ 83	− 27	+ 86	− 24	+ 90
					+ 8	− 21	+ 52	− 23	+ 52	− 24	+ 52	− 29	+ 53	− 30	+ 55	− 27	+ 57
605a	+ 31	+ 37	− 32	+ 175	+ 14	− 42	+ 82	− 42	+ 82	− 41	+ 82	− 37	+ 84	− 34	+ 87	− 27	+ 91
					+ 8	− 44	+ 55	− 44	+ 55	− 45	+ 55	− 42	+ 56	− 37	+ 58	− 31	+ 61
605b	+ 2	+ 37	− 30	+ 176	+ 14	− 40	+ 82	− 41	+ 82	− 41	+ 82	− 39	+ 84	− 33	+ 86	− 26	+ 90
					+ 8	− 37	+ 54	− 40	+ 54	− 45	+ 54	− 42	+ 55	− 36	+ 58	− 29	+ 60
606	− 440	+ 48	+ 299	+ 371	+ 19	+ 334	+ 182	+ 326	+ 182	+ 325	+ 186	+ 343	+ 203	+ 361	+ 251	+ 328	+ 364
					+ 11	+ 359	+ 115	+ 348	+ 115	+ 335	+ 118	+ 356	+ 128	+ 390	+ 167	+ 351	+ 295
607	−1057	+ 55	+ 807	+ 441	+ 23	+ 984	+ 215	+ 975	+ 215	+ 958	+ 219	+ 951	+ 243	+ 904	+ 308	+ 770	+ 464
					+ 13	+1059	+ 135	+1056	+ 135	+1036	+ 138	+1026	+ 151	+ 988	+ 206	+ 831	+ 382
608	−2411	+ 64	+1571	+ 531	+ 27	+1999	+ 252	+1977	+ 254	+1961	+ 261	+1852	+ 289	+1673	+ 378	+1386	+ 600
					+ 15	+2192	+ 152	+2179	+ 152	+2165	+ 157	+2029	+ 176	+1841	+ 247	+1499	+ 498
609	−2970	+ 77	+2044	+ 641	+ 30	+2544	+ 293	+2521	+ 295	+2524	+ 303	+2485	+ 340	+2327	+ 459	+1955	+ 764
					+ 16	+2746	+ 172	+2729	+ 172	+2725	+ 177	+2687	+ 201	+2551	+ 298	+2113	+ 647
610	−3370	+ 83	+2329	+ 739	+ 32	+2921	+ 326	+2900	+ 328	+2904	+ 339	+2845	+ 379	+2655	+ 520	+2221	+ 903
					+ 17	+3152	+ 184	+3141	+ 185	+3140	+ 190	+3076	+ 218	+2913	+ 329	+2407	+ 757
611	−3498	+ 87	+2452	+ 842	+ 32	+3070	+ 353	+3050	+ 355	+3055	+ 366	+3011	+ 411	+2826	+ 567	+2371	+ 987
					+ 17	+3287	+ 196	+3287	+ 197	+3291	+ 204	+3249	+ 233	+3102	+ 353	+2575	+ 829
612	−3431	+ 87	+2396	+ 870	+ 33	+2985	+ 360	+2963	+ 362	+2970	+ 373	+2935	+ 418	+2769	+ 575	+2331	+ 998
					+ 18	+3202	+ 199	+3196	+ 200	+3201	+ 207	+3164	+ 236	+3038	+ 356	+2527	+ 834
613	−3425	+ 86	+2376	+ 878	+ 31	+2973	+ 367	+2954	+ 369	+2960	+ 380	+2918	+ 425	+2744	+ 582	+2307	+ 999
					+ 17	+3194	+ 203	+3184	+ 204	+3185	+ 211	+3134	+ 240	+2998	+ 359	+2491	+ 831
614	−3365	+ 86	+2334	+ 885	+ 31	+2900	+ 368	+2880	+ 370	+2888	+ 381	+2857	+ 426	+2697	+ 581	+2270	+ 995
					+ 17	+3114	+ 203	+3107	+ 204	+3106	+ 211	+3077	+ 250	+2956	+ 358	+2461	+ 825

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
							Anomalies in milligal		Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
615	33°10′ S	1	39°13′ W	1	4450	3	− 16	− 9	− 12 − 16	− 10 − 16	− 11 − 16	− 11 − 14	− 8 − 10	− 3 − 4
616	32°50′ S	2	38°25′ W	2	4750	3	− 27	− 18	− 21 − 27	− 19 − 25	− 20 − 25	− 19 − 22	− 14 − 17	− 9 − 10
617	32°33′ S	1	37°47′ W	1	4525	3	− 12	+ 2	− 8 − 9	− 5 − 8	− 5 − 7	+ 3 + 1	+ 10 + 9	+ 15 + 16
618	32°05′ S	2	36°30′ W	2	3020	3	+ 3	− 21	− 5 + 7	− 4 + 10	− 5 + 7	− 7 0	− 9 − 4	− 13 − 11
619	31°34′ S	1.5	35°33′ W	1.5	1610	3	+ 22	− 41	− 6 + 8	− 6 + 7	− 10 + 2	− 20 − 9	− 31 − 21	− 44 − 32
620	31°10′ S	1.5	35°10′ W	1.5	770	3	+ 53	− 43	− 3 + 12	− 4 + 11	− 8 + 7	− 20 − 7	− 34 − 23	− 50 − 40
621	31°33′ S	1.5	33°59′ W	1.5	2840	4	− 54	− 59	− 32 − 37	− 28 − 29	− 24 − 18	− 29 − 21	− 39 − 31	− 49 − 42
622	31°58′ S	1	32°46′ W	1	1490	4	+ 120	+ 14	+ 37 + 62	+ 32 + 50	+ 19 + 27	+ 10 + 12	+ 9 + 11	+ 9 + 13
623	32°26′ S	1	31°15′ W	1	4100	4	− 12	− 13	− 10 − 14	− 7 − 13	− 8 − 12	− 5 − 7	− 1 − 2	+ 3 + 5
624	33°04′ S	1	29°25′ W	1	3180	5	+ 2	− 16	+ 5 + 9	+ 5 + 10	+ 3 + 8	− 3 + 1	− 9 − 6	− 14 − 10
625	33°42′ S	1	27°29′ W	1	4160	5	+ 15	+ 13	+ 16 + 12	+ 18 + 14	+ 17 + 14	+ 18 + 16	+ 21 + 19	+ 24 + 25
626	34°21′ S	1	25°30′ W	1	3825	4	+ 19	+ 9	+ 18 + 16	+ 19 + 17	+ 18 + 17	+ 17 + 17	+ 16 + 16	+ 15 + 17
627	34°47′ S	1	23°27′ W	1	3700	3	+ 28	+ 16	+ 26 + 26	+ 28 + 27	+ 27 + 27	+ 26 + 27	+ 25 + 27	+ 24 + 28
628	35°08′ S	2	21°21′ W	2	3650	2	+ 27	+ 17	+ 26 + 25	+ 27 + 26	+ 26 + 26	+ 26 + 26	+ 26 + 27	+ 26 + 29
629	35°29′ S	1	19°20′ W	1	3630	3	+ 16	+ 8	+ 16 + 14	+ 17 + 15	+ 16 + 15	+ 15 + 15	+ 17 + 18	+ 19 + 21
630	36°38′ S	1.5	12°10′ W	1	3890	6	− 5	+ 1	+ 16 + 11	+ 18 + 18	+ 18 + 19	+ 16 + 19	+ 12 + 15	+ 8 + 12
631	36°59′.7 S	0.3	12°16′.0 W	0.3	1415	3	+ 86	− 24	0 + 25	− 4 + 13	− 14 − 1	− 25 − 18	− 35 − 30	− 41 − 37
632	36°36′ S	1	11°43′ W	1	3820	4	+ 2	+ 3	+ 8 + 4	+ 9 + 5	+ 9 + 6	+ 14 + 14	+ 17 + 18	+ 16 + 19
633	35°28′ S	1.5	10°29′ W	1.5	3335	3	+ 16	− 2	+ 8 + 10	+ 9 + 10	+ 7 + 8	+ 5 + 6	+ 4 + 5	+ 4 + 6
634	34°26′ S	1.5	9°24′ W	1.5	4410	3	− 7	− 2	+ 3 − 2	+ 6 + 2	+ 5 + 3	+ 5 + 5	+ 7 + 6	+ 8 + 10
635	33°16′ S	1	8°11′ W	1	3955	3	− 9	− 16	− 10 − 13	− 8 − 11	− 9 − 11	− 10 − 11	− 10 − 11	− 9 − 8

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp $A\text{-}0_2$	t + c 18-1	I.R. T=20	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1
615	—3215	+ 82	+2229	+ 835	+ 30	+2786	+ 354	+2765	+ 356	+2770	+ 367	+2723	+ 409	+2551	+ 549	+2141	+ 916
					+ 17	+3001	+ 200	+2993	+ 201	+2993	+ 208	+2942	+ 234	+2797	+ 342	+2318	+ 762
616	—3158	+ 80	+2175	+ 816	+ 29	+2719	+ 348	+2697	+ 350	+2698	+ 360	+2647	+ 399	+2470	+ 524	+2067	+ 884
					+ 16	+2943	+ 198	+2922	+ 199	+2918	+ 204	+2861	+ 229	+2709	+ 335	+2238	+ 732
617	—3074	+ 77	+2060	+ 802	+ 29	+2660	+ 344	+2632	+ 346	+2619	+ 354	+2506	+ 394	+2307	+ 521	+1925	+ 855
					+ 16	+2834	+ 196	+2821	+ 196	+2811	+ 201	+2701	+ 227	+2522	+ 327	+2075	+ 703
618	—2089	+ 69	+1480	+ 780	+ 27	+1802	+ 337	+1794	+ 339	+1798	+ 347	+1780	+ 383	+1689	+ 496	+1435	+ 787
					+ 16	+1836	+ 195	+1806	+ 195	+1836	+ 201	+1877	+ 224	+1825	+ 317	+1531	+ 680
619	—1124	+ 64	+ 919	+ 773	+ 25	+1044	+ 333	+1047	+ 335	+1076	+ 343	+1142	+ 377	+1146	+ 485	+1007	+ 751
					+ 15	+1059	+ 190	+1067	+ 190	+1109	+ 196	+1203	+ 217	+1245	+ 297	+1082	+ 563
620	— 596	+ 62	+ 719	+ 776	+ 24	+ 804	+ 332	+ 809	+ 334	+ 837	+ 341	+ 923	+ 375	+ 963	+ 480	+ 856	+ 750
					+ 14	+ 797	+ 194	+ 806	+ 194	+ 841	+ 200	+ 957	+ 221	+1039	+ 303	+ 918	+ 598
621	—1886	+ 64	+1105	+ 763	+ 25	+1310	+ 326	+1272	+ 327	+1225	+ 336	+1241	+ 369	+1234	+ 472	+1074	+ 736
					+ 15	+1509	+ 191	+1425	+ 191	+1316	+ 196	+1321	+ 218	+1342	+ 302	+1156	+ 592
622	—1191	+ 70	+1418	+ 761	+ 27	+1671	+ 328	+1715	+ 330	+1832	+ 338	+1895	+ 373	+1794	+ 484	+1517	+ 753
					+ 16	+1560	+ 192	+1679	+ 192	+1910	+ 197	+2035	+ 220	+1963	+ 307	+1635	+ 611
623	—2683	+ 73	+1837	+ 780	+ 28	+2297	+ 333	+2274	+ 335	+2268	+ 343	+2210	+ 379	+2053	+ 492	+1720	+ 784
					+ 16	+2497	+ 194	+2478	+ 194	+2469	+ 199	+2396	+ 222	+2251	+ 315	+1857	+ 642
624	—2379	+ 75	+1650	+ 833	+ 29	+1974	+ 350	+1964	+ 352	+1977	+ 360	+2005	+ 399	+1933	+ 526	+1650	+ 862
					+ 15	+2092	+ 198	+2087	+ 198	+2104	+ 203	+2149	+ 229	+2114	+ 330	+1779	+ 703
625	—2950	+ 79	+2047	+ 840	+ 29	+2557	+ 353	+2533	+ 355	+2536	+ 363	+2490	+ 403	+2334	+ 532	+1959	+ 874
					+ 16	+2762	+ 201	+2745	+ 201	+2741	+ 206	+2692	+ 232	+2557	+ 335	+2116	+ 717
626	—2742	+ 78	+1922	+ 845	+ 29	+2372	+ 356	+2352	+ 358	+2354	+ 369	+2330	+ 408	+2205	+ 539	+1865	+ 890
					+ 16	+2557	+ 203	+2539	+ 204	+2537	+ 209	+2510	+ 236	+2416	+ 339	+2012	+ 731
627	—2622	+ 78	+1831	+ 832	+ 28	+2256	+ 355	+2237	+ 357	+2237	+ 365	+2213	+ 405	+2088	+ 532	+1765	+ 869
					+ 15	+2430	+ 199	+2415	+ 199	+2414	+ 205	+2385	+ 231	+2290	+ 331	+1905	+ 705
628	—2549	+ 75	+1774	+ 796	+ 28	+2188	+ 343	+2172	+ 345	+2174	+ 353	+2146	+ 390	+2018	+ 512	+1703	+ 828
					+ 15	+2358	+ 195	+2346	+ 195	+2346	+ 200	+2314	+ 226	+2211	+ 322	+1837	+ 675
629	—2461	+ 73	+1711	+ 760	+ 27	+2109	+ 329	+2092	+ 331	+2096	+ 339	+2068	+ 373	+1933	+ 489	+1629	+ 780
					+ 15	+2272	+ 191	+2261	+ 191	+2264	+ 196	+2235	+ 219	+2121	+ 310	+1756	+ 638
630	—2458	+ 72	+1564	+ 760	+ 27	+1893	+ 331	+1868	+ 333	+1861	+ 341	+1845	+ 377	+1766	+ 494	+1504	+ 795
					+ 14	+2095	+ 193	+2022	+ 193	+2005	+ 198	+1982	+ 221	+1929	+ 314	+1620	+ 651
631	—1013	+ 72	+1282	+ 758	+ 27	+1511	+ 332	+1549	+ 334	+1621	+ 342	+1718	+ 378	+1698	+ 493	+1465	+ 793
					+ 14	+1418	+ 194	+1532	+ 194	+1668	+ 199	+1820	+ 222	+1847	+ 316	+1575	+ 650
632	—2540	+ 72	+1695	+ 765	+ 27	+2123	+ 334	+2103	+ 336	+2095	+ 344	+2015	+ 380	+1870	+ 497	+1573	+ 799
					+ 14	+2314	+ 195	+2298	+ 195	+2291	+ 200	+2184	+ 223	+2050	+ 318	+1696	+ 656
633	—2364	+ 74	+1701	+ 765	+ 28	+2080	+ 333	+2069	+ 335	+2080	+ 343	+2065	+ 379	+1956	+ 497	+1655	+ 805
					+ 15	+2212	+ 194	+2217	+ 194	+2234	+ 199	+2225	+ 222	+2140	+ 318	+1784	+ 664
634	—2845	+ 77	+1917	+ 799	+ 29	+2370	+ 342	+2343	+ 344	+2341	+ 352	+2305	+ 389	+2164	+ 516	+1823	+ 848
					+ 15	+2598	+ 195	+2544	+ 195	+2530	+ 200	+2487	+ 226	+2372	+ 326	+1967	+ 698
635	—2816	+ 78	+1979	+ 825	+ 28	+2448	+ 350	+2428	+ 352	+2432	+ 360	+2403	+ 399	+2267	+ 533	+1911	+ 879
					+ 16	+2643	+ 196	+2622	+ 196	+2619	+ 201	+2593	+ 227	+2484	+ 331	+2064	+ 721

Reductions in 0.1 mgal

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal: Free Air	Hayf. 113.7	Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km. R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
636	32°04′	S	1.5	7°03′	W	2	4235	3	− 2	− 8	− 2 − 5	− 1 − 3	− 3 − 4	− 2 − 2	− 1 − 2	0 + 1
637	30°49′	S	1.5	5°53′	W	3	4735	4	− 13	+ 1	+ 4 − 8	+ 7 − 1	+ 9 + 5	+ 11 + 10	+ 12 + 12	+ 13 + 15
638	30°57′	S	1.5	4°23′	W	3	4220	3	+ 21	+ 17	+ 22 + 18	+ 24 + 19	+ 24 + 20	+ 25 + 24	+ 26 + 26	+ 27 + 29
639	31°14′	S	1.5	2°31′	W	3	3345	3	+ 30	− 4	+ 7 + 15	+ 7 + 10	+ 1 + 1	− 4 − 5	− 2 − 3	0 + 1
640	31°30′	S	1	0°57′	W	2	3255	4	+ 28	− 8	+ 13 + 19	+ 14 + 20	+ 10 + 16	− 3 0	− 7 − 5	− 8 − 5
641	31°42′	S	1	0°35′	E	2	1455	3	+ 155	+ 30	+ 56 + 85	+ 50 + 71	+ 37 + 46	+ 26 + 28	+ 28 + 31	+ 27 + 33
642	31°48′	S	1	1°23′	E	2	4440	3	− 16	+ 8	+ 14 − 4	+ 20 + 5	+ 28 + 20	+ 40 + 44	+ 36 + 41	+ 27 + 33
643	31°56′	S	1	1°58′	E	2	1455	3	+ 93	− 38	+ 20 + 50	+ 17 + 43	+ 5 + 26	− 22 − 9	− 42 − 34	− 56 − 49
644	32°05′	S	1	2°52′	E	1	4905	3	− 30	− 6	− 6 − 24	− 1 − 18	+ 6 − 3	+ 18 + 19	+ 18 + 21	+ 13 + 17
645	32°17′	S	1	4°13′	E	1	4880	3	+ 21	+ 20	+ 22 + 19	+ 24 + 19	+ 22 + 18	+ 21 + 19	+ 23 + 21	+ 28 + 28
646	32°29′	S	1	5°28′	E	1	5135	3	0	+ 1	+ 3 − 1	+ 5 0	+ 3 − 2	+ 2 0	+ 3 + 1	+ 5 + 4
647	32°44′	S	1	7°12′	E	1	5055	2	+ 13	+ 17	+ 18 + 15	+ 20 + 15	+ 18 + 14	+ 17 + 14	+ 18 + 16	+ 20 + 19
648	32°55′	S	1	8°35′	E	1	5130	2	− 2	0	+ 1 − 2	+ 3 − 2	+ 1 − 3	+ 1 − 2	+ 1 − 2	+ 2 0
649	32°25′	S	1	10°10′	E	2	4955	3	+ 9	+ 22	+ 16 + 10	+ 18 + 11	+ 17 + 10	+ 19 + 15	+ 25 + 22	+ 30 + 29
650	32°09′	S	1	11°14′	E	3	4690	5	+ 5	+ 27	+ 30 + 15	+ 35 + 25	+ 40 + 37	+ 39 + 41	+ 34 + 35	+ 29 + 31
651	32°01′	S	2	12°01′	E	3	4155	3	0	+ 11	+ 8 0	+ 11 + 2	+ 11 + 3	+ 20 + 19	+ 22 + 23	+ 20 + 22
652	32°37′	S	2	13°00′	E	2	3715	3	+ 21	+ 21	+ 23 + 19	+ 24 + 21	+ 23 + 20	+ 22 + 20	+ 22 + 20	+ 23 + 23
653	33°21′	S	1	13°54′	E	1	4250	4	− 1	+ 12	+ 6 0	+ 8 + 2	+ 8 + 2	+ 8 + 4	+ 10 + 8	+ 16 + 14
654	33°22′	S	1.5	15°21′	E	2	3650	5	+ 1	+ 21	+ 10 + 3	+ 12 + 4	+ 12 + 4	+ 17 + 11	+ 27 + 23	+ 36 + 35
655	33°17′	S	1	16°38′	E	2	1286	5	+ 37	+ 3	+ 15 + 28	+ 15 + 27	+ 12 + 21	+ 7 + 13	+ 5 + 8	+ 3 + 6
656	33°17′	S	1	17°47′	E	2	100	4	+ 34	− 9	+ 11 + 18	+ 11 + 18	+ 10 + 17	+ 7 + 14	0 + 7	− 6 − 1

No.	Topog	Reductions in 0.1 mgal															
		Hayford 113.7 km			I.R T=30	R=0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t+c 18-1	I R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
636	—2885	+ 80	+2018	+ 843	+ 29	+2504	+ 355	+2487	+ 357	+2495	+ 367	+2447	+ 405	+2307	+ 541	+1944	+ 895
					+ 16	+2704	+ 199	+2683	+ 200	+2681	+ 205	+2639	+ 230	+2528	+ 336	+2101	+ 736
637	—3161	+ 79	+2075	+ 863	+ 29	+2603	+ 362	+2564	+ 364	+2536	+ 374	+2475	+ 414	+2326	+ 553	+1957	+ 913
					+ 16	+2893	+ 203	+2823	+ 204	+2758	+ 211	+2674	+ 237	+2551	+ 343	+2116	+ 751
638	—2936	+ 78	+2029	+ 865	+ 29	+2537	+ 362	+2513	+ 364	+2505	+ 375	+2456	+ 416	+2307	+ 550	+1941	+ 908
					+ 16	+2747	+ 204	+2736	+ 205	+2714	+ 212	+2652	+ 238	+2528	+ 343	+2096	+ 746
639	—2597	+ 79	+1995	+ 864	+ 29	+2438	+ 361	+2440	+ 363	+2486	+ 373	+2492	+ 414	+2341	+ 549	+1967	+ 903
					+ 16	+2529	+ 204	+2572	+ 205	+2655	+ 212	+2689	+ 237	+2567	+ 342	+2128	+ 743
640	—2361	+ 77	+1791	+ 854	+ 28	+2127	+ 356	+2119	+ 358	+2148	+ 367	+2235	+ 407	+2143	+ 535	+1813	+ 879
					+ 15	+2232	+ 201	+2228	+ 201	+2256	+ 208	+2392	+ 233	+2346	+ 333	+1956	+ 716
641	—1253	+ 73	+1556	+ 875	+ 27	+1855	+ 363	+1904	+ 365	+2032	+ 374	+2105	+ 414	+1956	+ 538	+1633	+ 869
					+ 15	+1732	+ 204	+1874	+ 204	+2118	+ 211	+2271	+ 237	+2146	+ 332	+1763	+ 695
642	—2974	+ 74	+1763	+ 901	+ 28	+2278	+ 370	+2219	+ 372	+2128	+ 383	+1964	+ 424	+1863	+ 562	+1593	+ 926
					+ 15	+2629	+ 206	+2538	+ 207	+2382	+ 214	+2122	+ 240	+2038	+ 347	+1717	+ 754
643	—1085	+ 77	+1416	+ 897	+ 28	+1412	+ 371	+1446	+ 373	+1554	+ 384	+1782	+ 425	+1842	+ 564	+1615	+ 929
					+ 15	+1296	+ 206	+1361	+ 207	+1522	+ 214	+1853	+ 240	+1996	+ 347	+1732	+ 757
644	—3274	+ 77	+2033	+ 921	+ 29	+2636	+ 375	+2576	+ 377	+2493	+ 388	+2334	+ 431	+2190	+ 576	+1854	+ 963
					+ 16	+2989	+ 208	+2924	+ 209	+2771	+ 216	+2526	+ 243	+2398	+ 355	+2001	+ 790
645	—3364	+ 83	+2366	+ 920	+ 30	+2946	+ 378	+2927	+ 380	+2934	+ 391	+2896	+ 435	+2730	+ 582	+2294	+ 969
					+ 16	+3164	+ 208	+3158	+ 209	+3160	+ 216	+3124	+ 244	+2995	+ 356	+2488	+ 793
646	—3498	+ 86	+2448	+ 951	+ 30	+3060	+ 383	+3038	+ 385	+3043	+ 396	+3002	+ 443	+2830	+ 604	+2378	+1043
					+ 16	+3278	+ 209	+3275	+ 210	+3280	+ 217	+3237	+ 246	+3106	+ 370	+2582	+ 865
647	—3557	+ 87	+2473	+ 957	+ 31	+3093	+ 387	+3071	+ 389	+3077	+ 400	+3035	+ 447	+2862	+ 611	+2405	+1055
					+ 16	+3307	+ 212	+3305	+ 213	+3315	+ 220	+3278	+ 250	+3142	+ 374	+2613	+ 873
648	—3499	+ 86	+2450	+ 939	+ 30	+3054	+ 380	+3035	+ 382	+3042	+ 393	+3005	+ 439	+2834	+ 604	+2384	+1045
					+ 16	+3273	+ 210	+3269	+ 211	+3275	+ 218	+3238	+ 248	+3111	+ 371	+2589	+ 870
649	—3419	+ 81	+2345	+ 863	+ 30	+2960	+ 360	+2940	+ 362	+2940	+ 373	+2869	+ 416	+2664	+ 562	+2224	+ 958
					+ 16	+3190	+ 201	+3184	+ 202	+3184	+ 209	+3107	+ 237	+2926	+ 349	+2412	+ 792
650	—3086	+ 78	+1970	+ 817	+ 28	+2459	+ 349	+2403	+ 351	+2348	+ 362	+2310	+ 404	+2217	+ 548	+1889	+ 928
					+ 15	+2776	+ 196	+2673	+ 197	+2547	+ 204	+2476	+ 231	+2425	+ 343	+2038	+ 774
651	—2853	+ 74	+1896	+ 770	+ 27	+2412	+ 334	+2387	+ 336	+2365	+ 347	+2236	+ 386	+2080	+ 523	+1756	+ 872
					+ 16	+2643	+ 192	+2627	+ 193	+2608	+ 199	+2425	+ 225	+2281	+ 329	+1894	+ 724
652	—2615	+ 72	+1838	+ 703	+ 28	+2261	+ 309	+2242	+ 311	+2244	+ 319	+2225	+ 355	+2102	+ 477	+1777	+ 788
					+ 16	+2432	+ 183	+2418	+ 183	+2419	+ 188	+2396	+ 212	+2303	+ 309	+1918	+ 659
653	—2819	+ 73	+1941	+ 680	+ 27	+2416	+ 304	+2395	+ 306	+2394	+ 313	+2352	+ 351	+2199	+ 479	+1847	+ 780
					+ 15	+2616	+ 181	+2596	+ 181	+2591	+ 186	+2543	+ 211	+2411	+ 308	+1995	+ 662
654	—2466	+ 62	+1654	+ 552	+ 25	+2090	+ 257	+2070	+ 258	+2062	+ 267	+1986	+ 294	+1797	+ 383	+1485	+ 610
					+ 14	+2277	+ 157	+2261	+ 157	+2258	+ 162	+2174	+ 180	+1977	+ 253	+1606	+ 509
655	— 923	+ 51	+ 769	+ 439	+ 21	+ 907	+ 212	+ 913	+ 212	+ 940	+ 216	+ 962	+ 238	+ 926	+ 301	+ 792	+ 450
					+ 12	+ 866	+ 134	+ 874	+ 134	+ 934	+ 137	+1005	+ 150	+ 997	+ 202	+ 847	+ 373
656	— 74	+ 40	+ 124	+ 338	+ 15	+ 133	+ 161	+ 133	+ 161	+ 135	+ 164	+ 158	+ 176	+ 185	+ 210	+ 172	+ 287
					+ 9	+ 126	+ 102	+ 127	+ 102	+ 130	+ 104	+ 157	+ 110	+ 200	+ 138	+ 185	+ 226

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
							Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
									$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
657	33°54′.36 S	0.01	18°25′.50 E	0.01	Cape T.	2	+ 2	— 33	— 10 — 2	— 10 — 2	— 11 — 3	— 15 — 6	— 22 — 14	— 30 — 24
658	33°56′.10 S	0.00	18°28′.68 E	0.00	Roy.Obs. —16	1	+ 8	— 28	— 6 + 3	— 6 + 2	— 7 + 2	— 10 — 1	— 18 — 10	— 26 — 19
658a	33°28′.35 S	—	18°38′.48 E	—	—262	3	+ 41	+ 2	+ 24 + 31	+ 24 + 30	+ 24 + 30	+ 24 + 31	+ 18 + 26	+ 10 + 17
658b	33°22′.1 S	—	19°18′.2 E	—	—452	3	— 16	— 45	— 20 — 10	— 19 — 10	— 20 — 10	— 25 — 14	— 32 — 23	— 41 — 33
658c	33°10′.34 S	—	19°47′.93 E	—	—676	3	+ 29	— 4	+ 20 + 31	+ 20 + 30	+ 18 + 30	+ 13 + 22	+ 8 + 16	+ 1 + 9
658d	33°20′.5 S	—	20°02′.4 E	—	—772	3	+ 8	— 33	— 9 + 2	— 10 0	— 12 — 1	— 17 — 7	— 22 — 13	— 28 — 20
658e	33°55′.9 S	—	18°51′.2 E	—	—118	3	+ 2	— 29	— 5 + 4	— 5 + 4	— 6 + 3	— 10 — 1	— 16 — 7	— 24 — 17
659	34°26′.7 S	0.5	18°29′.0 E	0.5	80	5	+ 30	— 23	+ 1 + 11	0 + 10	— 1 + 9	— 9 — 1	— 18 — 12	— 27 — 21
660	34°44′.4 S	1	19°16′.0 E	1	90	6	+ 33	— 13	+ 11 + 19	+ 11 + 19	+ 10 + 18	+ 7 + 16	0 + 8	— 9 — 2
661	34°48′ S	1.5	21°31′ E	1.5	80	4	— 5	— 30	— 13 — 10	— 13 — 9	— 12 — 8	— 10 — 5	— 8 — 2	— 8 — 1
662	34°36′ S	2	22°54′ E	2	90	3	+ 11	— 14	+ 1 + 5	+ 1 + 5	+ 2 + 6	+ 4 + 9	+ 5 + 11	+ 3 + 9
663	34°25′ S	1.5	24°19′ E	1.5	120	4	+ 28	— 7	+ 11 + 17	+ 11 + 17	+ 10 + 17	+ 8 + 15	+ 2 + 8	— 5 0
664	35°20′ S	2	24°38′ E	2	2317	4	— 20	— 6	— 6 — 12	— 3 — 9	— 1 — 4	+ 1 + 1	+ 3 + 2	+ 6 + 7
665	36°01′ S	1.5	25°21′ E	1.5	4792	3	— 23	+ 29	+ 3 — 11	+ 5 — 10	+ 6 — 11	+ 22 + 12	+ 39 + 33	+ 54 + 51
666	36°36′ S	1.5	26°02′ E	1.5	2850	4	+ 31	— 8	— 5 + 7	— 8 — 1	— 16 — 15	— 26 — 29	— 27 — 32	— 21 — 24
667	37°08′ S	1	26°44′ E	1.5	3380	4	+ 11	— 8	— 5 + 3	— 6 — 2	— 12 — 14	— 15 — 16	— 15 — 17	— 14 — 14
668	36°39′ S	1	27°28′ E	1	4070	3	+ 15	+ 29	+ 21 + 14	+ 22 + 14	+ 23 + 15	+ 26 + 21	+ 30 + 26	+ 33 + 32
669	34°43′ S	1	29°53′ E	1	4342	7	— 15	+ 27	+ 12 — 5	+ 17 + 2	+ 21 + 12	+ 25 + 20	+ 28 + 24	+ 32 + 29
670	33°55′ S	1	30°54′ E	1	4000	4	+ 3	+ 31	+ 18 + 7	+ 20 + 10	+ 22 + 14	+ 25 + 21	+ 29 + 25	+ 34 + 31
671	33°21′ S	1	30°23′ E	1	3705	4	— 11	+ 14	+ 2 — 7	+ 3 — 5	+ 4 — 4	+ 6 0	+ 11 + 5	+ 18 + 14
672	32°49′ S	2	29°51′ E	2	3360	4	— 1	+ 45	+ 25 + 13	+ 28 + 15	+ 30 + 18	+ 40 + 31	+ 54 + 48	+ 66 + 63

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t+c 18-1	I.R. T=20	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
657	— 14	+ 39	— 13	+ 333	+ 14	— 35	+ 159	— 36	+ 159	— 28	+ 161	— 5	+ 173	+ 39	+ 199	+ 58	+ 266
					+ 8	— 54	+ 98	— 49	+ 98	— 46	+ 99	— 24	+ 105	+ 36	+ 129	+ 60	+ 202
658	+ 8	+ 39	— 18	+ 333	+ 14	— 43	+ 159	— 43	+ 159	— 38	+ 161	— 13	+ 173	+ 35	+ 199	+ 54	+ 266
					+ 8	— 60	+ 98	— 57	+ 98	— 56	+ 99	— 31	+ 105	+ 30	+ 129	+ 56	+ 202
658a	+ 295	+ 33	— 217	+ 274	+ 11	— 260	+ 128	— 261	+ 128	— 262	+ 128	— 262	+ 136	— 221	+ 149	— 174	+ 179
					+ 7	— 278	+ 81	— 277	+ 81	— 271	+ 81	— 289	+ 87	— 247	+ 96	— 191	+ 130
658b	+ 490	+ 29	— 461	+ 234	+ 9	— 570	+ 106	— 573	+ 106	— 561	+ 106	— 519	+ 108	— 448	+ 109	— 364	+ 115
					+ 5	— 622	+ 66	— 618	+ 66	— 622	+ 66	— 580	+ 66	— 496	+ 67	— 397	+ 69
658c	+ 757	+ 26	— 612	+ 159	+ 8	— 737	+ 62	— 739	+ 62	— 721	+ 62	— 658	+ 57	— 589	+ 38	— 488	+ 1
					+ 4	— 817	+ 41	— 809	+ 41	— 807	+ 41	— 726	+ 35	— 650	+ 20	— 532	— 26
658d	+ 868	+ 25	— 638	+ 155	+ 7	— 760	+ 58	— 758	+ 58	— 734	+ 57	— 680	+ 51	— 604	+ 32	— 500	— 11
					+ 4	— 842	+ 31	— 827	+ 31	— 811	+ 31	— 748	+ 25	— 671	+ 8	— 545	— 45
658e	+ 125	+ 35	— 169	+ 316	+ 12	— 218	+ 150	— 216	+ 150	— 204	+ 151	— 177	+ 160	— 142	+ 183	— 104	+ 231
					+ 7	— 248	+ 93	— 245	+ 93	— 237	+ 93	— 201	+ 99	— 160	+ 118	— 116	+ 171
659	— 78	+ 44	+ 178	+ 384	+ 17	+ 171	+ 183	+ 173	+ 184	+ 187	+ 187	+ 250	+ 201	+ 300	+ 244	+ 284	+ 347
					+ 10	+ 146	+ 117	+ 149	+ 117	+ 163	+ 120	+ 245	+ 129	+ 321	+ 164	+ 303	+ 277
660	— 42	+ 41	+ 70	+ 386	+ 16	+ 65	+ 183	+ 66	+ 183	+ 68	+ 187	+ 88	+ 199	+ 121	+ 237	+ 122	+ 321
					+ 9	+ 61	+ 115	+ 61	+ 115	+ 61	+ 118	+ 82	+ 126	+ 128	+ 156	+ 129	+ 250
661	— 52	+ 33	— 16	+ 280	+ 12	— 3	+ 123	— 6	+ 123	— 14	+ 123	— 37	+ 126	— 58	+ 125	— 61	+ 126
					+ 6	+ 15	+ 77	+ 11	+ 77	+ 1	+ 77	— 31	+ 76	— 62	+ 76	— 66	+ 71
662	— 61	+ 35	+ 7	+ 268	+ 12	+ 26	+ 124	+ 23	+ 124	+ 16	+ 124	— 13	+ 131	— 32	+ 137	— 31	+ 162
					+ 7	+ 41	+ 76	+ 39	+ 76	+ 31	+ 76	— 6	+ 78	— 32	+ 87	— 32	+ 111
663	— 82	+ 39	+ 97	+ 292	+ 15	+ 98	+ 140	+ 98	+ 140	+ 100	+ 144	+ 118	+ 154	+ 149	+ 183	+ 148	+ 249
					+ 9	+ 94	+ 88	+ 95	+ 88	+ 95	+ 91	+ 111	+ 96	+ 157	+ 120	+ 158	+ 198
664	—1597	+ 53	+ 999	+ 402	+ 20	+1234	+ 198	+1211	+ 198	+1186	+ 202	+1144	+ 222	+1071	+ 280	+ 904	+ 412
					+ 12	+1376	+ 125	+1348	+ 125	+1298	+ 128	+1237	+ 140	+1173	+ 188	+ 976	+ 343
665	—2981	+ 63	+1880	+ 515	+ 26	+2452	+ 243	+2432	+ 245	+2417	+ 249	+2227	+ 278	+1970	+ 364	+1615	+ 574
					+ 14	+2700	+ 151	+2687	+ 151	+2693	+ 155	+2449	+ 171	+2164	+ 245	+1741	+ 486
666	—2115	+ 73	+1831	+ 605	+ 29	+2165	+ 279	+2191	+ 281	+2267	+ 288	+2336	+ 322	+2238	+ 432	+1894	+ 712
					+ 16	+2170	+ 167	+2248	+ 167	+2383	+ 172	+2502	+ 194	+2447	+ 285	+2043	+ 608
667	—2406	+ 75	+1836	+ 687	+ 29	+2226	+ 309	+2237	+ 311	+2286	+ 319	+2274	+ 358	+2150	+ 482	+1818	+ 808
					+ 16	+2289	+ 180	+2341	+ 180	+2452	+ 185	+2447	+ 211	+2355	+ 310	+1962	+ 682
668	—2860	+ 75	+1967	+ 679	+ 29	+2464	+ 305	+2454	+ 307	+2441	+ 315	+2373	+ 352	+2210	+ 475	+1855	+ 794
					+ 16	+2676	+ 180	+2677	+ 180	+2657	+ 185	+2569	+ 211	+2425	+ 309	+2004	+ 672
669	—2951	+ 68	+1877	+ 588	+ 27	+2378	+ 273	+2332	+ 275	+2283	+ 282	+2210	+ 318	+2065	+ 431	+1735	+ 724
					+ 15	+2671	+ 164	+2599	+ 164	+2498	+ 169	+2394	+ 191	+2262	+ 282	+1873	+ 623
670	—2734	+ 67	+1822	+ 570	+ 27	+2294	+ 267	+2265	+ 269	+2240	+ 276	+2173	+ 311	+2024	+ 419	+1701	+ 697
					+ 15	+2522	+ 162	+2490	+ 162	+2444	+ 167	+2352	+ 188	+2221	+ 278	+1836	+ 600
671	—2540	+ 64	+1726	+ 498	+ 27	+2151	+ 237	+2130	+ 239	+2123	+ 245	+2070	+ 276	+1922	+ 373	+1613	+ 615
					+ 15	+2336	+ 147	+2318	+ 147	+2308	+ 151	+2244	+ 170	+2110	+ 255	+1740	+ 536
672	—2300	+ 53	+1423	+ 368	+ 23	+1830	+ 183	+1808	+ 183	+1779	+ 187	+1661	+ 209	+1465	+ 259	+1198	+ 407
					+ 13	+2030	+ 117	+2009	+ 117	+1981	+ 120	+1833	+ 133	+1616	+ 182	+1296	+ 348

Reductions in 0.1 mgal

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
							Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
									$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
673	32°28′ S	2	28°57′ E	2	590	4	+ 58	+ 35	+ 44 + 49	+ 44 + 49	+ 42 + 46	+ 39 + 41	+ 39 + 41	+ 40 + 42
674	29°51′.97 S	0.01	31°02′.20 E	0.01	Durban	1	+ 36	+ 34	+ 46 + 48	+ 47 + 49	+ 48 + 52	+ 47 + 51	+ 46 + 50	+ 45 + 49
674a	29°45′.50 S	—	30°43′.25 E	—	—746	7	+ 67	+ 13	+ 30 + 36	+ 31 + 36	+ 30 + 37	+ 28 + 36	+ 25 + 32	+ 18 + 25
674b	29°32′.50 S	—	30°17′.25 E	—	—1091	7	+ 20	— 32	— 12 — 3	— 11 — 4	— 12 — 3	— 15 — 5	— 20 — 11	— 28 — 19
675	30°07′ S	1	31°58′ E	3	1080	4	+ 45	+ 28	+ 32 + 36	+ 32 + 35	+ 30 + 32	+ 27 + 27	+ 28 + 28	+ 31 + 31
676	29°39′ S	1	34°06′ E	1	2650	5	+ 10	+ 22	+ 17 + 11	+ 18 + 13	+ 19 + 14	+ 21 + 18	+ 26 + 23	+ 32 + 31
677	29°34′ S	1	35°36′ E	2	1930	4	+ 28	— 8	+ 7 + 16	+ 7 + 15	+ 4 + 10	— 2 + 3	— 10 — 6	— 19 — 15
678	29°30′ S	1	36 50′ E	1	4040	4	— 12	+ 17	+ 5 — 6	+ 8 — 5	+ 12 + 3	+ 19 + 16	+ 23 + 21	+ 27 + 28
679	29°26′ S	1.5	38°01′ E	1.5	4990	4	— 12	+ 18	— 2 — 11	0 — 10	— 2 — 11	+ 1 — 8	+ 11 + 3	+ 24 + 19
680	28°44′ S	2	39°15′ E	2	4942	3	0	+ 23	+ 11 + 4	+ 13 + 5	+ 13 + 5	+ 13 + 8	+ 16 + 10	+ 19 + 15
681	28°01′ S	1.5	40°27′ E	1.5	4605	3	— 2	+ 12	+ 6 — 1	+ 8 0	+ 7 + 2	+ 7 + 4	+ 8 + 5	+ 10 + 8
682	26°54′ S	1	42°22′ E	3	4305	3	+ 23	+ 50	+ 37 + 26	+ 40 + 29	+ 42 + 35	+ 46 + 42	+ 50 + 46	+ 55 + 54
683	26°22′ S	1	43°19′ E	2	3855	4	— 2	+ 30	+ 18 + 7	+ 20 + 10	+ 22 + 12	+ 30 + 25	+ 41 + 38	+ 50 + 50
684	26°04′ S	1	44°49′ E	2	150	5	+ 36	— 42	— 14 0	— 15 — 1	— 18 — 6	— 29 — 19	— 38 — 30	— 47 — 40
685	26°01′ S	1	46°06′ E	1.5	1465	5	— 1	— 7	+ 15 + 15	+ 17 + 19	+ 20 + 25	+ 21 + 29	+ 19 + 27	+ 12 + 21
686	25°47′ S	1	47°17′ E	1	2175	4	— 6	— 17	— 8 — 10	— 6 — 9	— 3 — 3	— 1 + 1	— 1 + 3	— 2 + 2
687	25°36′ S	2	48°16′ E	2	4525	4	— 26	+ 28	+ 6 — 15	+ 11 — 11	+ 20 + 4	+ 35 + 28	+ 48 + 44	+ 57 + 57
688	20°09′.50 S	0.05	57°29′.88 E	0.05	Maurit.	2	+ 269	+ 106	+ 156 + 192	+ 150 + 183	+ 137 + 162	+ 106 + 120	+ 83 + 93	+ 67 + 75
689	20°39′ S	1	57°15′ E	1	2860	4	+ 7	— 22	+ 7 + 9	+ 9 + 14	+ 10 + 20	— 2 + 7	— 14 — 7	— 25 — 19
690	21°31′ S	2	57°30′ E	2	4425	4	+ 10	+ 31	+ 36 + 21	+ 42 + 31	+ 46 + 42	+ 51 + 52	+ 51 + 54	+ 48 + 53
691	22°28′ S	2	57°44′ E	2	4910	5	+ 5	+ 22	+ 19 + 8	+ 23 + 15	+ 22 + 16	+ 25 + 22	+ 31 + 29	+ 38 + 38

Reductions in 0.1 mgal

No.	Topog	Hayford 113.7 km			I.R $T=30$	$R=0$ (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t+c 18-1	I.R. $T=20$	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
673	— 459	+ 40	+ 380	+ 264	+ 16	+ 451	+ 128	+ 454	+ 128	+ 471	+ 129	+ 492	+ 140	+ 463	+ 166	+ 391	+ 228
					+ 10	+ 454	+ 83	+ 459	+ 83	+ 490	+ 83	+ 530	+ 91	+ 506	+ 114	+ 423	+ 184
674	— 17	+ 26	— 122	+ 136	+ 10	— 156	+ 60	— 161	+ 60	— 168	+ 60	— 161	+ 59	— 146	+ 52	— 123	+ 42
					+ 5	— 149	+ 37	— 158	+ 37	— 180	+ 37	— 177	+ 35	— 160	+ 30	— 134	+ 14
674a	+ 825	+ 23	— 449	+ 139	+ 8	— 526	+ 60	— 528	+ 60	— 524	+ 60	— 503	+ 58	— 464	+ 53	— 389	+ 42
					+ 4	— 561	+ 39	— 561	+ 39	— 569	+ 39	— 550	+ 36	— 508	+ 33	— 422	+ 16
674b	+1215	+ 16	— 795	+ 88	+ 3	— 929	+ 28	— 934	+ 28	— 923	+ 26	— 883	+ 18	— 810	— 7	— 683	— 57
					+ 1	—1001	+ 13	— 990	+ 14	—1000	+ 12	— 969	+ 6	— 893	— 18	— 743	— 81
675	— 774	+ 42	+ 630	+ 267	+ 17	+ 751	+ 133	+ 751	+ 133	+ 766	+ 137	+ 786	+ 149	+ 740	+ 187	+ 627	+ 273
					+ 10	+ 771	+ 86	+ 774	+ 86	+ 809	+ 89	+ 849	+ 95	+ 811	+ 126	+ 675	+ 230
676	—1794	+ 52	+1213	+ 406	+ 22	+1502	+ 202	+1488	+ 202	+1478	+ 206	+1434	+ 229	+1321	+ 295	+1102	+ 449
					+ 12	+1642	+ 127	+1622	+ 127	+1611	+ 130	+1559	+ 143	+1449	+ 200	+1190	+ 378
677	—1362	+ 58	+1089	+ 574	+ 25	+1274	+ 269	+1276	+ 271	+1299	+ 279	+1330	+ 311	+1311	+ 412	+1137	+ 668
					+ 13	+1303	+ 162	+1316	+ 162	+1362	+ 166	+1412	+ 189	+1423	+ 269	+1222	+ 561
678	—2779	+ 64	+1795	+ 635	+ 26	+2294	+ 291	+2261	+ 293	+2212	+ 301	+2111	+ 334	+1957	+ 442	+1643	+ 721
					+ 13	+2537	+ 171	+2524	+ 171	+2436	+ 176	+2290	+ 198	+2148	+ 284	+1773	+ 596
679	—3425	+ 73	+2361	+ 695	+ 28	+2985	+ 310	+2966	+ 312	+2976	+ 320	+2905	+ 359	+2678	+ 486	+2223	+ 817
					+ 15	+3214	+ 181	+3208	+ 181	+3218	+ 186	+3153	+ 212	+2944	+ 312	+2413	+ 689
680	—3420	+ 77	+2356	+ 762	+ 29	+2951	+ 329	+2928	+ 331	+2916	+ 342	+2878	+ 385	+2705	+ 531	+2273	+ 931
					+ 15	+3179	+ 187	+3166	+ 188	+3159	+ 193	+3103	+ 222	+2967	+ 336	+2465	+ 792
681	—3150	+ 74	+2182	+ 751	+ 28	+2720	+ 325	+2695	+ 327	+2691	+ 338	+2655	+ 379	+2501	+ 520	+2105	+ 897
					+ 15	+2942	+ 186	+2928	+ 187	+2902	+ 193	+2859	+ 218	+2741	+ 329	+2276	+ 756
682	—2928	+ 67	+1953	+ 643	+ 27	+2463	+ 295	+2430	+ 297	+2402	+ 305	+2334	+ 341	+2182	+ 453	+1835	+ 748
					+ 15	+2713	+ 172	+2678	+ 172	+2618	+ 177	+2526	+ 201	+2391	+ 294	+1980	+ 628
683	—2586	+ 58	+1643	+ 570	+ 24	+2099	+ 265	+2072	+ 267	+2047	+ 274	+1937	+ 301	+1744	+ 388	+1441	+ 602
					+ 13	+2326	+ 161	+2296	+ 161	+2264	+ 166	+2122	+ 185	+1922	+ 254	+1557	+ 496
684	— 129	+ 45	+ 347	+ 515	+ 18	+ 370	+ 239	+ 383	+ 239	+ 411	+ 244	+ 493	+ 264	+ 527	+ 325	+ 473	+ 467
					+ 11	+ 330	+ 146	+ 344	+ 146	+ 391	+ 149	+ 507	+ 163	+ 568	+ 211	+ 506	+ 368
685	— 994	+ 42	+ 468	+ 542	+ 17	+ 572	+ 247	+ 549	+ 247	+ 517	+ 253	+ 484	+ 272	+ 448	+ 329	+ 383	+ 465
					+ 9	+ 680	+ 149	+ 640	+ 149	+ 578	+ 152	+ 524	+ 166	+ 492	+ 210	+ 413	+ 356
686	—1553	+ 52	+1028	+ 581	+ 20	+1288	+ 265	+1266	+ 265	+1231	+ 272	+1187	+ 297	+1107	+ 374	+ 935	+ 560
					+ 12	+1423	+ 159	+1408	+ 159	+1349	+ 162	+1289	+ 181	+1213	+ 243	+1010	+ 449
687	—3033	+ 60	+1807	+ 631	+ 24	+2401	+ 287	+2349	+ 289	+2258	+ 296	+2076	+ 326	+1854	+ 418	+1530	+ 654
					+ 14	+2740	+ 173	+2694	+ 173	+2537	+ 178	+2279	+ 198	+2043	+ 275	+1654	+ 538
688	— 117	+ 65	+ 871	+ 806	+ 26	+ 883	+ 343	+ 935	+ 345	+1063	+ 353	+1332	+ 392	+1435	+ 514	+1283	+ 826
					+ 14	+ 680	+ 194	+ 765	+ 194	+ 971	+ 201	+1364	+ 225	+1547	+ 320	+1375	+ 670
689	—1921	+ 65	+1327	+ 822	+ 26	+1551	+ 348	+1524	+ 350	+1503	+ 359	+1585	+ 398	+1586	+ 520	+1376	+ 843
					+ 14	+1692	+ 197	+1644	+ 197	+1571	+ 204	+1676	+ 230	+1724	+ 325	+1480	+ 682
690	—2855	+ 68	+1750	+ 827	+ 27	+2215	+ 349	+2162	+ 351	+2107	+ 360	+2020	+ 399	+1894	+ 523	+1604	+ 846
					+ 14	+2533	+ 199	+2428	+ 199	+2313	+ 206	+2188	+ 233	+2073	+ 329	+1728	+ 688
691	—3270	+ 74	+2175	+ 850	+ 29	+2743	+ 355	+2707	+ 357	+2702	+ 366	+2633	+ 408	+2437	+ 540	+2032	+ 884
					+ 15	+3020	+ 203	+2951	+ 203	+2935	+ 210	+2853	+ 237	+2674	+ 340	+2200	+ 727

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	Anomalies in milligal. Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
692	23°46′ S	2	58°04′ E	4	4905	7	+ 3	+ 9	+ 8	+ 11	+ 11	+ 10	+ 13	+ 16
									+ 3	+ 4	+ 6	+ 9	+ 11	+ 15
693	24°45′ S	3	58°18′ E	2	5100	6	+ 5	+ 16	+ 13	+ 16	+ 17	+ 20	+ 23	+ 25
									+ 7	+ 8	+ 12	+ 18	+ 21	+ 25
694	26°01′ S	2	58°47′ E	2	5320	6	+ 9	+ 28	+ 20	+ 24	+ 27	+ 32	+ 37	+ 40
									+ 14	+ 15	+ 20	+ 29	+ 34	+ 39
695	26°58′ S	1.5	59°18′ E	3	5960	8	— 37	— 1	— 17	— 9	0	+ 8	+ 13	+ 16
									— 28	— 23	— 8	+ 5	+ 11	+ 15
696	27°43′ S	1.5	60°42′ E	2	4050	6	+ 22	— 1	+ 6	+ 6	+ 2	+ 1	+ 2	+ 3
									+ 11	+ 6	— 1	0	+ 1	+ 4
697	28°16′ S	2	61°49′ E	1.5	4570	6	+ 16	+ 7	+ 19	+ 21	+ 19	+ 14	+ 14	+ 14
									+ 15	+ 21	+ 19	+ 15	+ 14	+ 16
698	29°16′ S	2	63°41′ E	2	5020	5	+ 4	+ 8	+ 13	+ 15	+ 13	+ 13	+ 15	+ 18
									+ 7	+ 11	+ 10	+ 12	+ 15	+ 19
699	29°47′ S	2	65°24′ E	2	4885	5	+ 15	+ 24	+ 24	+ 27	+ 27	+ 30	+ 34	+ 37
									+ 17	+ 20	+ 22	+ 28	+ 33	+ 38
700	29°49′ S	3	67°27′ E	2	4570	4	+ 30	+ 31	+ 36	+ 38	+ 38	+ 39	+ 41	+ 42
									+ 31	+ 32	+ 34	+ 38	+ 40	+ 43
701	29°51′ S	2	69°18′ E	2	4270	4	+ 35	+ 28	+ 36	+ 39	+ 38	+ 36	+ 36	+ 36
									+ 33	+ 36	+ 37	+ 37	+ 37	+ 38
702	29°53′ S	2	71°26′ E	2	3600	4	+ 37	+ 6	+ 22	+ 22	+ 17	+ 11	+ 10	+ 9
									+ 28	+ 26	+ 19	+ 12	+ 10	+ 11
703	30°39′ S	1	91°11′ E	1	1605	6	+ 65	— 34	+ 1	— 2	— 14	— 29	— 37	— 44
									+ 26	+ 19	— 1	— 22	— 32	— 38
704	31°49′ S	1.5	106°42′ E	2	5120	6	— 8	+ 1	+ 3	+ 6	+ 8	+ 11	+ 13	+ 14
									— 3	— 2	+ 4	+ 10	+ 13	+ 15
705	31°55′ S	1	108°34′ E	2	5355	8	— 26	— 8	— 14	— 9	— 5	0	+ 3	+ 4
									— 21	— 20	— 11	— 2	+ 2	+ 5
706	31°55′ S	1	110°19′ E	2	5130	7	— 13	+ 1	— 3	+ 1	+ 2	+ 4	+ 5	+ 5
									— 8	— 7	— 3	+ 2	+ 3	+ 5
707	31°52′ S	1.5	112°18′ E	1	5095	5	— 25	+ 1	— 16	— 13	— 14	— 12	— 6	+ 3
									— 23	— 23	— 23	— 19	— 13	— 2
708	31°52′ S	1.5	113°59′ E	1	4560	5	— 31	+ 31	+ 3	+ 8	+ 13	+ 33	+ 52	+ 68
									— 19	— 14	— 6	+ 21	+ 46	+ 66
709	32°02′.80 S	0.01	115°44′.60 E	0.01	Free-mantle	3	— 81	— 121	— 96	— 95	— 96	— 99	— 107	— 115
									— 87	— 87	— 86	— 90	— 98	— 107
709a	31°58′.57 S	—	115°48′.85 E	—	—11	4	— 102	— 145	— 120	— 121	— 121	— 124	— 130	— 139
									— 113	— 113	— 112	— 115	— 122	— 131
709b	31°52′.52 S	—	116°19′.12 E	—	—278	4	+ 11	— 42	— 17	— 17	— 18	— 22	— 27	— 35
									— 6	— 7	— 8	— 13	— 18	— 26
709c	31°53′.42 S	—	116°46′.10 E	—	—177	4	— 6	— 40	— 16	— 16	— 16	— 17	— 20	— 25
									— 8	— 8	— 7	— 8	— 12	— 16

No.	Topog	Reductions in 0.1 mgal																	
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t + c 18-1	I.R. $T=20$	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
692	—3375	+ 79	+2327	+ 909	+ 30	+2919	+ 372	+2894	+ 374	+2884	+ 385	+2832	+ 430	+2662	+ 581	+2238	+ 981
					+ 15	+3157	+ 207	+3144	+ 208	+3115	+ 215	+3053	+ 244	+2920	+ 357	+2426	+ 814
693	—3501	+ 80	+2374	+ 940	+ 30	+3011	+ 382	+2976	+ 384	+2953	+ 395	+2878	+ 440	+2699	+ 596	+2266	+1010
					+ 15	+3255	+ 211	+3242	+ 212	+3196	+ 219	+3106	+ 248	+2960	+ 366	+2457	+ 834
694	—3651	+ 81	+2435	+ 947	+ 30	+3123	+ 384	+3082	+ 386	+3044	+ 397	+2944	+ 443	+2747	+ 597	+2302	+1010
					+ 15	+3372	+ 212	+3365	+ 213	+3302	+ 220	+3184	+ 249	+3016	+ 367	+2498	+ 837
695	—3886	+ 82	+2488	+ 957	+ 30	+3273	+ 385	+3191	+ 387	+3091	+ 398	+2958	+ 444	+2746	+ 606	+2298	+1028
					+ 15	+3566	+ 214	+3517	+ 215	+3363	+ 222	+3203	+ 252	+3016	+ 375	+2494	+ 858
696	—3024	+ 79	+2237	+ 938	+ 29	+2772	+ 382	+2770	+ 384	+2803	+ 395	+2766	+ 439	+2606	+ 592	+2193	+ 993
					+ 15	+2902	+ 213	+2953	+ 214	+3014	+ 221	+2982	+ 250	+2859	+ 364	+2376	+ 818
697	—3085	+ 79	+2152	+ 939	+ 30	+2645	+ 379	+2620	+ 381	+2637	+ 392	+2636	+ 436	+2488	+ 584	+2095	+ 980
					+ 15	+2868	+ 209	+2811	+ 210	+2824	+ 217	+2838	+ 246	+2728	+ 359	+2266	+ 804
698	—3306	+ 79	+2256	+ 934	+ 31	+2809	+ 381	+2783	+ 383	+2794	+ 394	+2747	+ 438	+2576	+ 585	+2163	+ 975
					+ 15	+3049	+ 209	+3010	+ 210	+3017	+ 217	+2967	+ 246	+2826	+ 357	+2342	+ 799
699	—3343	+ 80	+2257	+ 918	+ 31	+2843	+ 375	+2814	+ 377	+2803	+ 388	+2733	+ 431	+2551	+ 576	+2138	+ 958
					+ 15	+3102	+ 209	+3070	+ 210	+3043	+ 217	+2958	+ 243	+2798	+ 355	+2314	+ 787
700	—3144	+ 80	+2145	+ 907	+ 30	+2686	+ 371	+2663	+ 373	+2653	+ 384	+2597	+ 426	+2437	+ 568	+2048	+ 945
					+ 15	+2915	+ 208	+2899	+ 209	+2876	+ 216	+2803	+ 242	+2672	+ 353	+2216	+ 779
701	—2937	+ 80	+2036	+ 893	+ 29	+2526	+ 368	+2499	+ 370	+2499	+ 381	+2471	+ 423	+2333	+ 562	+1967	+ 931
					+ 14	+2738	+ 207	+2709	+ 208	+2693	+ 215	+2663	+ 241	+2554	+ 349	+2126	+ 766
702	—2570	+ 80	+1925	+ 873	+ 30	+2331	+ 359	+2326	+ 361	+2366	+ 372	+2385	+ 413	+2269	+ 546	+1921	+ 904
					+ 15	+2443	+ 204	+2456	+ 205	+2519	+ 212	+2563	+ 238	+2482	+ 342	+2072	+ 744
703	—1189	+ 76	+1284	+ 815	+ 29	+1452	+ 345	+1489	+ 347	+1594	+ 355	+1711	+ 392	+1670	+ 509	+1436	+ 810
					+ 15	+1365	+ 200	+1433	+ 200	+1626	+ 205	+1816	+ 228	+1819	+ 324	+1545	+ 658
704	—3521	+ 91	+2355	+ 983	+ 33	+2990	+ 392	+2951	+ 394	+2922	+ 405	+2844	+ 450	+2670	+ 608	+2243	+1025
					+ 16	+3244	+ 215	+3226	+ 216	+3165	+ 223	+3069	+ 252	+2926	+ 370	+2431	+ 842
705	—3638	+ 91	+2411	+ 955	+ 32	+3099	+ 384	+3049	+ 386	+2997	+ 397	+2907	+ 442	+2712	+ 601	+2278	+1024
					+ 16	+3359	+ 211	+3345	+ 212	+3255	+ 219	+3131	+ 247	+2976	+ 367	+2469	+ 847
706	—3530	+ 91	+2393	+ 903	+ 33	+3022	+ 370	+2986	+ 372	+2963	+ 383	+2900	+ 428	+2731	+ 587	+2299	+1014
					+ 16	+3262	+ 206	+3248	+ 207	+3203	+ 214	+3129	+ 243	+2997	+ 363	+2490	+ 848
707	—3488	+ 86	+2407	+ 736	+ 32	+3039	+ 324	+3014	+ 326	+3012	+ 336	+2948	+ 376	+2751	+ 511	+2301	+ 872
					+ 16	+3265	+ 188	+3260	+ 189	+3256	+ 194	+3187	+ 220	+3019	+ 329	+2495	+ 745
708	—3054	+ 67	+1825	+ 541	+ 26	+2435	+ 251	+2392	+ 251	+2334	+ 256	+2118	+ 282	+1840	+ 360	+1492	+ 550
					+ 14	+2761	+ 154	+2715	+ 154	+2630	+ 154	+2348	+ 174	+2035	+ 240	+1619	+ 456
709	— 6	+ 44	— 9	+ 369	+ 17	— 38	+ 172	— 40	+ 172	— 40	+ 174	— 14	+ 185	+ 30	+ 214	+ 49	+ 282
					+ 8	— 44	+ 106	— 46	+ 106	— 57	+ 107	— 31	+ 115	+ 28	+ 140	+ 49	+ 212
709a	+ 8	+ 44	+ 8	+ 368	+ 17	— 10	+ 172	— 9	+ 172	— 8	+ 174	+ 11	+ 185	+ 45	+ 214	+ 59	+ 282
					+ 8	— 17	+ 106	— 17	+ 106	— 20	+ 107	— 4	+ 115	+ 45	+ 139	+ 60	+ 212
709b	+ 312	+ 40	— 164	+ 340	+ 15	— 206	+ 155	— 203	+ 155	— 191	+ 156	— 162	+ 164	— 124	+ 180	— 91	+ 219
					+ 7	— 244	+ 97	— 240	+ 97	— 226	+ 97	— 185	+ 101	— 140	+ 115	— 102	+ 150
709c	+ 192	+ 37	— 207	+ 314	+ 13	— 247	+ 139	— 247	+ 139	— 247	+ 140	— 238	+ 143	— 213	+ 147	— 175	+ 157
					+ 6	— 267	+ 85	— 264	+ 85	— 269	+ 85	— 264	+ 88	— 234	+ 100	— 193	+ 91

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
											Anomalies in milligal. Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
709d	32°00′.60	S	—	117°23′.87	E	—	—250	4	+ 3	— 29	— 8 — 3	— 8 — 3	— 7 — 1	— 7 0	— 7 — 1	— 10 — 2
709e	31°52′.75	S	—	118°08′.68	E	—	—282	4	— 7	— 37	— 19 — 14	— 19 — 14	— 18 — 13	— 18 — 12	— 18 — 12	— 19 — 13
709f	31°28′.85	S	—	118°16′.52	E	—	—320	4	— 2	— 33	— 15 — 10	— 15 — 10	— 15 — 9	— 15 — 9	— 16 — 10	— 16 — 10
709g	31°39′.25	S	—	116°40′.08	E	—	—151	4	+ 16	— 17	+ 7 + 15	+ 8 + 15	+ 7 + 15	+ 5 + 14	+ 4 + 12	— 1 + 8
710	31°57′	S	1	115°05′	E	1.5	1120	8	— 83	— 103	— 84 — 79	— 83 — 78	— 83 — 78	— 87 — 82	— 91 — 86	— 95 — 91
711	30°00′	S	1.5	113°48′	E	1.5	2900	5	— 49	— 23	— 26 — 35	— 23 — 31	— 20 — 25	— 17 — 18	— 12 — 13	— 8 — 8
712	25°19′	S	1.5	112°25′	E	1.5	100	6	+ 41	— 26	+ 5 + 17	+ 4 + 17	+ 2 + 14	— 5 + 7	— 16 — 6	— 28 — 19
713	23°42′	S	2	112°54′	E	1.5	160	6	+ 16	— 53	— 24 — 11	— 25 — 11	— 28 — 15	— 38 — 27	— 49 — 41	— 60 — 52
714	22°50′	S	2	112°25′	E	1.5	1670	3	+ 13	— 57	— 46 — 25	— 50 — 33	— 63 — 60	— 68 — 69	— 63 — 63	— 59 — 57
715	21°50′	S	1.5	111°53′	E	1.5	4970	3	— 36	— 6	— 24 — 32	— 22 — 31	— 24 — 32	— 22 — 31	— 12 — 21	+ 4 — 1
716	20°48′	S	2	111°20′	E	2	2505	5	— 15	— 118	— 83 — 45	— 91 — 56	— 117 — 100	— 146 — 144	— 155 — 158	— 154 — 160
717	19°21′	S	1.5	111°39′	E	1.5	2392	3	— 38	— 45	— 46 — 48	— 44 — 48	— 46 — 50	— 49 — 51	— 51 — 54	— 51 — 52
718	18°08′	S	1	112°02′	E	1.5	4800	4	0	— 9	— 1 — 2	0 — 2	— 4 — 6	— 10 — 11	— 13 — 16	— 15 — 17
719	16°51′	S	1	112°25′	E	2	4610	4	— 31	— 61	— 41 — 35	— 42 — 34	— 51 — 48	— 63 — 63	— 68 — 70	— 73 — 74
720	15°38′	S	1.5	112°43′	E	1.5	4755	6	— 47	— 61	— 51 — 49	— 51 — 51	— 56 — 58	— 60 — 61	— 63 — 65	— 66 — 67
721	14°33′	S	1.5	113°02′	E	2	3800	2	+ 18	— 38	— 11 + 7	— 14 + 3	— 28 — 21	— 44 — 43	— 51 — 53	— 56 — 58
722	13°41′	S	1.5	113°15′	E	1	5280	6	+ 1	+ 2	+ 3 + 1	+ 4 — 1	+ 1 — 4	0 — 5	— 2 — 7	— 2 — 6
723	12°51′	S	1.5	113°27′	E	1.5	5580	3	0	+ 13	+ 8 + 5	+ 11 + 5	+ 8 + 2	+ 7 + 1	+ 8 + 1	+ 9 + 3
724	8°12′.5	S	0.1	114°24′.1	E	0.1	Ban- joew.	4	+ 10	— 28	0 + 13	0 + 13	— 3 + 11	— 13 — 1	— 29 — 17	— 42 — 33
725	49°37′	N	1	00°29′	W	1	45	3	+ 65	+ 64	+ 67 + 66	+ 67 + 67	+ 68 + 68	+ 69 + 70	+ 70 + 71	+ 71 + 72
726	48°29′.5	N	1	05°27′.5	W	1	105	6	+ 31	+ 10	+ 22 + 25	+ 21 + 25	+ 21 + 25	+ 20 + 25	+ 18 + 23	+ 13 + 18

No.	Topog	Reductions in 0.1 mgal																
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I R.	Comp A-0_2	t + c 18-1	I.R. $T=20$	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
709d	+ 283	+ 35	— 238	+ 239	+ 12	— 279	+ 95	— 283	+ 95	— 286	+ 95	— 289	+ 92	— 274	+ 82	— 232	+ 62
					+ 5	— 287	+ 59	— 289	+ 59	— 305	+ 59	— 215	+ 57	— 300	+ 49	— 253	+ 18
709e	+ 320	+ 35	— 242	+ 190	+ 11	— 286	+ 73	— 289	+ 73	— 290	+ 73	— 291	+ 68	— 272	+ 51	— 232	+ 21
					+ 5	— 300	+ 42	— 300	+ 42	— 309	+ 42	— 316	+ 37	— 298	+ 23	— 251	— 15
709f	+ 362	+ 34	— 260	+ 175	+ 11	— 308	+ 65	— 309	+ 65	— 308	+ 65	— 304	+ 59	— 280	+ 42	— 239	+ 8
					+ 5	— 324	+ 38	— 323	+ 38	— 332	+ 38	— 330	+ 33	— 308	+ 19	— 260	— 23
709g	+ 172	+ 37	— 193	+ 314	+ 13	— 234	+ 139	— 233	+ 139	— 234	+ 140	— 226	+ 143	— 209	+ 147	— 175	+ 157
					+ 6	— 248	+ 85	— 249	+ 85	— 254	+ 85	— 247	+ 88	— 230	+ 90	— 192	+ 91
710	— 818	+ 53	+ 513	+ 450	+ 20	+ 593	+ 211	+ 586	+ 211	+ 584	+ 215	+ 604	+ 233	+ 595	+ 287	+ 517	+ 405
					+ 10	+ 638	+ 133	+ 622	+ 133	+ 617	+ 136	+ 647	+ 147	+ 650	+ 190	+ 558	+ 325
711	—2066	+ 61	+1258	+ 491	+ 25	+1575	+ 232	+1548	+ 232	+1511	+ 237	+1454	+ 262	+1336	+ 336	+1120	+ 513
					+ 13	+1762	+ 146	+1724	+ 146	+1660	+ 149	+1582	+ 165	+1465	+ 226	+1209	+ 431
712	— 77	+ 49	+ 185	+ 515	+ 19	+ 184	+ 239	+ 186	+ 239	+ 203	+ 245	+ 253	+ 265	+ 305	+ 323	+ 291	+ 460
					+ 10	+ 159	+ 146	+ 165	+ 146	+ 184	+ 149	+ 249	+ 163	+ 323	+ 210	+ 310	+ 360
713	— 142	+ 51	+ 286	+ 495	+ 20	+ 289	+ 233	+ 296	+ 233	+ 321	+ 237	+ 402	+ 257	+ 455	+ 317	+ 421	+ 459
					+ 9	+ 254	+ 144	+ 263	+ 144	+ 297	+ 147	+ 403	+ 160	+ 489	+ 211	+ 449	+ 367
714	—1291	+ 64	+1328	+ 601	+ 26	+1575	+ 276	+1617	+ 278	+1741	+ 285	+1760	+ 312	+1621	+ 401	+1353	+ 627
					+ 14	+1489	+ 165	+1575	+ 165	+1833	+ 170	+1908	+ 189	+1779	+ 261	+1461	+ 513
715	—3490	+ 80	+2400	+ 712	+ 30	+3020	+ 317	+3001	+ 319	+3009	+ 327	+2957	+ 364	+2736	+ 482	+2271	+ 790
					+ 15	+3246	+ 185	+3242	+ 185	+3247	+ 190	+3206	+ 214	+3008	+ 312	+2465	+ 658
716	—1909	+ 87	+2026	+ 827	+ 31	+2208	+ 350	+2290	+ 352	+2535	+ 363	+2780	+ 407	+2720	+ 561	+2319	+ 948
					+ 15	+1992	+ 197	+2102	+ 198	+2544	+ 203	+2952	+ 233	+2974	+ 352	+2514	+ 827
717	—3326	+ 87	+2402	+ 904	+ 32	+3000	+ 370	+2986	+ 372	+2992	+ 383	+2975	+ 429	+2827	+ 594	+2384	+1038
					+ 15	+3198	+ 208	+3206	+ 209	+3215	+ 216	+3199	+ 246	+3100	+ 372	+2588	+ 866
718	—3384	+ 89	+2436	+ 944	+ 31	+2983	+ 379	+2970	+ 381	+3001	+ 392	+3007	+ 442	+2869	+ 611	+2427	+1079
					+ 15	+3182	+ 210	+3174	+ 211	+3214	+ 218	+3233	+ 249	+3148	+ 381	+2635	+ 908
719	—3087	+ 88	+2332	+ 967	+ 31	+2777	+ 381	+2783	+ 383	+2865	+ 394	+2927	+ 444	+2814	+ 615	+2386	+1087
					+ 16	+2902	+ 208	+2892	+ 209	+3028	+ 216	+3140	+ 247	+3086	+ 379	+2591	+ 910
720	—3321	+ 88	+2406	+ 970	+ 31	+2949	+ 381	+2945	+ 383	+2982	+ 394	+2977	+ 443	+2835	+ 616	+2391	+1084
					+ 14	+3120	+ 211	+3139	+ 212	+3197	+ 219	+3201	+ 250	+3109	+ 382	+2597	+ 909
721	—2747	+ 88	+2255	+ 960	+ 30	+2625	+ 378	+2655	+ 380	+2783	+ 391	+2892	+ 441	+2794	+ 614	+2373	+1088
					+ 14	+2634	+ 209	+2678	+ 210	+2909	+ 217	+3093	+ 248	+3062	+ 381	+2577	+ 916
722	—3645	+ 90	+2588	+ 959	+ 31	+3222	+ 377	+3205	+ 379	+3220	+ 390	+3187	+ 440	+3025	+ 614	+2548	+1094
					+ 14	+3418	+ 210	+3437	+ 211	+3465	+ 218	+3436	+ 250	+3324	+ 383	+2773	+ 924
723	—3841	+ 90	+2682	+ 938	+ 31	+3365	+ 370	+3332	+ 373	+3342	+ 384	+3306	+ 433	+3122	+ 609	+2624	+1101
					+ 14	+3574	+ 206	+3574	+ 207	+3596	+ 215	+3569	+ 247	+3435	+ 382	+2859	+ 934
724	— 40	+ 43	+ 13	+ 360	+ 16	— 57	+ 177	— 53	+ 177	— 32	+ 181	+ 59	+ 197	+ 165	+ 244	+ 189	+ 350
					+ 8	— 112	+ 112	— 105	+ 112	— 89	+ 115	+ 14	+ 124	+ 151	+ 163	+ 178	+ 286
725	— 26	+ 6	— 11	+ 38	+ 1	— 8	+ 14	— 10	+ 15	— 18	+ 15	— 30	+ 14	— 36	+ 9	— 31	— 3
					0	+ 3	+ 10	— 4	+ 10	— 10	+ 10	— 29	+ 9	— 39	+ 4	— 34	— 9
726	— 74	+ 11	+ 48	+ 225	+ 3	+ 60	+ 112	+ 58	+ 112	+ 57	+ 114	+ 56	+ 125	+ 55	+ 145	+ 49	+ 202
					+ 1	+ 64	+ 70	+ 63	+ 70	+ 62	+ 71	+ 57	+ 76	+ 60	+ 94	+ 54	+ 154

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km.					
											$R = 0$ Heisk.	29.05	58.1	116.2	174.3	232.4
727	47°42′	N	1	09°25′	W	1	4112	5	− 60	+ 12	− 20 − 42	− 15 − 33	− 11 − 26	+ 2 − 5	+ 12 + 8	+ 18 + 16
728	47°23′	N	2	10°58′	W	2	4505	6	− 28	+ 23	− 11 − 24	− 9 − 28	− 9 − 21	− 5 − 16	+ 8 − 1	+ 24 + 19
729	46°35′	N	3	12°08′	W	3	4732	9	− 6	+ 37	+ 9 − 3	+ 11 + 1	+ 11 + 4	+ 12 + 7	+ 13 + 7	+ 16 + 12
730	45°39′	N	3	13°07′	W	3	4620	5	+ 4	+ 37	+ 15 + 7	+ 18 + 10	+ 18 + 13	+ 18 + 16	+ 17 + 15	+ 15 + 14
731	45°31′	N	3	13°16′	W	3	4110	8	+ 30	+ 40	+ 25 + 26	+ 25 + 23	+ 22 + 20	+ 20 + 19	+ 18 + 17	+ 17 + 16
732	44°50′	N	3	14°38′	W	2	4450	7	− 20	+ 2	− 16 − 30	− 14 − 19	− 15 − 19	− 14 − 15	− 14 − 14	− 14 − 13
733	44°06′	N	3	16°10′	W	2	4635	7	+ 26	+ 56	+ 43 + 31	+ 47 + 39	+ 49 + 47	+ 48 + 49	+ 43 + 45	+ 39 + 41
734	43°54′	N	3	16°29′	W	2	3620	7	+ 82	+ 64	+ 64 + 73	+ 63 + 70	+ 57 + 60	+ 50 + 51	+ 45 + 46	+ 41 + 43
735	42°52′	N	3	17°37′	W	2	4570	5	+ 26	+ 45	+ 29 + 25	+ 31 + 27	+ 28 + 26	+ 27 + 26	+ 27 + 26	+ 30 + 29
736	41°53′	N	3	18°33′	W	2	4875	6	− 3	+ 28	+ 6 − 1	+ 8 + 1	+ 7 + 3	+ 9 + 6	+ 13 + 12	+ 16 + 17
737	41°00′	N	3	19°21′	W	2	5045	4	− 13	+ 22	− 4 − 10	− 2 − 9	− 2 − 8	0 − 3	+ 5 + 3	+ 11 + 10
738	40°21′	N	3	26°28′	W	2	2845	8	+ 37	+ 44	+ 41 + 39	+ 42 + 40	+ 43 + 42	+ 45 + 47	+ 46 + 48	+ 46 + 50
739	39°36′	N	3	27°06′	W	2	1560	5	+ 40	+ 7	+ 18 + 25	+ 18 + 23	+ 15 + 19	+ 13 + 17	+ 11 + 15	+ 7 + 12
740	38°47′.6	N	1	27°36′.3	W	1	1880	4	+ 17	+ 22	+ 41 + 43	+ 43 + 48	+ 44 + 52	+ 39 + 47	+ 30 + 36	+ 20 + 27
741	38°41′.6	N	1	27°40′.1	W	1	1305	5	+ 62	+ 37	+ 60 + 69	+ 60 + 70	+ 58 + 68	+ 49 + 58	+ 39 + 46	+ 30 + 35
742	38°05′	N	1	29°05′	W	1	990	7	+ 65	+ 21	+ 43 + 54	+ 43 + 54	+ 40 + 49	+ 33 + 42	+ 23 + 31	+ 12 + 9
743	37°55′	N	1	29°14′	W	1	380	9	+ 99	+ 14	+ 34 + 51	+ 32 + 46	+ 27 + 36	+ 20 + 28	+ 12 + 19	+ 3 + 10
744	38°52′	N	2	30°29′	W	2	1145	6	+ 86	+ 42	+ 58 + 66	+ 58 + 65	+ 55 + 62	+ 51 + 56	+ 47 + 53	+ 43 + 48
745	38°58′	N	2	30°37′	W	2	1480	6	+ 57	+ 29	+ 43 + 48	+ 43 + 48	+ 42 + 46	+ 40 + 44	+ 38 + 42	+ 34 + 39
746	34°34′	N	2.5	36°25′	W	1.5	2540	5	+ 48	+ 30	+ 44 + 46	+ 45 + 50	+ 44 + 50	+ 37 + 42	+ 29 + 33	+ 22 + 27
747	34°24′	N	2.5	36°25′	W	1.5	1830	5	+ 84	+ 30	+ 46 + 57	+ 46 + 55	+ 42 + 50	+ 34 + 40	+ 25 + 30	+ 18 + 23

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0₂	t + c 18-1	I.R. T=20	Comp A-0₂	t + c 18-1	Comp A-0₂	t + c 18-1	Comp A-0₂	t + c 18-1	Comp A-0₂	t + c 18-1	Comp A-0₂	t + c 18-1	Comp A-0₂	t + c 18-1
727	—2707	+ 37	+1490	+ 464	+ 14	+2066	+ 225	+2019	+ 227	+1967	+ 234	+1811	+ 261	+1628	+ 347	+1352	+ 557
					+ 8	+2380	+ 138	+2286	+ 138	+2200	+ 143	+1989	+ 161	+1792	+ 231	+1462	+ 473
728	—3086	+ 45	+1982	+ 552	+ 17	+2638	+ 261	+2614	+ 263	+2609	+ 271	+2538	+ 303	+2302	+ 403	+1896	+ 658
					+ 9	+2875	+ 158	+2857	+ 158	+2840	+ 163	+2770	+ 185	+2535	+ 267	+2054	+ 556
729	—3220	+ 54	+2073	+ 664	+ 20	+2756	+ 298	+2727	+ 300	+2716	+ 310	+2673	+ 349	+2526	+ 487	+2129	+ 847
					+ 11	+3002	+ 172	+2969	+ 173	+2935	+ 178	+2879	+ 202	+2767	+ 310	+2303	+ 726
730	—3141	+ 56	+2015	+ 743	+ 20	+2678	+ 333	+2645	+ 335	+2637	+ 346	+2597	+ 388	+2461	+ 535	+2083	+ 927
					+ 11	+2922	+ 183	+2882	+ 184	+2847	+ 190	+2794	+ 219	+2694	+ 329	+2252	+ 775
731	—2891	+ 56	+1989	+ 743	+ 20	+2593	+ 333	+2582	+ 335	+2601	+ 346	+2579	+ 388	+2452	+ 535	+2078	+ 927
					+ 11	+2746	+ 183	+2763	+ 184	+2793	+ 190	+2774	+ 219	+2685	+ 329	+2247	+ 775
732	—3051	+ 56	+1994	+ 779	+ 20	+2642	+ 345	+2621	+ 347	+2618	+ 358	+2567	+ 401	+2421	+ 545	+2041	+ 929
					+ 11	+2858	+ 185	+2842	+ 186	+2834	+ 193	+2770	+ 221	+2654	+ 329	+2208	+ 765
733	—3084	+ 56	+1910	+ 820	+ 20	+2543	+ 356	+2496	+ 358	+2467	+ 369	+2435	+ 412	+2330	+ 560	+1982	+ 953
					+ 11	+2832	+ 192	+2746	+ 193	+2668	+ 200	+2613	+ 229	+2547	+ 341	+2139	+ 785
734	—2570	+ 57	+1877	+ 820	+ 20	+2376	+ 356	+2378	+ 358	+2429	+ 369	+2459	+ 412	+2358	+ 560	+2005	+ 953
					+ 11	+2461	+ 192	+2491	+ 193	+2577	+ 200	+2637	+ 229	+2578	+ 341	+2163	+ 785
735	—3138	+ 58	+2074	+ 819	+ 22	+2732	+ 357	+2712	+ 359	+2720	+ 370	+2693	+ 413	+2547	+ 557	+2147	+ 930
					+ 11	+2941	+ 192	+2925	+ 193	+2925	+ 200	+2901	+ 228	+2790	+ 337	+2326	+ 771
736	—3320	+ 58	+2130	+ 827	+ 22	+2853	+ 360	+2826	+ 362	+2822	+ 273	+2762	+ 415	+2573	+ 562	+2153	+ 954
					+ 11	+3100	+ 192	+3076	+ 193	+3054	+ 200	+2989	+ 228	+2822	+ 340	+2332	+ 781
737	—3435	+ 59	+2206	+ 819	+ 23	+2968	+ 358	+2939	+ 360	+2935	+ 371	+2865	+ 413	+2669	+ 559	+2229	+ 946
					+ 11	+3204	+ 191	+3190	+ 192	+3175	+ 199	+3099	+ 227	+2928	+ 339	+2417	+ 774
738	—1953	+ 43	+1239	+ 602	+ 17	+1614	+ 275	+1599	+ 277	+1586	+ 284	+1534	+ 312	+1435	+ 398	+1215	+ 619
					+ 9	+1764	+ 165	+1747	+ 165	+1727	+ 170	+1660	+ 189	+1572	+ 261	+1309	+ 506
739	—1108	+ 37	+ 838	+ 567	+ 15	+1059	+ 259	+1056	+ 259	+1074	+ 266	+1071	+ 291	+1018	+ 368	+ 871	+ 549
					+ 8	+1096	+ 157	+1110	+ 157	+1147	+ 160	+1152	+ 178	+1111	+ 240	+ 940	+ 443
740	—1223	+ 35	+ 587	+ 555	+ 14	+ 711	+ 255	+ 691	+ 255	+ 677	+ 261	+ 706	+ 285	+ 729	+ 355	+ 650	+ 525
					+ 7	+ 799	+ 155	+ 747	+ 155	+ 709	+ 158	+ 739	+ 175	+ 790	+ 232	+ 697	+ 419
741	— 863	+ 35	+ 522	+ 555	+ 14	+ 616	+ 255	+ 615	+ 255	+ 632	+ 261	+ 695	+ 285	+ 721	+ 355	+ 642	+ 525
					+ 7	+ 632	+ 155	+ 619	+ 155	+ 640	+ 158	+ 725	+ 175	+ 782	+ 232	+ 689	+ 419
742	— 689	+ 36	+ 522	+ 574	+ 14	+ 633	+ 262	+ 637	+ 262	+ 661	+ 268	+ 701	+ 293	+ 725	+ 369	+ 648	+ 554
					+ 7	+ 632	+ 159	+ 636	+ 159	+ 678	+ 163	+ 733	+ 180	+ 783	+ 242	+ 794	+ 446
743	— 298	+ 36	+ 540	+ 574	+ 14	+ 672	+ 262	+ 690	+ 262	+ 740	+ 268	+ 778	+ 293	+ 781	+ 369	+ 688	+ 554
					+ 7	+ 611	+ 159	+ 660	+ 159	+ 759	+ 163	+ 823	+ 180	+ 847	+ 242	+ 739	+ 446
744	— 812	+ 35	+ 663	+ 551	+ 14	+ 823	+ 254	+ 828	+ 254	+ 846	+ 260	+ 865	+ 284	+ 834	+ 350	+ 719	+ 512
					+ 7	+ 845	+ 156	+ 856	+ 156	+ 890	+ 159	+ 926	+ 175	+ 910	+ 230	+ 773	+ 408
745	—1027	+ 35	+ 717	+ 551	+ 14	+ 902	+ 254	+ 899	+ 254	+ 906	+ 260	+ 903	+ 284	+ 858	+ 350	+ 733	+ 512
					+ 8	+ 955	+ 156	+ 955	+ 156	+ 968	+ 159	+ 973	+ 175	+ 937	+ 230	+ 792	+ 408
746	—1738	+ 49	+1160	+ 707	+ 19	+1447	+ 313	+1433	+ 315	+1438	+ 323	+1478	+ 355	+1453	+ 460	+1251	+ 727
					+ 11	+1559	+ 185	+1527	+ 185	+1518	+ 190	+1574	+ 213	+1579	+ 297	+1347	+ 591
747	—1336	+ 49	+1119	+ 707	+ 19	+1383	+ 313	+1384	+ 315	+1413	+ 323	+1466	+ 355	+1446	+ 460	+1247	+ 727
					+ 11	+1414	+ 185	+1435	+ 185	+1477	+ 190	+1556	+ 213	+1571	+ 297	+1341	+ 591

Reductions in 0.1 mgal

No.	Latitude φ	m_φ miles	Longitude λ	m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
							Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
									$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
748	33°48′ N	1.5	37°01′ W	1	3090	8	+ 21	+ 22	+ 24 + 22	+ 25 + 24	+ 26 + 25	+ 27 + 28	+ 26 + 28	+ 24 + 28
749	33°52′ N	1.5	38°09′ W	1.5	2600	4	+ 46	+ 20	+ 30 + 35	+ 30 + 35	+ 26 + 30	+ 21 + 24	+ 20 + 22	+ 18 + 22
750	33°54′ N	1.5	39°30′ W	1.5	3742	10	− 20	+ 4	− 1 − 12	+ 2 − 6	+ 6 + 1	+ 13 + 14	+ 18 + 20	+ 16 + 20
751	33°50′ N	1.5	40°59′ W	1.5	2640	13	+ 48	− 1	+ 12 + 24	+ 11 + 20	+ 6 + 12	− 5 − 1	− 12 − 11	− 15 − 11
752	33°58′ N	1.5	42°44′ W	1.5	4560	12	+ 10	+ 31	+ 17 + 11	+ 19 + 11	+ 20 + 12	+ 26 + 23	+ 30 + 29	+ 32 + 33
753	33°58′ N	2	43°57′ W	2	4175	7	+ 19	+ 14	+ 11 + 13	+ 12 + 14	+ 7 + 7	+ 1 0	+ 1 0	+ 4 + 4
754	33°03′ N	2	47°19′ W	2	5100	6	+ 3	+ 23	+ 6 + 3	+ 8 + 2	+ 7 + 2	+ 8 + 6	+ 10 + 7	+ 14 + 12
755	32°51′ N	1.5	49°00′ W	1.5	5420	8	− 8	+ 16	− 4 − 6	− 2 − 7	− 3 − 10	− 2 − 6	+ 4 − 1	+ 9 + 7
756	32°09′ N	1.5	51°56′ W	1.5	5640	8	− 23	0	− 20 − 21	− 18 − 23	− 19 − 25	− 18 − 23	− 16 − 21	− 13 − 16
757	32°02′ N	2.5	53°55′ W	2.5	5600	4	− 1	+ 21	+ 3 + 1	+ 6 + 0	+ 6 0	+ 7 + 3	+ 7 + 2	+ 8 + 5
758	32°01′ N	2.5	54°07′ W	2.5	5630	6	+ 3	+ 26	+ 8 + 6	+ 12 + 5	+ 11 + 5	+ 12 + 8	+ 13 + 8	+ 14 + 11
759	31°56′ N	2.5	55°30′ W	2.5	5530	7	0	+ 18	+ 2 + 2	+ 4 0	+ 3 − 2	+ 3 − 1	+ 4 − 1	+ 6 + 3
760	31°51′ N	2	57°05′ W	2	5565	9	+ 8	+ 30	+ 11 + 10	+ 13 + 8	+ 12 + 5	+ 13 + 8	+ 16 + 9	+ 21 + 17
761	31°50′ N	2	57°21′ W	2	5590	13	− 21	+ 2	− 18 − 19	− 15 − 21	− 16 − 23	− 15 − 20	− 12 − 18	− 7 − 11
762	32°02′ N	3	59°45′ W	3	5310	14	− 8	+ 15	− 1 − 5	+ 3 − 3	+ 3 − 1	+ 5 + 3	+ 7 + 5	+ 9 + 9
763	32°04′ N	3	59°58′ W	3	5098	13	− 12	+ 3	− 9 − 12	− 7 − 12	− 8 − 12	− 8 − 10	− 6 − 8	− 5 − 5
764	32°02′ N	2	62°06′ W	2	4645	9	+ 1	+ 5	0 − 2	+ 1 − 1	− 1 − 3	− 3 − 4	− 2 − 3	− 1 0
765	32°05′ N	1	63°55′ W	1	4515	6	+ 6	+ 16	+ 11 + 4	+ 14 + 7	+ 16 + 11	+ 21 + 23	+ 18 + 20	+ 11 + 14
766	32°17′.47 N	0.01	64°46′.82 W	0.02	Hamilton	3	+ 332	+ 111	+ 169 + 214	+ 162 + 202	+ 143 + 173	+ 101 + 116	+ 75 + 82	+ 59 + 64
767	32°46′ N	1.5	65°27′ W	1.5	4805	2	− 24	− 2	− 13 − 25	− 9 − 21	− 6 − 17	− 1 − 11	− 4 − 13	− 10 − 15
768	33°33′ N	2	67°31′ W	2	5240	4	− 45	− 21	− 41 − 44	− 39 − 44	− 41 − 46	− 42 − 46	− 39 − 43	− 36 − 38

No.	Topog	Reductions in 0.1 mgal																
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4		
		I.R.	Comp $A\text{-}0_2$	t + c 18-1	I.R. $T=20$	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	Comp $A\text{-}0_2$	t + c 18-1	
748	—2117	+51	+1350	+711	+19	+1758	+314	+1738	+316	+1726	+324	+1684	+358	+1585	+461	+1343	+729	
					+10	+1907	+186	+1890	+186	+1878	+191	+1819	+214	+1735	+299	+1448	+594	
749	—1819	+52	+1309	+714	+19	+1649	+312	+1650	+314	+1677	+322	+1693	+353	+1610	+455	+1367	+710	
					+11	+1731	+184	+1737	+184	+1783	+189	+1819	+211	+1759	+294	+1473	+574	
750	—2514	+54	+1460	+756	+21	+1979	+328	+1941	+330	+1895	+338	+1787	+373	+1634	+484	+1368	+766	
					+12	+2235	+191	+2174	+191	+2098	+196	+1948	+219	+1797	+308	+1478	+630	
751	—1900	+61	+1539	+787	+23	+1902	+336	+1910	+338	+1954	+346	+2021	+383	+1977	+500	+1697	+806	
					+13	+1938	+194	+1977	+194	+2052	+199	+2152	+222	+2155	+319	+1826	+655	
752	—3111	+67	+1972	+861	+24	+2660	+357	+2634	+359	+2621	+370	+2521	+411	+2334	+549	+1953	+913	
					+13	+2901	+202	+2882	+203	+2865	+210	+2736	+236	+2562	+344	+2114	+754	
753	—2902	+69	+2015	+868	+25	+2592	+361	+2587	+363	+2625	+374	+2644	+415	+2498	+556	+2105	+922	
					+13	+2744	+202	+2741	+203	+2798	+210	+2847	+236	+2739	+344	+2276	+760	
754	—3499	+74	+2286	+941	+26	+3059	+382	+3038	+384	+3040	+395	+2978	+441	+2803	+597	+2356	+1011	
					+13	+3274	+212	+3280	+213	+3281	+220	+3209	+249	+3077	+368	+2559	+836	
755	—3710	+77	+2416	+973	+27	+3255	+390	+3233	+392	+3233	+403	+3169	+449	+2952	+611	+2467	+1043	
					+14	+3466	+213	+3482	+214	+3492	+221	+3430	+250	+3249	+372	+2683	+859	
756	—3850	+82	+2521	+1017	+28	+3394	+399	+3367	+401	+3368	+412	+3312	+463	+3113	+635	+2611	+1107	
					+13	+3601	+219	+3618	+220	+3631	+227	+3578	+258	+3427	+391	+2845	+922	
757	—3818	+83	+2480	+1039	+28	+3347	+401	+3316	+403	+3310	+414	+3250	+465	+3070	+640	+2581	+1119	
					+13	+3561	+222	+3572	+223	+3567	+230	+3508	+262	+3378	+396	+2812	+934	
758	—3836	+83	+2483	+1039	+28	+3356	+401	+3320	+403	+3310	+414	+3251	+465	+3070	+640	+2582	+1119	
					+13	+3572	+222	+3580	+223	+3571	+230	+3508	+262	+3378	+396	+2813	+934	
759	—3783	+83	+2478	+1039	+28	+3330	+404	+3306	+406	+3307	+417	+3258	+468	+3074	+641	+2583	+1114	
					+13	+3534	+220	+3552	+221	+3563	+228	+3518	+260	+3382	+393	+2814	+926	
760	—3807	+81	+2491	+1018	+28	+3352	+396	+3330	+398	+3330	+409	+3273	+456	+3077	+624	+2579	+1075	
					+13	+3558	+219	+3576	+220	+3593	+227	+3538	+257	+3387	+384	+2810	+892	
761	—3818	+81	+2493	+1018	+28	+3360	+396	+3333	+398	+3334	+409	+3276	+456	+3077	+624	+2579	+1075	
					+13	+3566	+219	+3583	+220	+3597	+227	+3538	+257	+3388	+384	+2810	+892	
762	—3591	+78	+2293	+988	+27	+3096	+393	+3061	+395	+3047	+406	+2983	+452	+2798	+615	+2348	+1049	
					+13	+3336	+215	+3314	+216	+3288	+223	+3220	+252	+3072	+374	+2549	+864	
763	—3496	+78	+2281	+988	+27	+3050	+393	+3026	+395	+3026	+406	+2975	+452	+2794	+615	+2346	+1049	
					+13	+3269	+215	+3266	+216	+3262	+223	+3209	+252	+3068	+374	+2546	+864	
764	—3199	+75	+2125	+959	+26	+2800	+386	+2783	+388	+2796	+399	+2768	+444	+2609	+598	+2194	+1003	
					+13	+3001	+214	+2994	+215	+3008	+222	+2985	+251	+2859	+367	+2375	+825	
765	—3076	+73	+1940	+965	+26	+2613	+386	+2585	+388	+2555	+399	+2459	+445	+2335	+600	+1984	+1015	
					+14	+2864	+214	+2837	+215	+2794	+222	+2645	+251	+2556	+369	+2144	+836	
766	— 214	+75	+1387	+965	+26	+1434	+386	+1500	+388	+1682	+399	+2049	+445	+2153	+601	+1893	+1023	
					+14	+1165	+211	+1293	+212	+1572	+219	+2114	+248	+2331	+366	+2036	+840	
767	—3251	+75	+1998	+953	+27	+2728	+384	+2688	+386	+2643	+397	+2546	+443	+2428	+599	+2066	+1018	
					+14	+3033	+211	+2997	+212	+2949	+219	+2860	+248	+2760	+366	+2310	+838	
768	—3589	+79	+2361	+912	+28	+3147	+374	+3123	+376	+3132	+387	+3100	+433	+2908	+596	+2435	+1034	
					+14	+3358	+203	+3359	+204	+3372	+211	+3349	+240	+3195	+364	+2647	+859	

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T = 30$ km. Lower line: Airy, $T = 20$ km.					
											$R = 0$ Heisk.	29.05	58.1	116.2	174.3	232.4
769	34°09′	N	2.5	69°07′	W	2.5	5345	11	− 29	+ 2	− 22 − 26	− 21 − 27	− 22 − 29	− 21 − 27	− 17 − 22	− 13 − 16
770	34°39′	N	4	70°24′	W	3	5290	4	− 40	+ 2	− 27 − 35	− 23 − 32	− 21 − 27	− 20 − 24	− 18 − 22	− 16 − 18
771	35°23′	N	1	72°41′	W	1.5	4242	7	− 33	− 20	− 28 − 34	− 26 − 32	− 27 − 32	− 30 − 34	− 28 − 33	− 22 − 26
772	35°45′	N	1	73°42′	W	2	3385	4	− 33	− 7	− 26 − 30	− 25 − 31	− 26 − 32	− 23 − 30	− 12 − 16	− 3 − 5
773	36°21′	N	1	74°27′	W	1	2060	6	− 17	+ 7	+ 8 + 2	+ 11 + 8	+ 13 + 14	+ 12 + 15	+ 9 + 11	+ 5 + 8
774	36°39′	N	1	75°03′	W	1	30	8	+ 49	+ 1	+ 18 + 28	+ 18 + 27	+ 15 + 24	+ 8 + 14	0 + 6	− 8 − 4
776	37°20′	N	1	74°30′	W	1	60?	4	+ 29	− 29	− 14 − 8	− 15 − 10	− 17 − 14	− 25 − 22	− 31 − 29	− 37 − 35
777	37°15′	N	1	73°33′	W	1	2596	10	− 42	− 17	− 27 − 33	− 25 − 30	− 24 − 29	− 21 − 23	− 20 − 21	− 16 − 17
778	37°09′.7	N	1	72°28′.3	W	1	3285	12	− 37	− 12	− 27 − 32	− 25 − 28	− 26 − 30	− 27 − 30	− 24 − 28	− 18 − 20
779	37°07′	N	3	71°15′	W	5	3990	13	− 9	+ 25	+ 4 − 6	+ 7 − 2	+ 6 0	+ 5 0	+ 6 + 1	+ 9 + 6
780	37°32′	N	3	68°51′	W	7	4315	8	− 24	− 6	− 26 − 27	− 26 − 29	− 30 − 36	− 33 − 38	− 28 − 33	− 21 − 24
781	37°56′	N	3	66°45′	W	2	4735	7	− 6	+ 21	− 1 − 6	+ 1 − 6	− 2 − 8	− 1 − 7	+ 3 − 2	+ 8 + 5
782	38°28′	N	2	64°04′	W	2	4969	7	− 14	+ 11	− 8 − 13	− 6 − 11	− 8 − 12	− 10 − 14	− 11 − 15	− 10 − 13
783	38°47′	N	2	62°45′	W	1.5	5088	5	− 42	− 13	− 37 − 41	− 36 − 42	− 38 − 44	− 38 − 43	− 36 − 41	− 32 − 36
784	39°05′	N	3	61°11′	W	2	4435	7	+ 31	+ 28	+ 20 + 25	+ 19 + 21	+ 13 + 12	+ 4 + 1	+ 1 − 3	+ 2 − 1
785	39°28′	N	3	59°53′	W	2	5183	8	− 29	0	− 25 − 28	− 24 − 28	− 26 − 33	− 23 − 29	− 20 − 25	− 17 − 20
786	40°08′	N	3	56°49′	W	4	5180	6	− 35	− 6	− 32 − 34	− 30 − 37	− 31 − 38	− 29 − 34	− 27 − 31	− 23 − 26
787	40°09′	N	3	56°17′	W	4	5210	7	+ 7	+ 41	+ 10 + 8	+ 11 + 3	+ 11 + 2	+ 16 + 9	+ 22 + 16	+ 27 + 23
788	40°10′	N	3	53°18′	W	6	5225	6	− 24	+ 6	− 19 − 22	− 17 − 23	− 18 − 24	− 18 − 22	− 15 − 20	− 12 − 15
789	40°10′	N	3	53°00′	W	6	5224	5	− 8	+ 22	− 3 − 6	− 1 − 7	− 2 − 8	− 2 − 6	+ 1 − 4	+ 4 + 1
790	39°40′	N	1.5	48°44′	W	3	5332	8	+ 9	+ 34	+ 6 − 1	+ 8 − 1	+ 8 − 1	+ 16 + 9	+ 26 + 22	+ 35 + 34

No.	Topog	Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0_2	t + c 18-1	I.R. $T=20$	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
769	—3664	+ 77	+2384	+ 889	+ 28 + 14	+3203 +3418	+ 365 + 201	+3188 +3425	+ 367 + 202	+3185 +3436	+ 377 + 209	+3127 +3382	+ 424 + 239	+2926 +3215	+ 587 + 361	+2450 +2663	+1023 + 857
770	—3580	+ 75	+2268	+ 820	+ 27 + 14	+3070 +3318	+ 349 + 193	+3028 +3294	+ 351 + 194	+2998 +3235	+ 362 + 201	+2942 +3173	+ 407 + 230	+2768 +3038	+ 564 + 349	+2326 +2522	+ 984 + 825
771	—2913	+ 66	+2058	+ 658	+ 24 + 14	+2538 +2737	+ 296 + 173	+2519 +2718	+ 298 + 173	+2524 +2714	+ 306 + 178	+2510 +2705	+ 345 + 203	+2366 +2595	+ 470 + 304	+1988 +2150	+ 795 + 674
772	—2338	+ 53	+1528	+ 502	+ 20 + 12	+2006 +2152	+ 238 + 145	+1996 +2158	+ 240 + 145	+2006 +2187	+ 245 + 150	+1942 +2130	+ 274 + 167	+1743 +1920	+ 362 + 240	+1437 +1553	+ 584 + 491
773	—1382	+ 42	+ 718	+ 396	+ 16 + 9	+ 921 +1057	+ 196 + 125	+ 894 +1003	+ 196 + 125	+ 863 + 936	+ 200 + 128	+ 851 + 910	+ 223 + 140	+ 822 + 897	+ 287 + 192	+ 710 + 765	+ 433 + 363
774	— 28	+ 34	+ 147	+ 322	+ 12 + 8	+ 160 + 125	+ 162 + 105	+ 164 + 135	+ 162 + 105	+ 187 + 164	+ 166 + 108	+ 247 + 251	+ 181 + 117	+ 278 + 299	+ 225 + 153	+ 254 + 273	+ 329 + 272
776	— 57	+ 35	+ 283	+ 319	+ 13 + 8	+ 313 + 314	+ 161 + 104	+ 318 + 332	+ 161 + 104	+ 340 + 370	+ 165 + 107	+ 399 + 444	+ 181 + 117	+ 418 + 470	+ 228 + 154	+ 369 + 409	+ 333 + 276
777	—1764	+ 46	+1075	+ 398	+ 17 + 10	+1398 +1540	+ 197 + 126	+1380 +1512	+ 197 + 126	+1365 +1492	+ 201 + 129	+1317 +1422	+ 224 + 142	+1238 +1352	+ 289 + 195	+1049 +1132	+ 440 + 371
778	—2251	+ 55	+1467	+ 477	+ 21 + 12	+1893 +2041	+ 232 + 143	+1878 +2004	+ 234 + 143	+1878 +2025	+ 239 + 147	+1858 +2007	+ 268 + 164	+1746 +1913	+ 352 + 237	+1475 +1589	+ 567 + 482
779	—2722	+ 61	+1759	+ 559	+ 23 + 13	+2309 +2522	+ 264 + 160	+2277 +2481	+ 266 + 160	+2273 +2453	+ 273 + 165	+2253 +2429	+ 309 + 188	+2122 +2325	+ 425 + 282	+1791 +1932	+ 727 + 630
780	—3009	+ 67	+2072	+ 689	+ 25 + 14	+2698 +2851	+ 310 + 178	+2695 +2869	+ 312 + 179	+2726 +2926	+ 322 + 184	+2711 +2930	+ 360 + 209	+2532 +2775	+ 493 + 314	+2111 +2286	+ 841 + 710
781	—3267	+ 70	+2175	+ 750	+ 25 + 14	+2865 +3073	+ 325 + 183	+2850 +3074	+ 327 + 184	+2859 +3088	+ 338 + 189	+2815 +3043	+ 379 + 217	+2630 +2886	+ 521 + 328	+2202 +2387	+ 901 + 760
782	—3392	+ 74	+2240	+ 825	+ 26 + 14	+2954 +3174	+ 348 + 193	+2932 +3158	+ 350 + 194	+2942 +3162	+ 361 + 200	+2925 +3148	+ 405 + 229	+2773 +3041	+ 563 + 351	+2335 +2534	+ 989 + 832
783	—3510	+ 74	+2320	+ 828	+ 25 + 13	+3083 +3290	+ 353 + 195	+3066 +3300	+ 355 + 196	+3079 +3316	+ 366 + 203	+3038 +3279	+ 411 + 232	+2853 +3132	+ 569 + 353	+2392 +2598	+ 994 + 834
784	—3138	+ 74	+2242	+ 851	+ 26 + 13	+2866 +2990	+ 358 + 198	+2870 +3023	+ 360 + 199	+2926 +3109	+ 371 + 206	+2967 +3188	+ 416 + 235	+2835 +3109	+ 576 + 357	+2394 +2600	+1005 + 843
785	—3595	+ 74	+2364	+ 868	+ 26 + 13	+3167 +3373	+ 363 + 201	+3152 +3368	+ 365 + 202	+3158 +3409	+ 376 + 208	+3091 +3341	+ 422 + 238	+2897 +3184	+ 583 + 361	+2429 +2641	+1018 + 855
786	—3617	+ 73	+2380	+ 873	+ 26 + 13	+3193 +3396	+ 362 + 198	+3174 +3421	+ 364 + 199	+3173 +3426	+ 375 + 206	+3111 +3362	+ 421 + 235	+2921 +3209	+ 583 + 359	+2446 +2660	+1019 + 852
787	—3710	+ 73	+2429	+ 873	+ 25 + 13	+3295 +3492	+ 362 + 198	+3278 +3542	+ 364 + 199	+3270 +3545	+ 375 + 206	+3174 +3440	+ 421 + 235	+2953 +3250	+ 583 + 359	+2466 +2682	+1019 + 852
788	—3581	+ 72	+2344	+ 868	+ 25 + 13	+3138 +3350	+ 365 + 199	+3116 +3357	+ 367 + 200	+3120 +3364	+ 378 + 207	+3068 +3314	+ 424 + 236	+2881 +3166	+ 583 + 359	+2417 +2628	+1019 + 850
789	—3581	+ 72	+2344	+ 868	+ 25 + 12	+3138 +3350	+ 365 + 199	+3116 +3357	+ 367 + 200	+3120 +3364	+ 378 + 207	+3068 +3314	+ 424 + 236	+2881 +3166	+ 583 + 359	+2417 +2628	+1019 + 850
790	—3492	+ 68	+2297	+ 873	+ 24 + 12	+3138 +3376	+ 364 + 201	+3112 +3376	+ 366 + 202	+3098 +3371	+ 377 + 209	+2982 +3242	+ 419 + 235	+2733 +3008	+ 563 + 347	+2266 +2460	+ 944 + 773

Reductions in 0.1 mgal

No.	Latitude φ	mφ miles	Longitude λ	mλ miles	Depth meters	m_g mgal	Free Air	Hayf. 113.7	R = 0 Heisk.	29.05	58.1	116.2	174.3	232.4
							Anomalies in milligal		Upper line: Airy, T = 30 km. Lower line: Airy, T = 20 km.					
791	39°42′ N	1.5	48°29′ W	2.5	5327	5	+ 1	+ 26	− 2	0	0	+ 8	+ 18	+ 27
									− 9	− 9	− 9	+ 1	+ 14	+ 26
792	39°45′ N	1.5	46°23′ W	1.5	4235	7	+ 21	+ 22	+ 17	+ 18	+ 15	+ 12	+ 12	+ 11
									+ 17	+ 17	+ 15	+ 13	+ 13	+ 13
793	39°45′ N	1.5	45°02′ W	1.5	4493	5	− 12	+ 1	− 8	− 6	− 7	− 5	− 4	− 4
									− 13	− 11	− 11	− 7	− 4	− 3
794	39°45′ N	1	43°25′ W	1	4724	7	+ 21	+ 37	+ 25	+ 27	+ 26	+ 26	+ 28	+ 29
									+ 20	+ 22	+ 22	+ 23	+ 26	+ 30
795	39°57′ N	1	42°11′ W	1	5000	10	− 3	+ 22	+ 3	+ 5	+ 4	+ 5	+ 9	+ 13
									− 2	− 1	− 2	+ 2	+ 5	+ 12
796	40°01′ N	1	40°07′ W	1	4654	3	+ 13	+ 24	+ 13	+ 14	+ 11	+ 8	+ 8	+ 9
									+ 10	+ 11	+ 8	+ 6	+ 5	+ 8
797	40°01′ N	1	37°40′ W	1	4548	6	+ 12	+ 30	+ 16	+ 17	+ 15	+ 13	+ 15	+ 18
									+ 12	+ 13	+ 11	+ 10	+ 12	+ 16
798	39°41′ N	1	33°52′ W	1	3648	6	+ 14	+ 35	+ 24	+ 26	+ 26	+ 28	+ 33	+ 37
									+ 17	+ 20	+ 23	+ 25	+ 31	+ 38
799	39°22′ N	1	32°35′ W	1	2129	6	+ 47	+ 25	+ 33	+ 33	+ 31	+ 22	+ 15	+ 11
									+ 40	+ 41	+ 38	+ 32	+ 28	+ 24
800	39°16′.0 N	0.5	31°17′.9 W	0.5	1630	9	+ 44	+ 17	+ 33	+ 34	+ 33	+ 28	+ 23	+ 15
									+ 38	+ 40	+ 40	+ 35	+ 29	+ 21
800[1]	39°16′.8 N	0.5	31°20′.7 W	0.5	1613	10	+ 58	+ 29	+ 48	+ 49	+ 49	+ 44	+ 38	+ 30
									+ 42	+ 49	+ 53	+ 49	+ 44	+ 36
801	38°39′ N	1.5	29°34′ W	1.5	2114	11	+ 71	+ 77	+ 89	+ 91	+ 93	+ 94	+ 92	+ 86
									+ 88	+ 92	+ 96	+ 99	+ 98	+ 92
802	38°13′ N	1	27°51′ W	1	1341	5	+ 53	+ 14	+ 35	+ 35	+ 31	+ 22	+ 17	+ 11
									+ 45	+ 42	+ 41	+ 29	+ 23	+ 17
803	38°03′ N	1	26°49′ W	1	1750	11	+ 49	+ 34	+ 51	+ 52	+ 53	+ 50	+ 44	+ 34
									+ 55	+ 57	+ 60	+ 58	+ 51	+ 41
803[1]	38°03′ N	1	26°46′ W	1	1506	8	+ 55	+ 34	+ 51	+ 52	+ 52	+ 50	+ 43	+ 33
									+ 55	+ 57	+ 58	+ 57	+ 50	+ 40
804	37°28′ N	1	24°17′ W	1	1816	6	+ 57	+ 8	+ 26	+ 25	+ 20	+ 10	+ 4	− 3
									+ 38	+ 36	+ 29	+ 16	+ 9	+ 3
805	37°06′ N	1	22°41′ W	2	3863	3	+ 56	+ 62	+ 52	+ 53	+ 50	+ 50	+ 52	+ 55
									+ 51	+ 50	+ 47	+ 49	+ 50	+ 55
806	37°33′ N	1	20°10′ W	2	3940	6	+ 72	+ 61	+ 57	+ 56	+ 50	+ 45	+ 43	+ 42
									+ 64	+ 60	+ 50	+ 44	+ 42	+ 42
807	37°02′ N	1	18°45′ W	2.5	5170	5	+ 17	+ 55	+ 30	+ 33	+ 34	+ 36	+ 40	+ 44
									+ 22	+ 25	+ 27	+ 32	+ 36	+ 42
808	37°00′ N	1	15°47′ W	2	4710	7	− 49	− 9	− 30	− 25	− 22	− 19	− 15	− 14
									− 45	− 39	− 29	− 23	− 18	− 16
809	36°54′ N	1	14°21′ W	2	666	4	+ 157	+ 16	+ 48	+ 42	+ 28	− 4	− 26	− 40
									+ 79	+ 71	+ 50	+ 6	− 22	− 37

No.	Topog	Hayford 113.7 km			I.R T=30	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		Reductions in 0.1 mgal															
		I.R.	Comp A-0_2	t + c 18-1	I.R. T = 20	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1	Comp A-0_2	t + c 18-1
791	—3492	+ 68	+2297	+ 873	+ 24	+3137	+ 364	+3111	+ 366	+3098	+ 377	+2982	+ 419	+2733	+ 563	+2266	+ 944
					+ 12	+3374	+ 201	+3375	+ 202	+3371	+ 209	+3241	+ 235	+3007	+ 347	+2460	+ 773
792	—2923	+ 66	+1960	+ 886	+ 23	+2569	+ 365	+2553	+ 367	+2571	+ 378	+2555	+ 421	+2414	+ 571	+2033	+ 959
					+ 12	+2750	+ 204	+2742	+ 205	+2759	+ 212	+2752	+ 241	+2645	+ 351	+2198	+ 794
793	—3075	+ 65	+1986	+ 890	+ 23	+2645	+ 367	+2621	+ 369	+2617	+ 380	+2559	+ 423	+2393	+ 574	+2009	+ 964
					+ 12	+2872	+ 205	+2848	+ 206	+2836	+ 213	+2766	+ 242	+2624	+ 354	+2175	+ 799
794	—3220	+ 66	+2103	+ 889	+ 24	+2787	+ 368	+2764	+ 370	+2762	+ 381	+2726	+ 424	+2556	+ 573	+2145	+ 967
					+ 12	+3016	+ 206	+2994	+ 207	+2981	+ 214	+2943	+ 243	+2804	+ 356	+2323	+ 800
795	—3418	+ 68	+2220	+ 884	+ 24	+2966	+ 367	+2943	+ 369	+2945	+ 380	+2889	+ 423	+2704	+ 572	+2266	+ 968
					+ 12	+3196	+ 204	+3183	+ 205	+3180	+ 212	+3118	+ 240	+2969	+ 353	+2458	+ 797
796	—3204	+ 67	+2164	+ 864	+ 24	+2823	+ 361	+2807	+ 363	+2829	+ 374	+2812	+ 418	+2663	+ 569	+2243	+ 977
					+ 12	+3017	+ 202	+3013	+ 203	+3036	+ 209	+3027	+ 238	+2918	+ 355	+2431	+ 815
797	—3124	+ 65	+2074	+ 807	+ 23	+2720	+ 345	+2700	+ 347	+2717	+ 358	+2692	+ 398	+2536	+ 539	+2131	+ 910
					+ 12	+2921	+ 196	+2904	+ 197	+2920	+ 202	+2903	+ 228	+2778	+ 338	+2309	+ 761
798	—2480	+ 49	+1570	+ 650	+ 20	+2068	+ 295	+2045	+ 297	+2033	+ 305	+1982	+ 336	+1834	+ 439	+1534	+ 696
					+ 11	+2264	+ 178	+2233	+ 178	+2193	+ 183	+2153	+ 205	+2013	+ 288	+1656	+ 574
799	—1479	+ 43	+1031	+ 621	+ 18	+1322	+ 281	+1319	+ 283	+1336	+ 290	+1396	+ 319	+1376	+ 408	+1185	+ 640
					+ 10	+1366	+ 177	+1357	+ 177	+1375	+ 182	+1417	+ 201	+1381	+ 275	+1169	+ 531
800	—1136	+ 39	+ 768	+ 597	+ 16	+ 960	+ 271	+ 949	+ 271	+ 949	+ 278	+ 971	+ 305	+ 947	+ 386	+ 823	+ 589
					+ 9	+1022	+ 162	+1009	+ 162	+ 999	+ 165	+1036	+ 184	+1030	+ 251	+ 885	+ 475
800[1]	—1150	+ 39	+ 805	+ 597	+ 16	+ 960	+ 271	+ 949	+ 271	+ 949	+ 278	+ 971	+ 305	+ 947	+ 386	+ 823	+ 589
					+ 9	+1135	+ 162	+1065	+ 162	+1024	+ 165	+1046	+ 184	+1035	+ 251	+ 888	+ 475
801	—1370	+ 34	+ 710	+ 563	+ 14	+ 913	+ 259	+ 895	+ 259	+ 872	+ 265	+ 834	+ 289	+ 789	+ 360	+ 675	+ 533
					+ 8	+1031	+ 157	+ 992	+ 157	+ 956	+ 160	+ 902	+ 178	+ 862	+ 234	+ 728	+ 424
802	— 917	+ 36	+ 682	+ 584	+ 15	+ 821	+ 264	+ 821	+ 264	+ 849	+ 269	+ 916	+ 295	+ 891	+ 367	+ 771	+ 549
					+ 8	+ 834	+ 159	+ 858	+ 159	+ 869	+ 162	+ 975	+ 179	+ 972	+ 238	+ 830	+ 437
803	—1153	+ 35	+ 660	+ 605	+ 15	+ 845	+ 275	+ 832	+ 275	+ 819	+ 282	+ 816	+ 309	+ 802	+ 391	+ 702	+ 591
					+ 8	+ 923	+ 165	+ 900	+ 165	+ 871	+ 169	+ 870	+ 188	+ 872	+ 255	+ 755	+ 474
803[1]	—1088	+ 35	+ 657	+ 605	+ 15	+ 842	+ 275	+ 831	+ 275	+ 819	+ 282	+ 816	+ 309	+ 802	+ 391	+ 702	+ 591
					+ 8	+ 916	+ 165	+ 897	+ 165	+ 880	+ 169	+ 870	+ 188	+ 872	+ 255	+ 755	+ 474
804	—1287	+ 44	+1047	+ 684	+ 19	+1277	+ 306	+1284	+ 308	+1325	+ 316	+1388	+ 348	+1349	+ 450	+1155	+ 713
					+ 9	+1292	+ 179	+1312	+ 179	+1379	+ 184	+1480	+ 206	+1470	+ 287	+1242	+ 579
805	—2682	+ 54	+1814	+ 751	+ 22	+2374	+ 328	+2263	+ 330	+2378	+ 338	+2339	+ 377	+2199	+ 501	+1852	+ 820
					+ 11	+2535	+ 189	+2539	+ 189	+2567	+ 195	+2524	+ 220	+2408	+ 319	+2001	+ 676
806	—2798	+ 61	+2009	+ 836	+ 24	+2572	+ 352	+2579	+ 354	+2630	+ 365	+2639	+ 408	+2507	+ 557	+2118	+ 960
					+ 11	+2672	+ 195	+2709	+ 196	+2802	+ 202	+2837	+ 231	+2744	+ 344	+2291	+ 800
807	—3486	+ 61	+2212	+ 830	+ 23	+2982	+ 350	+2947	+ 352	+2931	+ 363	+2864	+ 405	+2680	+ 553	+2246	+ 945
					+ 11	+3234	+ 193	+3201	+ 194	+3172	+ 201	+3096	+ 229	+2942	+ 341	+2436	+ 785
808	—3177	+ 54	+1946	+ 777	+ 22	+2638	+ 326	+2591	+ 328	+2546	+ 338	+2480	+ 379	+2307	+ 512	+1935	+ 872
					+ 11	+2937	+ 187	+2880	+ 188	+2775	+ 195	+2686	+ 221	+2527	+ 330	+2090	+ 749
809	— 650	+ 54	+1265	+ 736	+ 21	+1403	+ 321	+1454	+ 323	+1585	+ 334	+1865	+ 375	+1942	+ 517	+1706	+ 888
					+ 11	+1234	+ 182	+1317	+ 183	+1524	+ 189	+1934	+ 216	+2102	+ 324	+1832	+ 750

No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal							
									Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km.					
											$R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
809[1]	36°55′	N	1	14°21′	W	1	753	4	+ 168	+ 27	+ 59 + 90	+ 53 + 82	+ 39 + 61	+ 7 + 17	— 15 — 11	— 29 — 26
810	37°22′	N	1	14°10′	W	1	1900	10	+ 104	+ 22	+ 37 + 61	+ 33 + 51	+ 20 + 30	+ 6 + 11	— 7 — 4	— 16 — 15
811	38°04′	N	1	13°56′	W	1	4050	8	+ 66	+ 77	+ 68 + 64	+ 70 + 67	+ 67 + 67	+ 61 + 60	+ 60 + 59	+ 58 + 57
812	37°46′	N	1	11°22′	W	1	5053	6	— 46	+ 34	— 19 — 37	— 16 — 36	— 12 — 32	+ 6 — 7	+ 26 + 16	+ 42 + 37
813	38°05′	N	1	10°34′	W	1	4842	5	— 46	+ 55	+ 3 — 28	+ 10 — 19	+ 20 — 1	+ 44 + 35	+ 61 + 57	+ 72 + 72
814	38°22′	N	1	09°56′	W	1	4056	6	— 68	+ 26	+ 9 — 19	+ 17 + 2	+ 25 + 19	+ 33 + 33	+ 38 + 42	+ 36 + 40
815	38°42′.00	N	0.02	09°10′.17	W	0.02	Lisboa	3	+ 35	— 27	0 + 13	— 1 + 11	— 4 + 7	— 15 — 6	— 28 — 20	— 40 — 34
816	12°06′.97	N	0.02	68°55′.58	W	0.02	Curaçao II	2	+ 163	+ 79	+ 90 + 101	+ 89 + 96	+ 85 + 90	+ 83 + 87	+ 78 + 82	+ 70 + 73
817	12°40′	N	1	69°17′	W	1	1820	8	— 77	— 53	— 83 — 83	 — 82	— 83 — 82	— 87 — 85	— 90 — 90	— 93 — 93
818	13°32′	N	2	69°26′	W	2	4445	5	— 114	+ 56	— 87 — 106	 — 102	— 81 — 96	— 73 — 83	— 62 — 69	— 52 — 56
819	12°38′	N	1	68°41′	W	1	3000	5	— 138	— 36	— 115 — 123	 — 118	— 111 — 114	— 112 — 113	— 113 — 115	— 113 — 113
820	11°34′	N	1	67°50′	W	1	1825	6	+ 16	+ 76	+ 36 + 21	 + 22	+ 29 + 24	+ 33 + 29	+ 38 + 33	+ 40 + 36
821	12°21′	N	1	67°19′	W	1	4718	4	— 198	+ 11	— 148 — 176	 — 163	— 135 — 149	— 126 — 133	— 118 — 124	— 110 — 114
822	13°08′	N	1	66°56′	W	2	5083	21	— 77	+ 93	— 58 — 71	 — 69	— 59 — 72	— 56 — 69	— 43 — 55	— 27 — 35
823	14°11′	N	1	66°30′	W	2	5074	25	— 8	+ 155	+ 6 — 4	 — 4	+ 8 — 4	+ 12 + 3	+ 21 + 11	+ 30 + 23
824	19°12′	N	1.5	65°22′	W	1.5	7370	8	— 244	— 226	— 222 — 230	— 219 — 223	— 221 — 224	— 222 — 224	— 219 — 220	— 216 — 215
825	20°22′	N	1.5	63°00′	W	1.5	5530	4	— 7	+ 4	— 4 — 5	0 — 7	— 3 — 9	— 6 — 11	— 5 — 12	— 1 — 6
826	23°30′	N	1	56°04′	W	1	6565	3	— 24	+ 3	— 16 — 22	— 13 — 21	— 12 — 19	— 5 — 10	+ 2 — 3	+ 8 + 5
827	25°00′	N	1	52°31′	W	1	5290	8	— 33	— 33	— 33 — 33	— 30 — 35	— 33 — 37	— 34 — 37	— 34 — 38	— 33 — 34
828	25°39′	N	1	48°29′	W	1	4380	6	+ 8	+ 3	+ 8 + 4	+ 10 + 6	+ 8 + 5	+ 8 + 7	+ 10 + 10	+ 11 + 13
829	26°08′	N	1	45°22′	W	1	2360	5	+ 62	+ 9	+ 41 + 50	+ 41 + 51	+ 38 + 48	+ 28 + 36	+ 18 + 24	+ 7 + 14

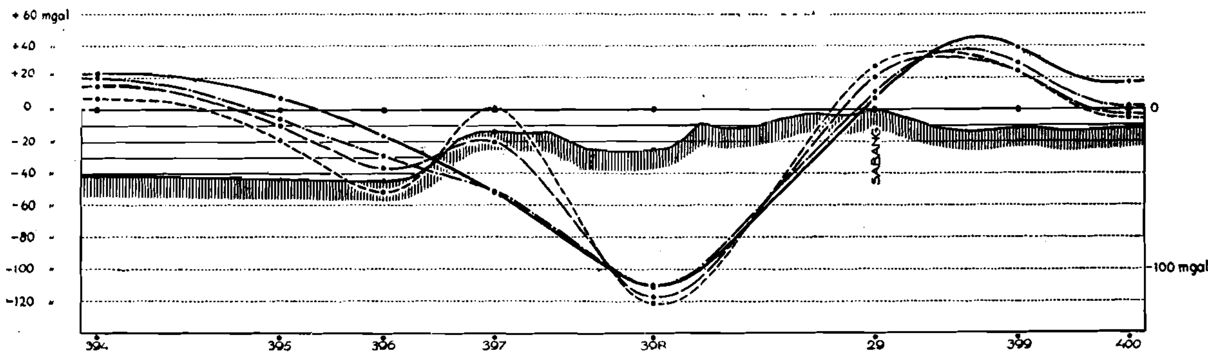
No.	Topog	Hayford 113.7 km			I.R T=30	R=0 (Heisk.)		29.05		58.1		116.2		174.3		232.4	
		I.R.	Comp A-0$_2$	t+c 18-1	I.R. T=20	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1	Comp A-0$_2$	t+c 18-1
809[1]	—650	+54	+1265	+736	+21	+1403	+321	+1454	+323	+1585	+334	+1865	+375	+1942	+517	+1706	+888
					+11	+1234	+182	+1317	+183	+1524	+189	+1934	+216	+2102	+324	+1832	+750
810	—1463	+53	+1497	+736	+20	+1796	+321	+1834	+323	+1945	+334	+2050	+375	+2031	+517	+1754	+888
					+11	+1705	+182	+1801	+183	+2004	+189	+2169	+216	+2209	+324	+1888	+750
811	—2788	+55	+1870	+758	+21	+2427	+325	+2405	+327	+2419	+338	+2434	+380	+2297	+527	+1936	+916
					+11	+2614	+182	+2586	+183	+2583	+189	+2623	+218	+2515	+328	+2093	+773
812	—3401	+45	+2029	+529	+18	+2856	+253	+2883	+255	+2780	+263	+2567	+294	+2276	+391	+1864	+642
					+10	+3152	+153	+3135	+153	+3096	+158	+2823	+179	+2511	+257	+2022	+539
813	—3191	+37	+1672	+471	+16	+2445	+241	+2375	+242	+2264	+250	+2002	+278	+1748	+362	+1425	+572
					+9	+2862	+136	+2774	+136	+2588	+140	+2219	+158	+1929	+224	+1544	+461
814	—2503	+32	+1058	+471	+14	+1475	+241	+1397	+242	+1312	+250	+1201	+278	+1068	+362	+881	+572
					+8	+1867	+136	+1655	+136	+1485	+140	+1325	+158	+1176	+224	+956	+461
815	—27	+23	+231	+388	+10	+170	+193	+181	+193	+212	+197	+301	+218	+369	+275	+355	+412
					+5	+124	+119	+140	+119	+183	+122	+298	+133	+390	+180	+372	+335
816	—58	+45	+469	+384	+18	+579	+192	+593	+192	+621	+196	+626	+219	+612	+283	+535	+435
					+10	+551	+122	+593	+122	+655	+125	+667	+138	+666	+191	+575	+369
817	—1345	+53	+984	+72	+21	+1172	+213			+1165	+218	+1174	+245	+1133	+323	+974	+513
					+12	+1258	+138	+1241	+138	+1242	+141	+1256	+158	+1238	+224	+1050	+440
818	—2999	+64	+1859	—625	+25	+2457	+247			+2387	+256	+2273	+289	+2063	+387	+1713	+639
					+14	+2753	+156	+2704	+156	+2640	+161	+2490	+182	+2275	+262	+1855	+549
819	—1996	+56	+1233	—313	+22	+1521	+221			+1480	+228	+1460	+255	+1391	+337	+1184	+542
					+12	+1690	+141	+1640	+141	+1600	+145	+1573	+162	+1519	+231	+1274	+462
820	—1254	+44	+765	—151	+17	+866	+169			+933	+173	+874	+190	+785	+236	+651	+347
					+10	+1083	+112	+1065	+112	+1048	+115	+985	+125	+909	+164	+752	+289
821	—2915	+59	+1622	—852	+23	+2175	+216			+2041	+223	+1920	+251	+1757	+335	+1469	+542
					+13	+2546	+138	+2410	+138	+2270	+142	+2090	+160	+1933	+230	+1586	+472
822	—3433	+71	+2277	—610	+27	+2959	+259			+2961	+268	+2893	+304	+2650	+417	+2198	+710
					+14	+3196	+161	+3173	+161	+3204	+166	+3149	+189	+2914	+281	+2386	+616
823	—3488	+75	+2310	—531	+28	+3026	+294			+2994	+305	+2914	+345	+2696	+478	+2249	+834
					+15	+3257	+177	+3257	+178	+3245	+183	+3161	+207	+2973	+314	+2440	+720
824	—3209	+73	+2114	+842	+28	+2603	+354	+2578	+356	+2588	+366	+2553	+407	+2390	+540	+2009	+896
					+15	+2849	+200	+2784	+200	+2787	+208	+2758	+234	+2621	+337	+2174	+734
825	—3780	+86	+2632	+955	+30	+3332	+387	+3295	+389	+3311	+400	+3290	+448	+3119	+615	+2624	+1067
					+16	+3533	+215	+3544	+216	+3560	+223	+3548	+254	+3430	+382	+2858	+892
826	—4365	+89	+2911	+1094	+30	+3842	+412	+3807	+415	+3793	+426	+3668	+477	+3412	+660	+2845	+1166
					+16	+4098	+226	+4087	+228	+4067	+236	+3944	+268	+3734	+407	+3087	+976
827	—3640	+83	+2530	+1030	+29	+3204	+403	+3180	+405	+3190	+416	+3159	+465	+2985	+635	+2510	+1097
					+15	+3408	+220	+3419	+221	+3432	+228	+3409	+258	+3281	+389	+2728	+910
828	—3002	+71	+2074	+902	+26	+2607	+371	+2587	+373	+2592	+383	+2555	+426	+2393	+566	+2008	+941
					+14	+2818	+207	+2798	+208	+2799	+215	+2760	+241	+2623	+350	+2171	+771
829	—1647	+61	+1283	+835	+22	+1486	+350	+1484	+352	+1503	+360	+1570	+399	+1545	+521	+1336	+840
					+13	+1558	+198	+1550	+198	+1572	+204	+1664	+229	+1683	+324	+1434	+678

Reductions in 0.1 mgal

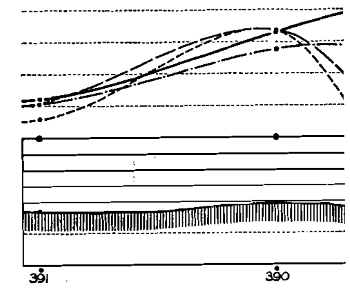
No.	Latitude φ		m_φ miles	Longitude λ		m_λ miles	Depth meters	m_g mgal	Anomalies in milligal Free Air	Hayf. 113.7	Upper line: Airy, $T=30$ km. Lower line: Airy, $T=20$ km. $R=0$ Heisk.	29.05	58.1	116.2	174.3	232.4
830	26°17′	N	1	44°19′	W	1	2940	3	+ 19	— 13	+ 8 + 12	+ 9 + 12	+ 7 + 11	+ 3 + 8	— 1 + 4	— 6 — 1
831	26°42′	N	1	40°46′	W	1	4685	4	+ 5	+ 14	+ 11 + 5	+ 13 + 7	+ 12 + 8	+ 14 + 12	+ 18 + 17	+ 20 + 21
832	27°17′	N	1	36°51′	W	1	5390	8	— 15	— 1	— 11 — 13	— 8 — 14	— 10 — 16	— 8 — 13	— 4 — 8	+ 2 0
833	33°28′	N	1	31°30′	W	1.5	3405	4	+ 21	+ 12	+ 20 + 19	+ 21 + 20	+ 20 + 19	+ 19 + 19	+ 19 + 19	+ 19 + 22
834	36°27′	N	2	28°23′	W	2	3105	14	+ 54	+ 57	+ 57 + 54	+ 58 + 55	+ 58 + 54	+ 61 + 59	+ 67 + 66	+ 71 + 72
835	40°52′	N	2	20°24′	W	2	4370	8	+ 13	+ 19	+ 19 + 12	+ 21 + 14	+ 19 + 13	+ 16 + 12	+ 15 + 11	+ 15 + 12
836	45°29′	N	2	13°20′	W	2	4540	3	+ 29	+ 44	+ 36 + 29	+ 38 + 31	+ 37 + 31	+ 37 + 33	+ 37 + 34	+ 37 + 34
837	52°06′	N	1	02°46′	E	1	42	4	+ 8	+ 7	+ 9 + 8	+ 9 + 9	+ 9 + 9	+ 9 + 10	+ 10 + 11	+ 11 + 11
838	49°48′	N	1	03°31′	W	1	75	2	+ 47	+ 41	+ 46 + 46	+ 46 + 46	+ 46 + 47	+ 47 + 48	+ 48 + 50	+ 49 + 50
839	48°56′	N	1	07°36′	W	2	135	4	+ 31	+ 3	+ 16 + 22	+ 17 + 22	+ 16 + 22	+ 15 + 21	+ 11 + 15	+ 3 + 8
840	47°09′	N	1	10°02′	W	1	4250	3	+ 9	+ 46	+ 23 + 13	+ 24 + 13	+ 23 + 11	+ 28 + 18	+ 40 + 32	+ 52 + 47
841	47°15′	N	1	09°09′	W	2	4400	4	— 29	+ 31	+ 5 — 17	+ 9 — 10	+ 14 0	+ 23 + 14	+ 34 + 27	+ 43 + 39
842	48°36′	N	1	06°30′	W	2	125	6	+ 20	— 8	+ 6 + 11	+ 6 + 11	+ 5 + 11	+ 3 + 9	— 2 + 4	— 11 — 6
843	52°22′	N	1	03°01′	E	1	40	5	+ 13	+ 11	+ 13 + 13	+ 13 + 13	+ 13 + 14	+ 14 + 14	+ 14 + 14	+ 15 + 15
844	56°18′	N	3	01°39′	E	3	90	1	+ 48	+ 45	+ 47 + 48	+ 47 + 48	+ 47 + 48	+ 47 + 48	+ 48 + 48	+ 48 + 49

No.	Topog	Reductions in 0.1 mgal																
		Hayford 113.7 km			I.R $T=30$	R = 0 (Heisk.)		29.05		58.1		116.2		174.3		232.4		
		I.R.	Comp A-0_2	t+c 18-1	I.R. $T=20$	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1	Comp A-0_2	t+c 18-1
830	—2036	+61	+1474	+818	+23	+1778	+346	+1768	+348	+1776	+356	+1780	+394	+1693	+516	+1437	+829
					+13	+1895	+198	+1891	+198	+1903	+203	+1911	+227	+1851	+324	+1548	+674
831	—3173	+69	+2141	+878	+25	+2723	+365	+2698	+367	+2696	+378	+2635	+420	+2455	+562	+2059	+939
					+14	+2958	+203	+2932	+204	+2923	+211	+2849	+237	+2694	+348	+2228	+774
832	—3684	+73	+2520	+950	+26	+3228	+385	+3205	+387	+3208	+398	+3147	+445	+2939	+606	+2458	+1030
					+13	+3441	+210	+3451	+211	+3462	+218	+3405	+247	+3233	+370	+2672	+851
833	—2348	+53	+1653	+734	+21	+2016	+322	+2003	+324	+2008	+333	+1985	+366	+1870	+480	+1579	+764
					+12	+2164	+188	+2158	+188	+2165	+193	+2142	+216	+2047	+306	+1701	+625
834	—2156	+46	+1456	+621	+19	+1828	+280	+1812	+282	+1811	+289	+1748	+318	+1604	+407	+1342	+629
					+10	+1975	+168	+1973	+168	+1975	+172	+1904	+191	+1760	+266	+1449	+517
835	—2987	+58	+2063	+805	+22	+2594	+345	+2572	+347	+2577	+358	+2563	+400	+2431	+541	+2054	+919
					+11	+2797	+194	+2774	+195	+2770	+202	+2759	+228	+2661	+338	+2219	+765
836	—3111	+56	+2146	+760	+21	+2698	+329	+2676	+331	+2679	+342	+2635	+384	+2485	+534	+2094	+928
					+11	+2913	+185	+2895	+186	+2891	+192	+2841	+221	+2722	+333	+2268	+783
837	—30	+7	+9	+22	+1	+14	+7	+15	+7	+13	+7	+8	+7	+3	+3	0	—2
					0	+22	+4	+19	+4	+17	+4	+11	+4	+3	+2	2	—5
838	—51	+8	+14	+85	+1	+24	+38	+23	+38	+21	+38	+9	+40	—1	+40	—5	+37
					0	+32	+24	+32	+24	+29	+24	+12	+24	0	+26	—6	+23
829	—87	+14	+74	+283	+5	+85	+143	+84	+143	+83	+146	+87	+158	+94	+193	+88	+275
					+2	+86	+90	+86	+90	+86	+92	+91	+99	+102	+127	+95	+218
840	—2960	+45	+2015	+526	+17	+2553	+252	+2537	+254	+2543	+262	+2458	+296	+2236	+398	+1848	+662
					+10	+2762	+152	+2754	+152	+2772	+157	+2682	+180	+2458	+264	+2000	+566
841	—2957	+41	+1834	+483	+16	+2372	+232	+2323	+234	+2267	+241	+2149	+271	+1946	+367	+1612	+611
					+9	+2681	+144	+2613	+144	+2508	+149	+2353	+168	+2143	+248	+1744	+526
842	—84	+14	+79	+267	+5	+88	+135	+87	+135	+87	+139	+94	+152	+110	+191	+108	+280
					+3	+88	+87	+86	+87	+86	+90	+94	+99	+118	+128	+115	+230
843	—27	+7	+12	+23	+1	+16	+8	+17	+8	+16	+8	+13	+8	+8	+5	+6	+1
					0	+22	+4	+20	+4	+18	+4	+15	+4	+10	+4	+7	—3
844	—62	+8	+39	+44	+1	+51	+21	+48	+21	+47	+21	+46	+21	+42	+23	+35	+28
					0	+54	+12	+55	+12	+53	+12	+51	+12	+46	+14	+38	+15

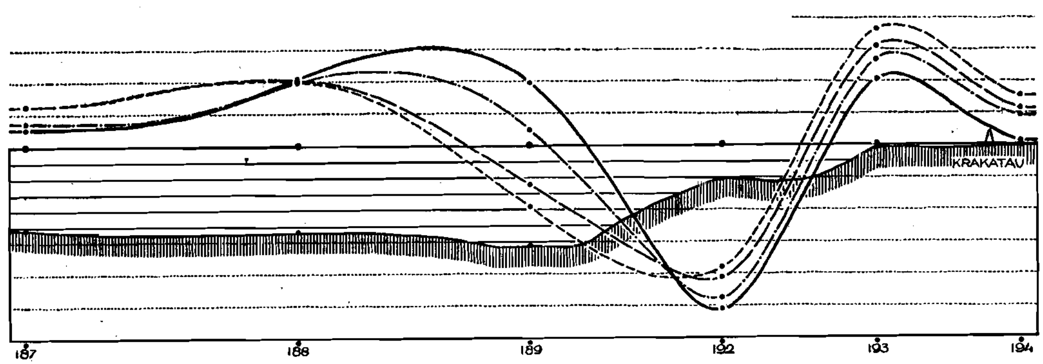
PLATE I



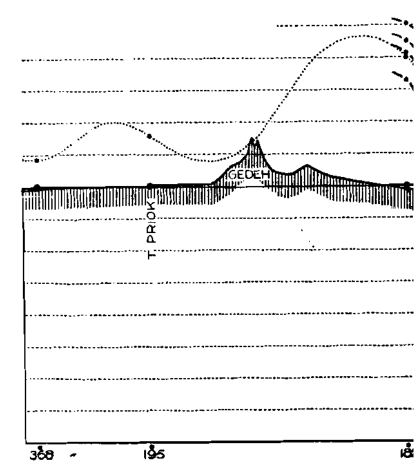
No. 1, Indian Ocean-Sumatra, over Sabang.



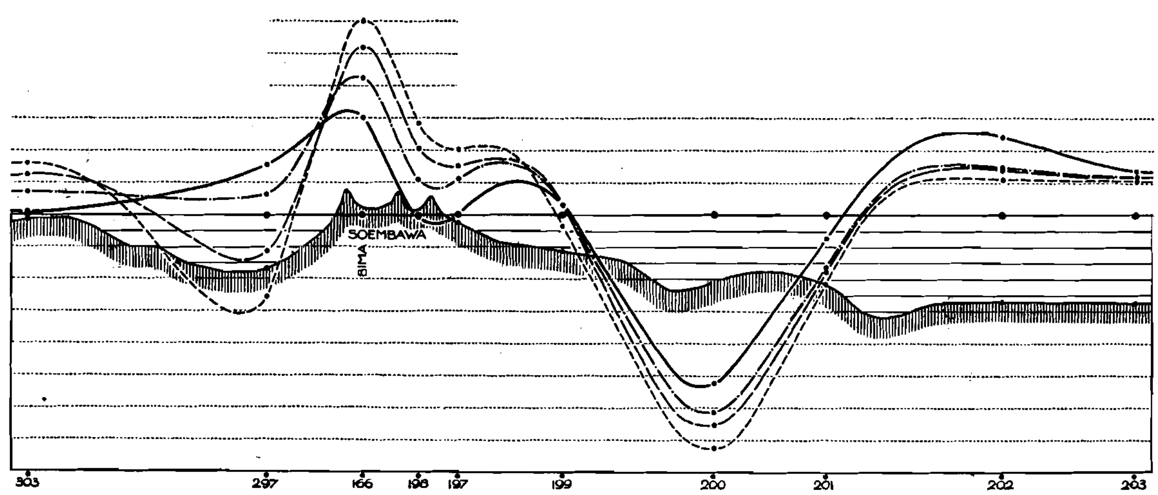
Nc



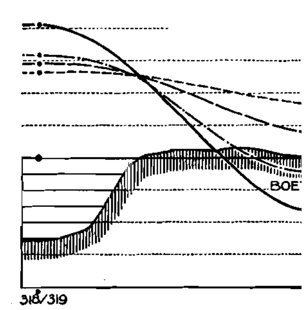
No. 5, Indian Ocean-Strait Soenda, over Krakatau.



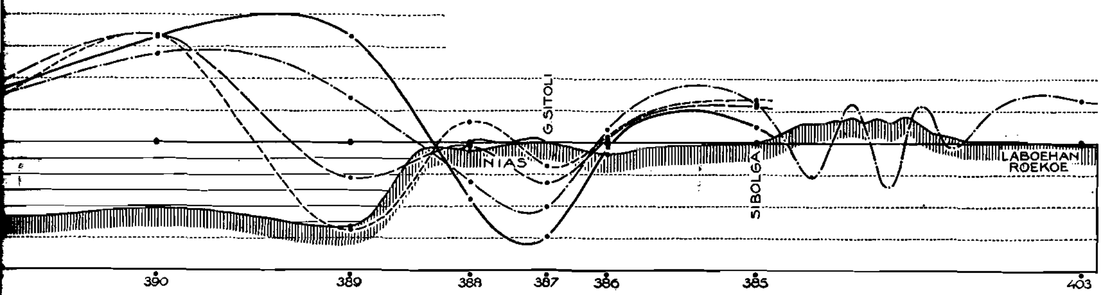
No. 6.



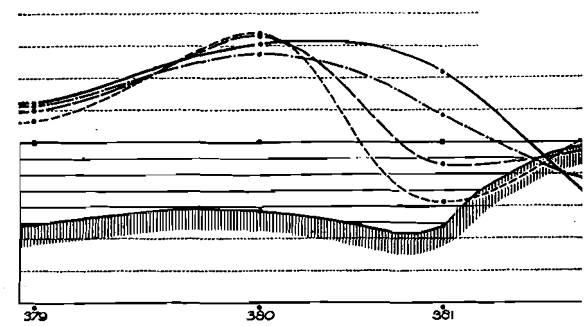
No. 9, Flores Sea-Indian Ocean, over Soembawa.



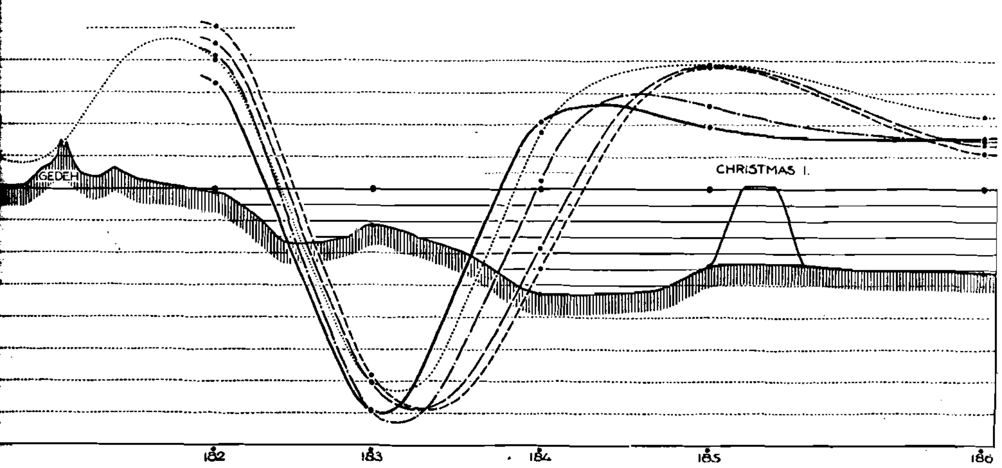
Profiles Indonesian Archipelago



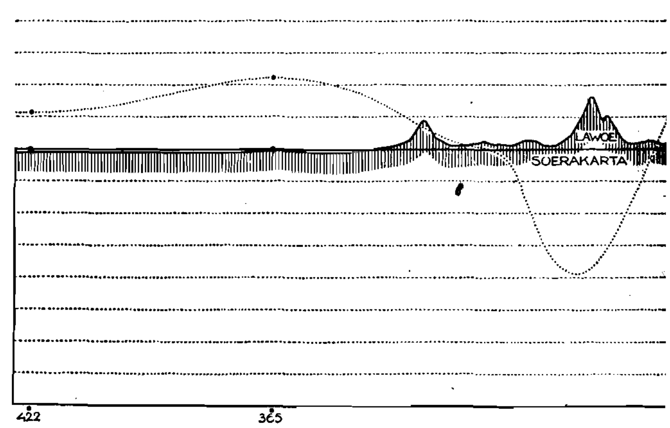
No. 2, Indian Ocean-Sumatra, over Sibolga.



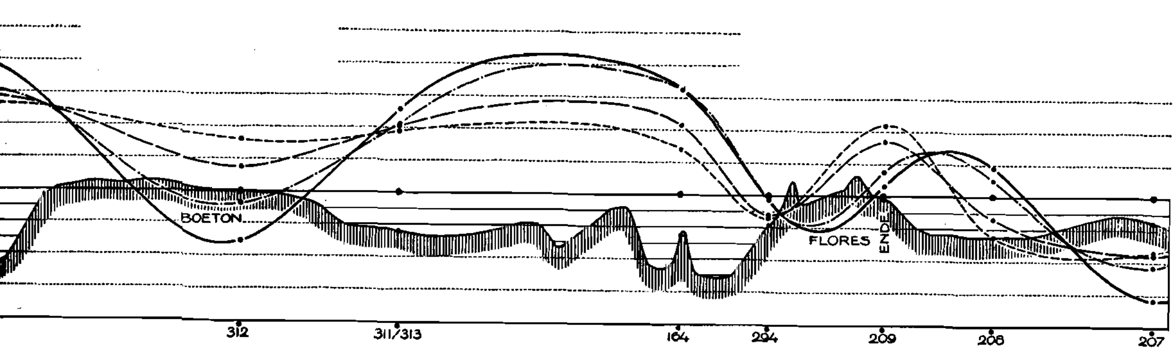
No. 3,



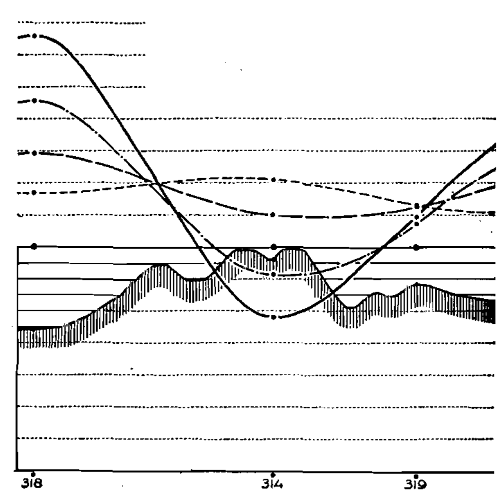
No. 6. Java Sea-Indian Ocean, over Batavia.



No. 7, Java Se

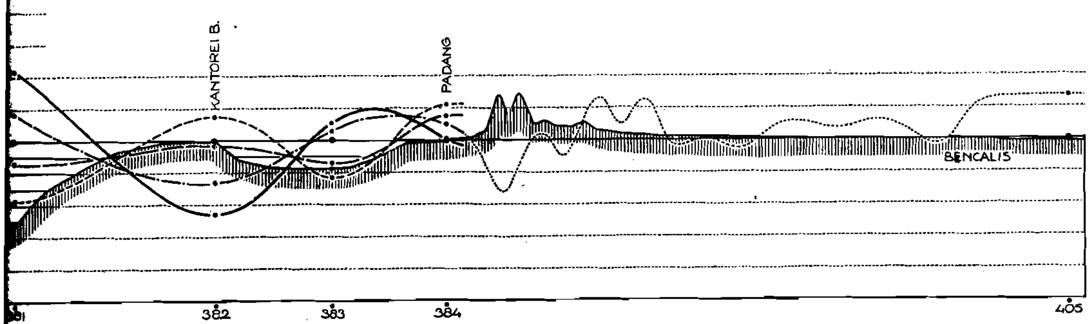


No. 10, Boeton-Indian Ocean, over Flores.

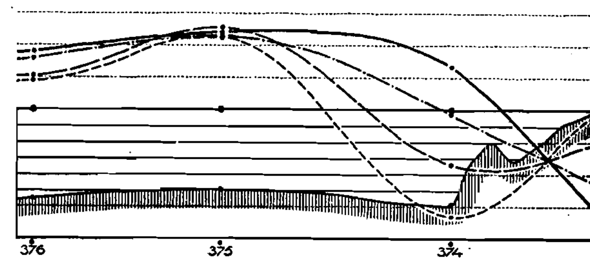


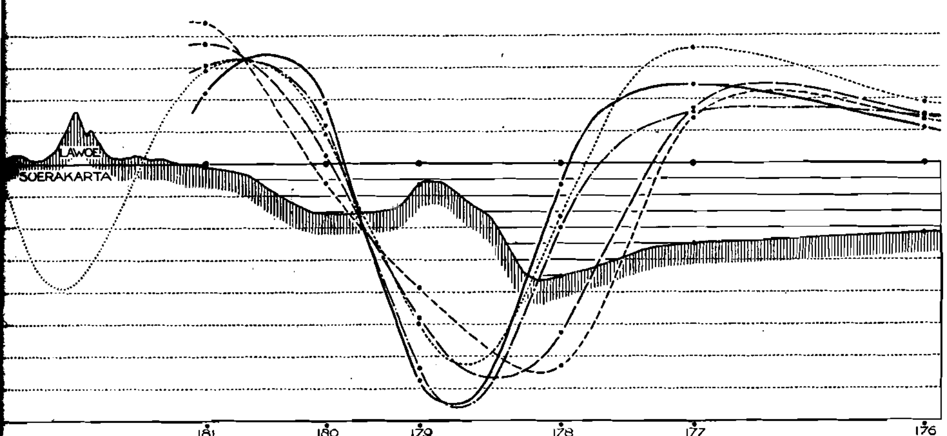
No. 11, Toekangbes

elago, western and central part.

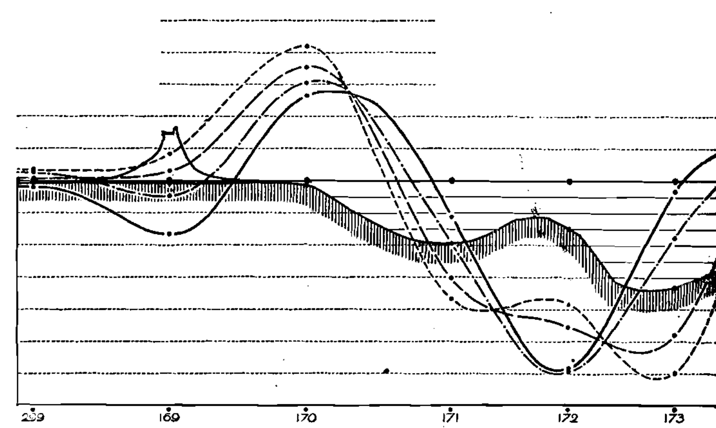


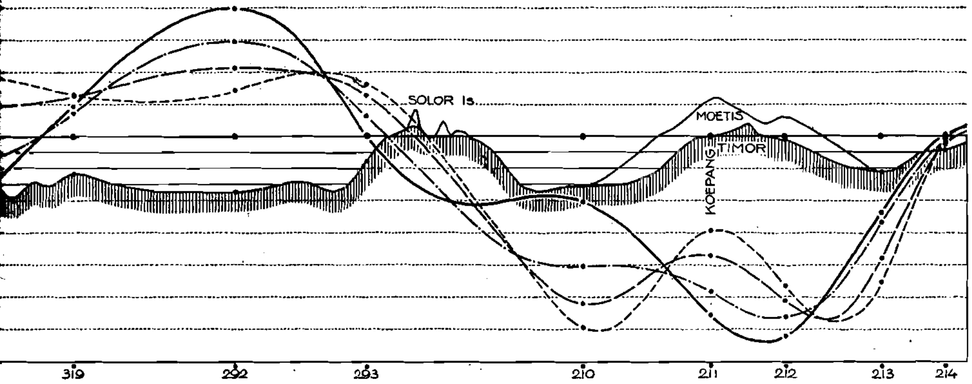
No. 3, Indian Ocean-Sumatra, over Padang.



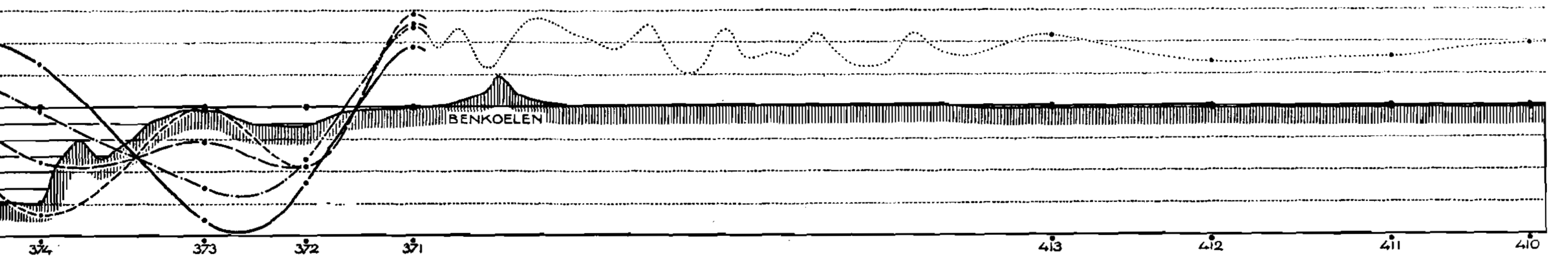


7, Java Sea-Indian Ocean, Soerakarta.

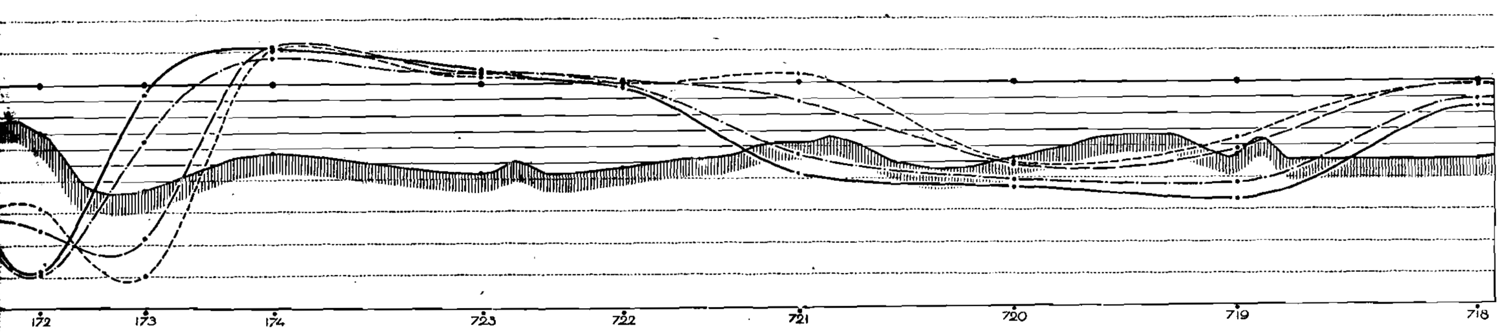




Toekangbesi Is.-Sahoel Shelf over Solor Is. and Koepang.

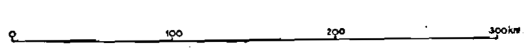


No. 4, Indian Ocean-Sumatra, over Benkoelen.



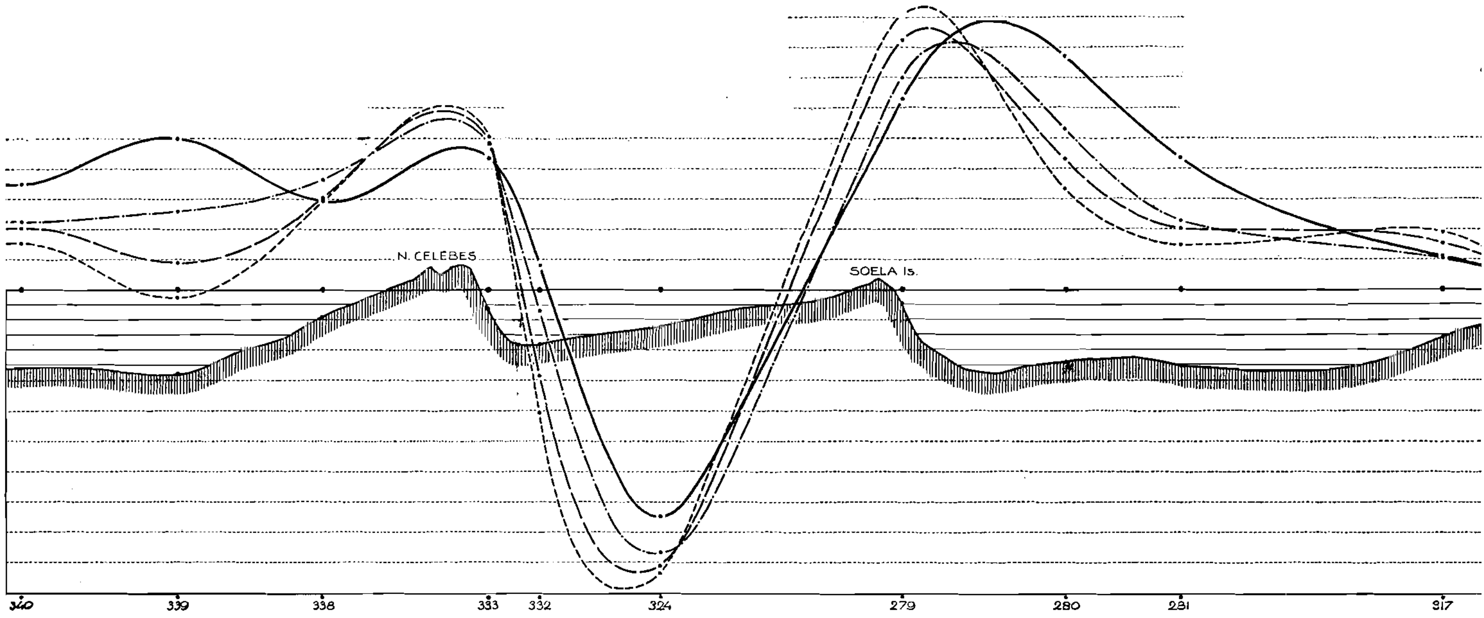
No. 8, Strait Bali-Indian Ocean.

local isostatic anomalies, T = 20 km.
local isostatic anomalies, T = 30 km.
regional isostatic anomalies, T = 30 km, R = 116.2 km.
regional isostatic anomalies, T = 30 km, R = 232.4 km.

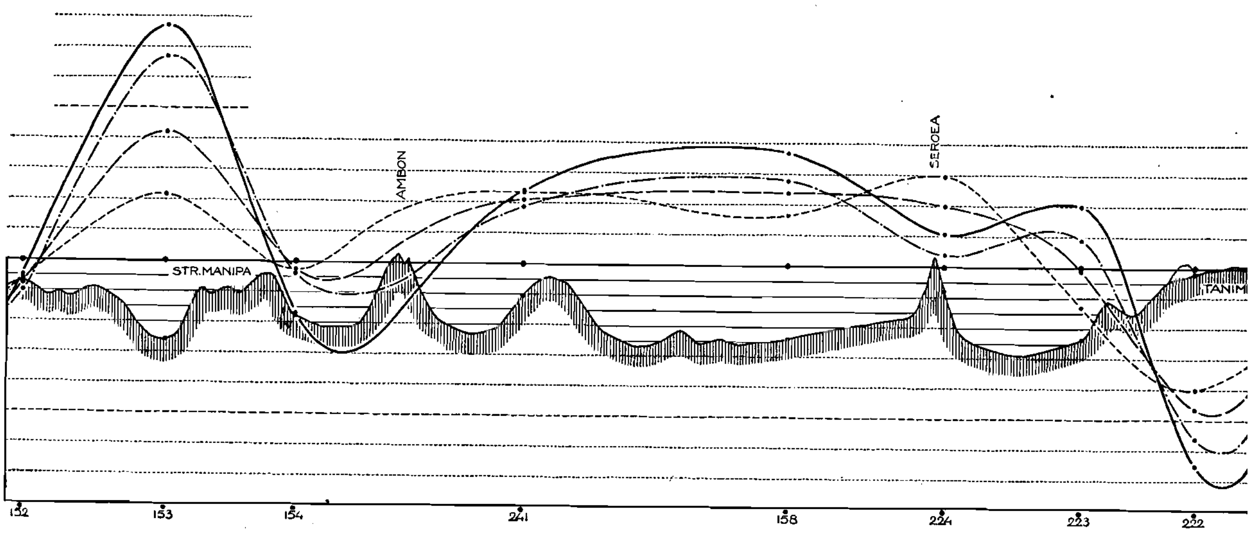


horizontale scale 1 : 5.000 000
vertical scale 1 : 500.000;
line-interval in oceans = 1000 m = 10 mgal
line-interval elsewhere = 2000 m = 20 mgal.

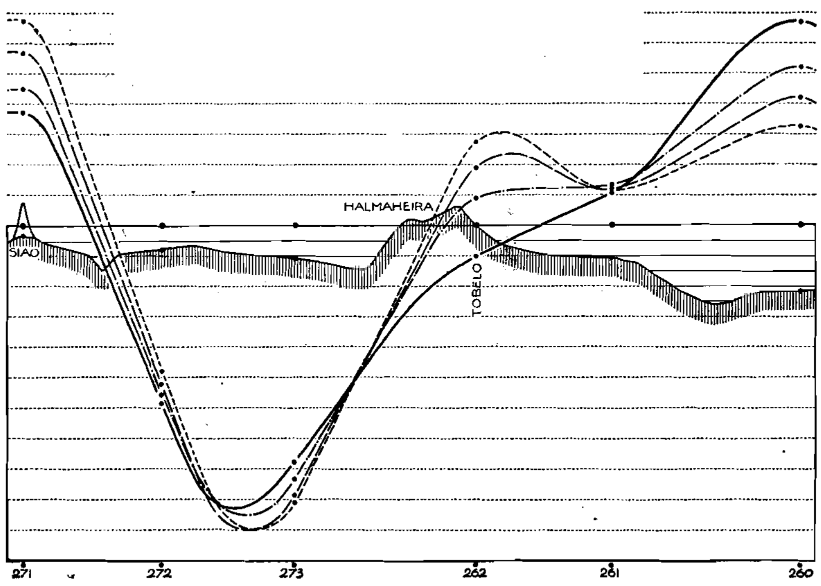
PLATE II



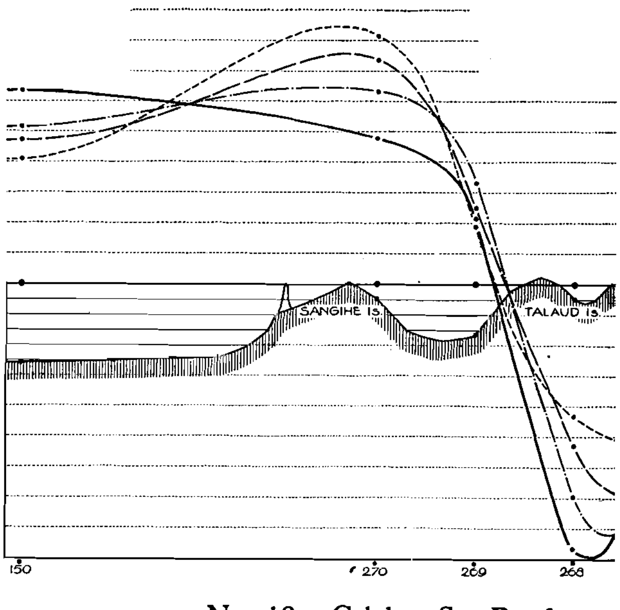
No. 12, Celebes Sea-Sahoel Shelf over North Celebes and



No. 14, Molucca Sea-Sahoel Shelf over Amboina and Tanimbar Is.

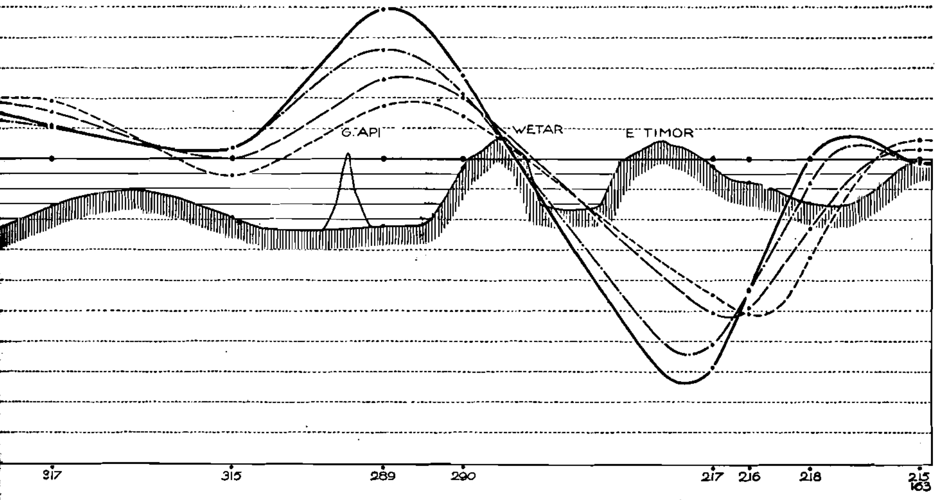


No. 18, Siao-Pacific over North Halmaheira.

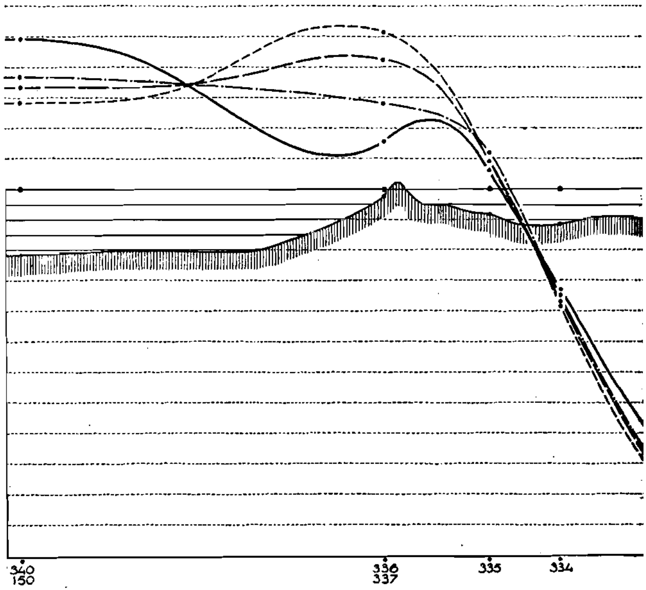


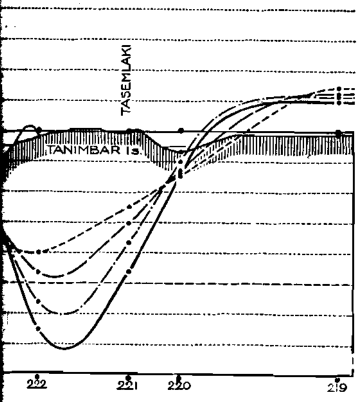
No. 19, Celebes Sea-Pacific ov

Profiles Indonesian Archipelago, eastern part.

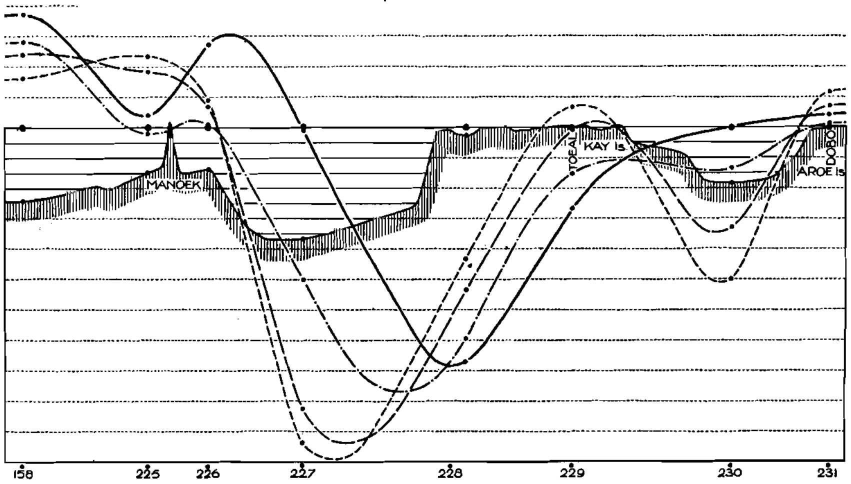


...s and East Timor.

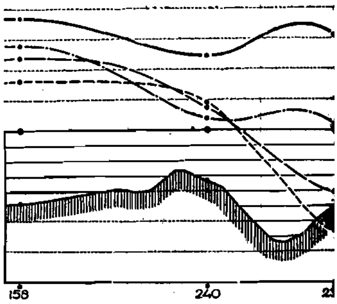




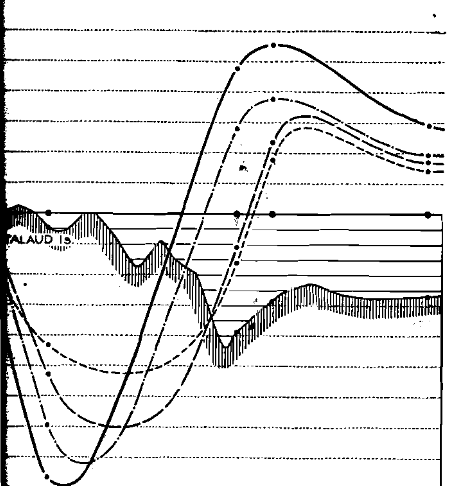
... Is.



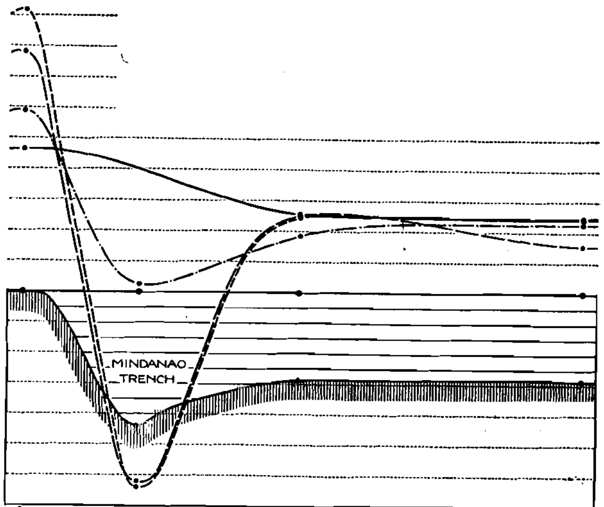
No. 15, Banda Sea-Aroe Is over Manoek and Kai Is.



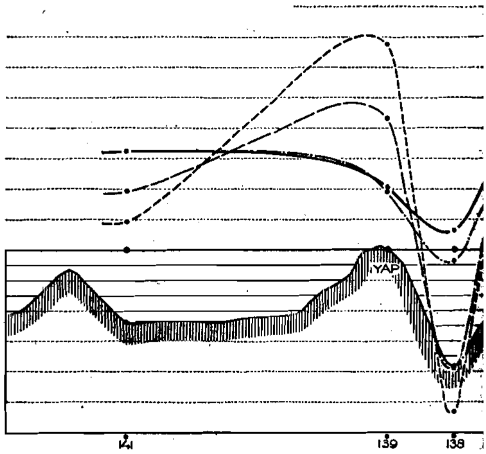
No. 16, Ban...



...ific over Talaud Is.

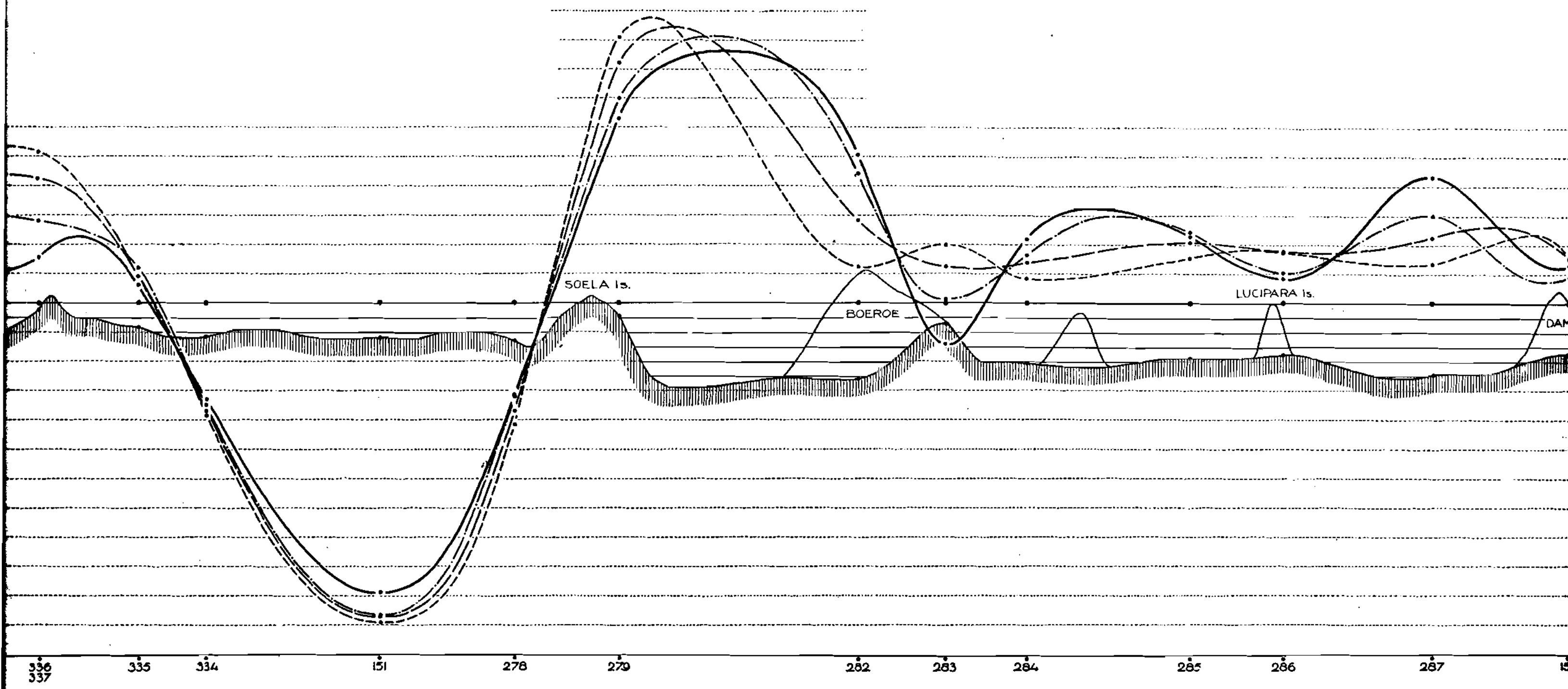


No. 20,
Strait Surigao-Pacific over Mindanao Trough.

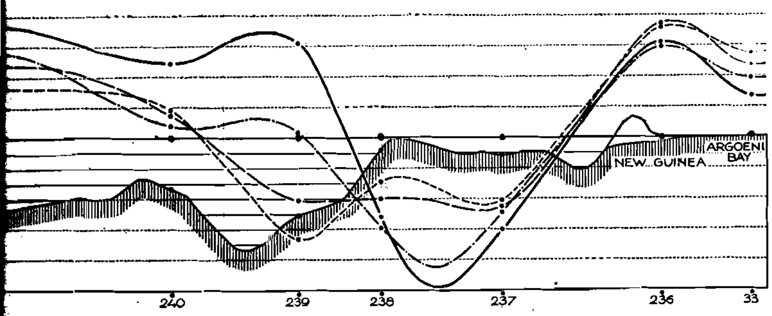


No. 21, Over Yap and Yap Troug...

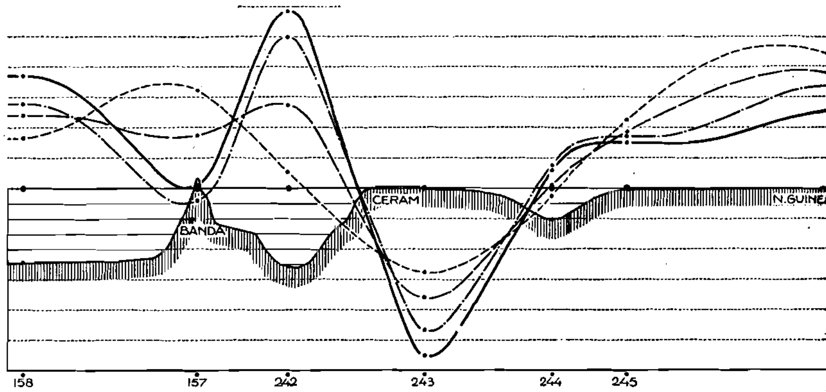
tern part.



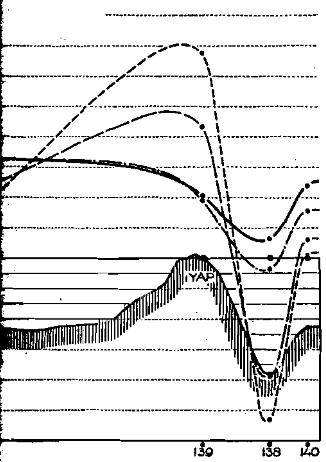
No. 13, Celebes Sea-Sahoel Shelf over Menado and Damar.



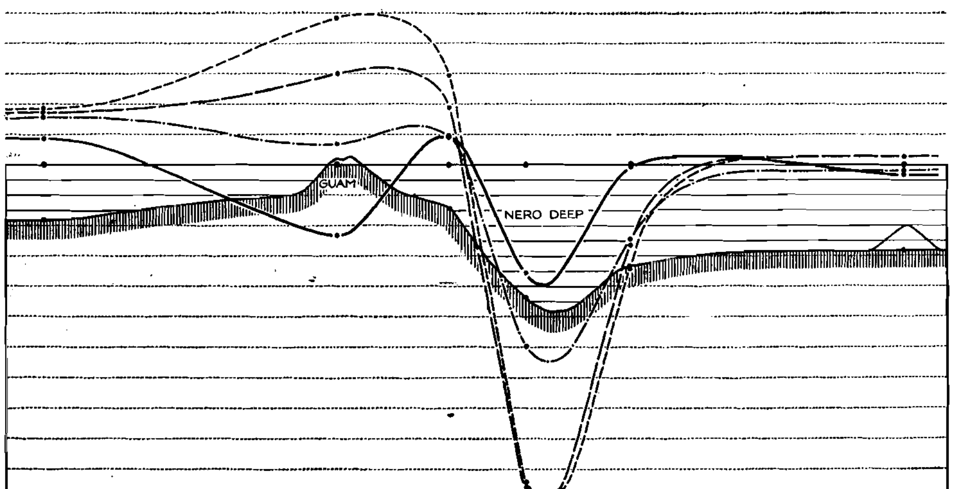
No. 16, Banda Sea-Argoeni Bay.



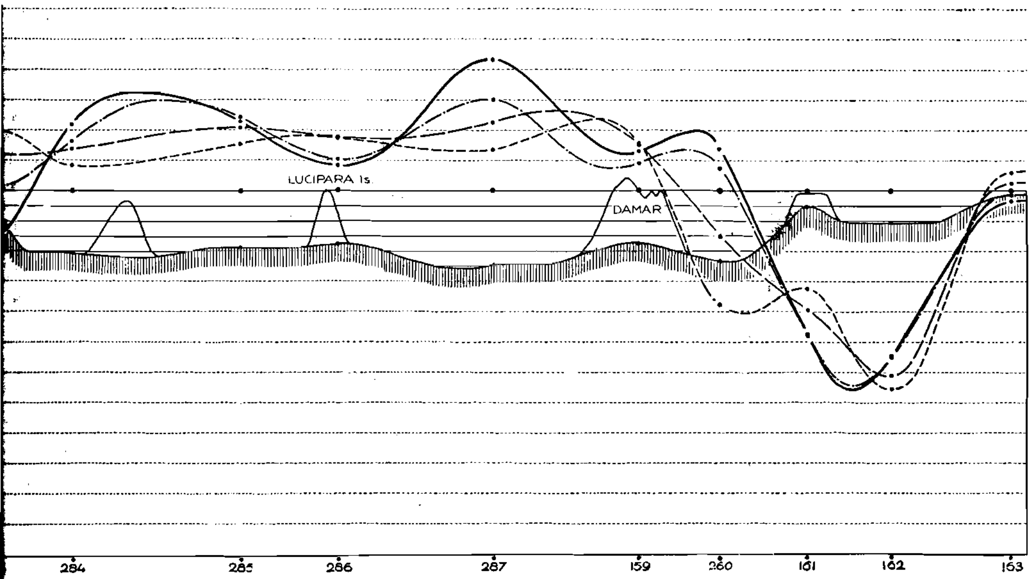
No. 17, Banda Sea-Sorrong over Banda Is.



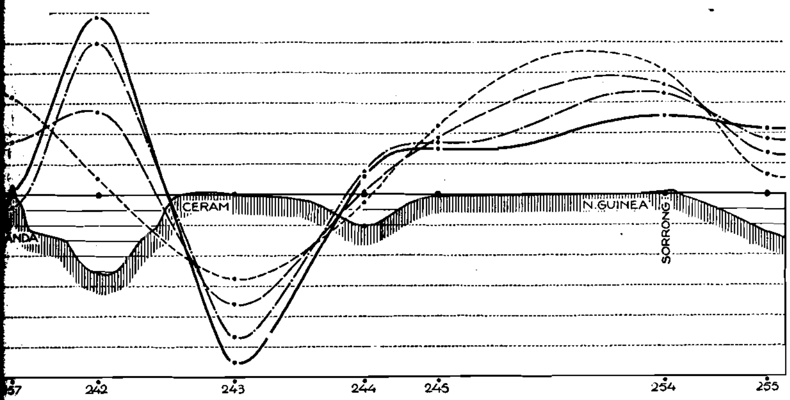
er Yap and Yap Trough.



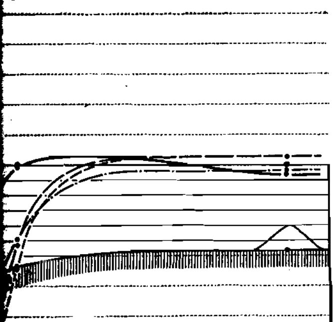
No. 22, Over Guam and Nero Deep.



ado and Damar.



No. 17, Banda Sea-Sorrong over Banda Is.



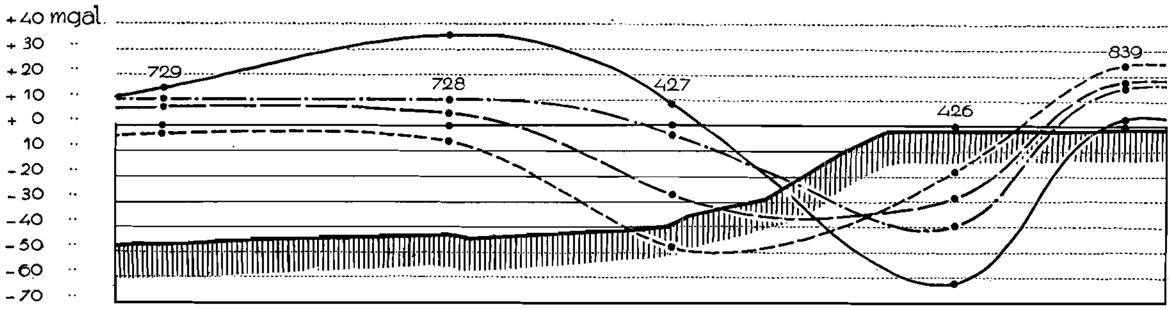
Deep.

local isostatic anomalies, T = 20 km.
local isostatic anomalies, T = 30 km.
regional isostatic anomalies, T = 30 km, R = 116.2 km.
regional isostatic anomalies, T = 30 km, R = 232.4 km.

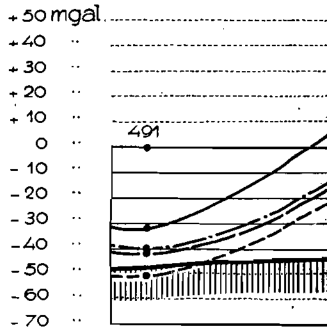
0 100 200 300 km

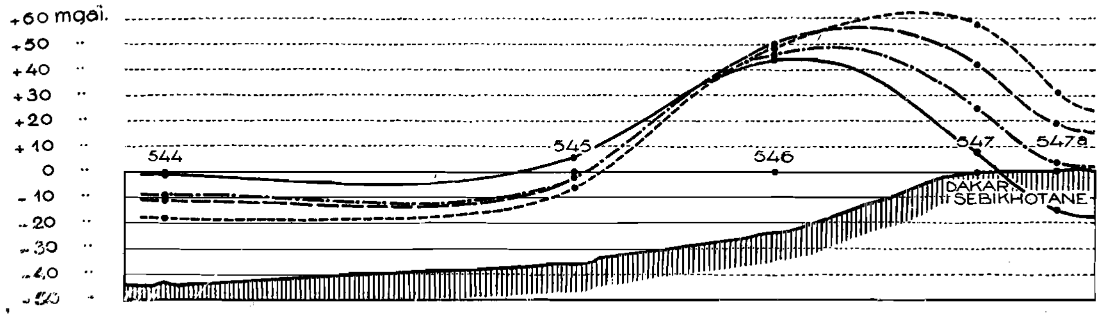
horizontale scale 1 : 5.000.000
verticale scale 1 : 500.000
line-interval in oceans = 1000 m = 10 mgal
line-interval elsewhere = 2000 m = 20 mgal.

PLATE III

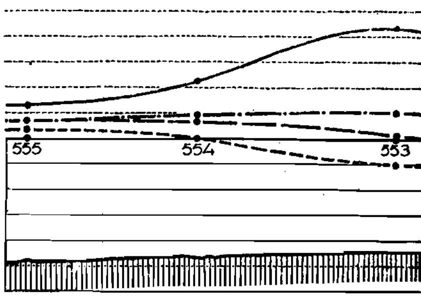


No. 23, End of English Channel.

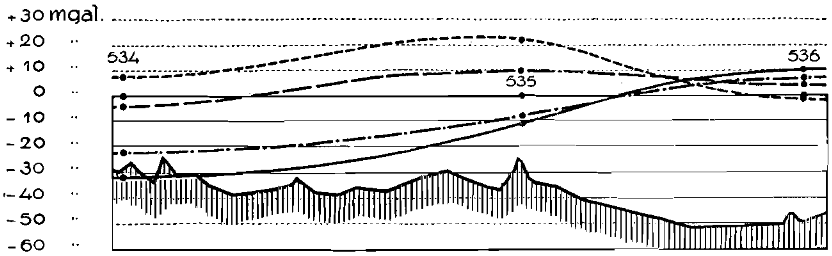




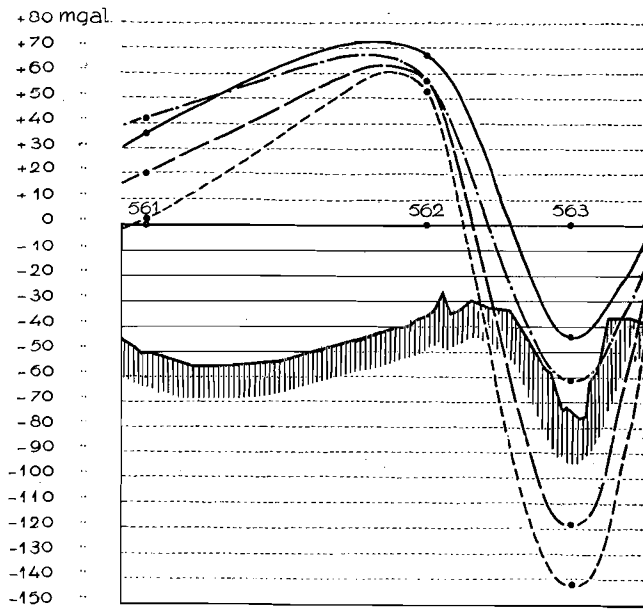
No. 29, West Africa, near Dakar.



No. 30, West

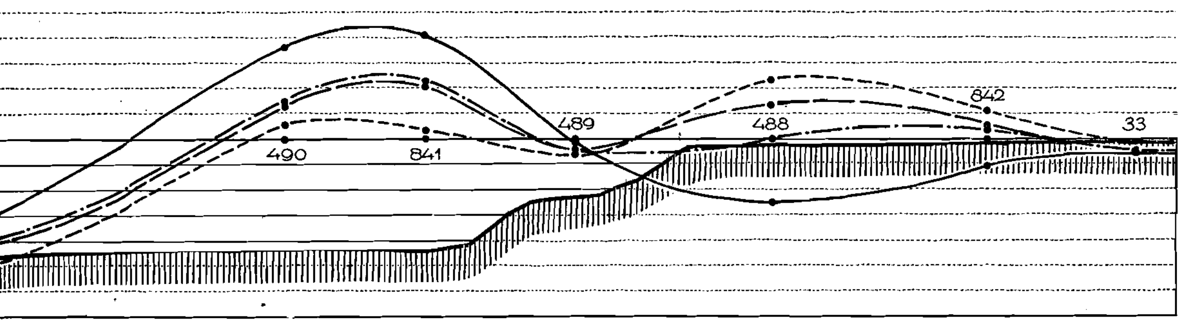


No. 37, Mid-Atlantic Ridge (7° N) to NE.

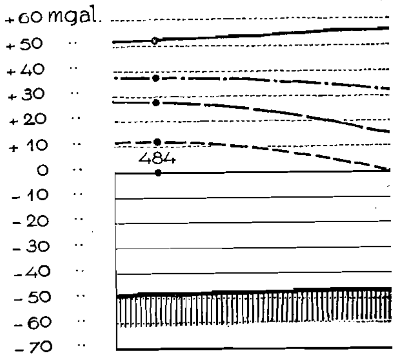


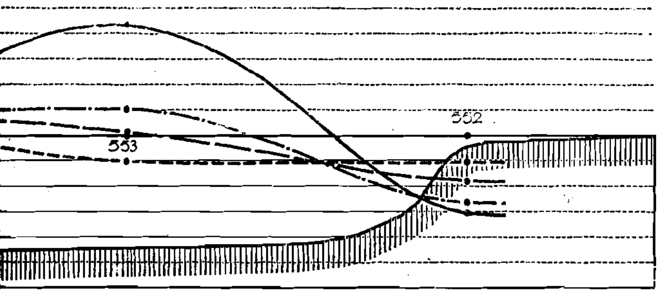
No. 38, Over

Profiles Continental Margins

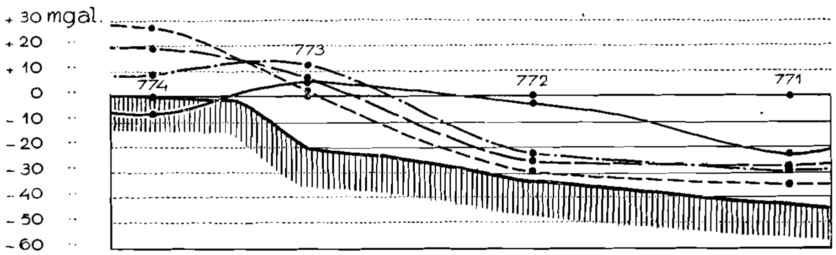


No. 24. End of English Channel.

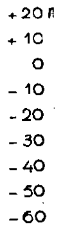


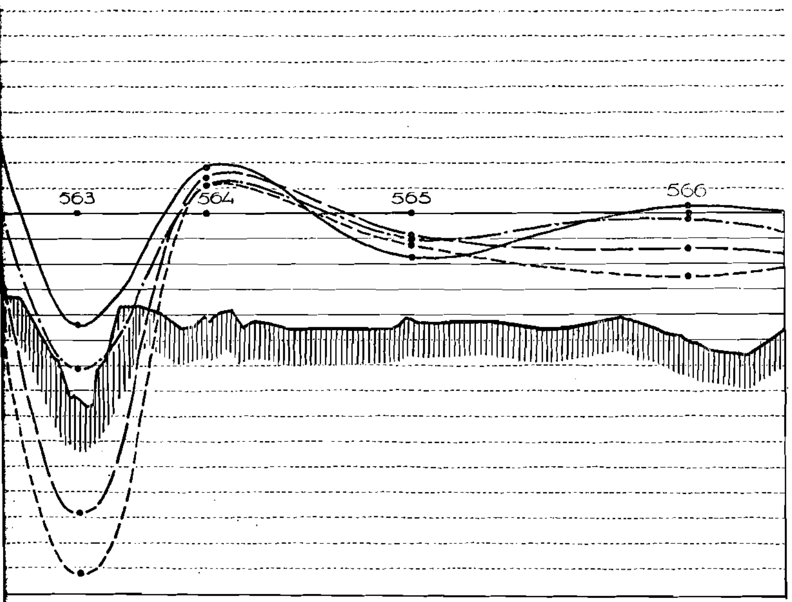


. 30, West Africa, near Konakri.

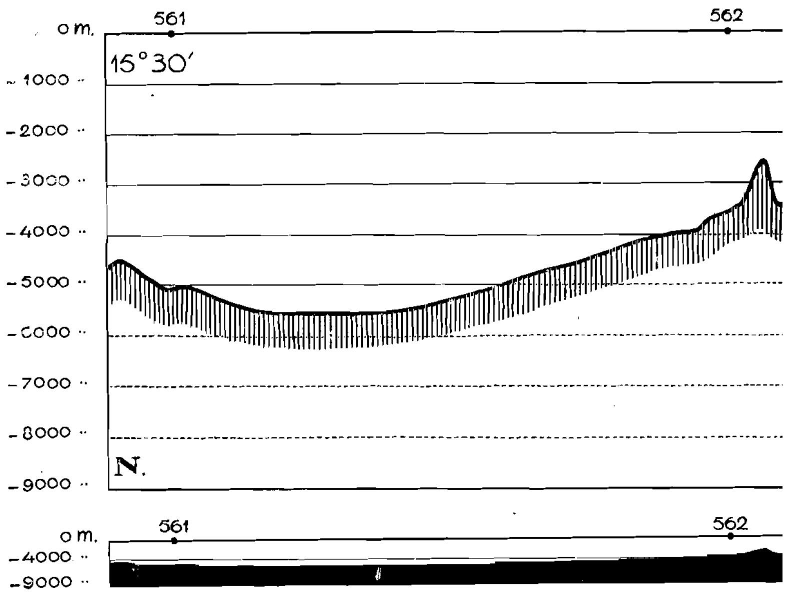


No. 31, Virginia (U.S.A).



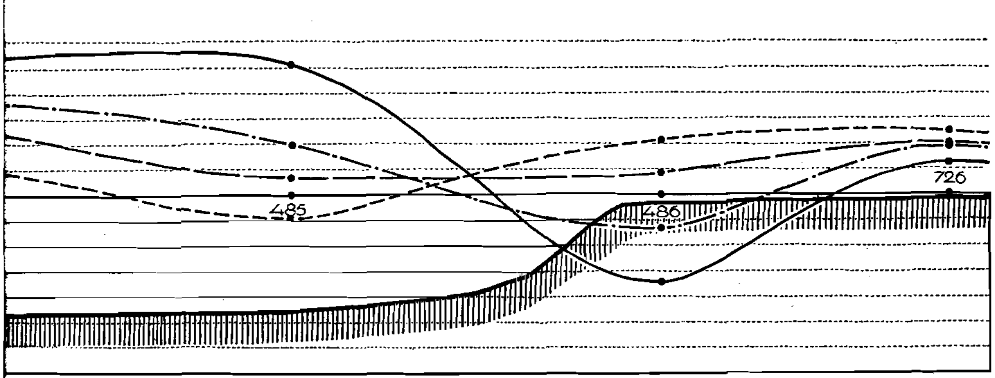


38, Over Romanche Deep.

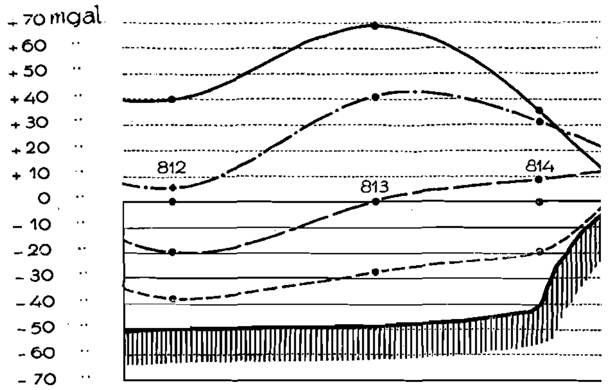


No. 38a,

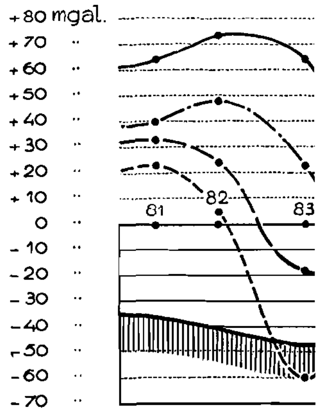
rgins, a.o.

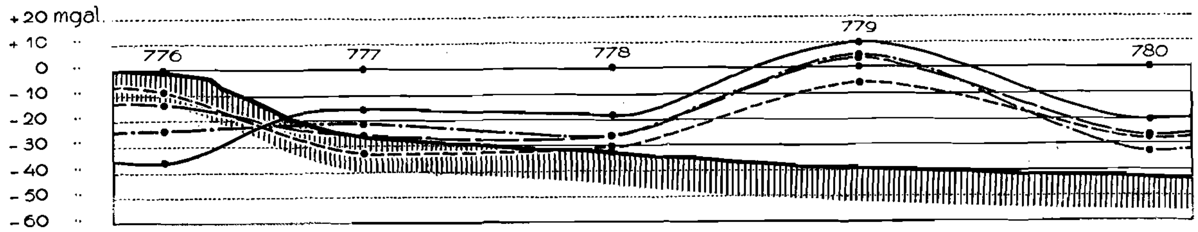


No. 25, End of English Channel.



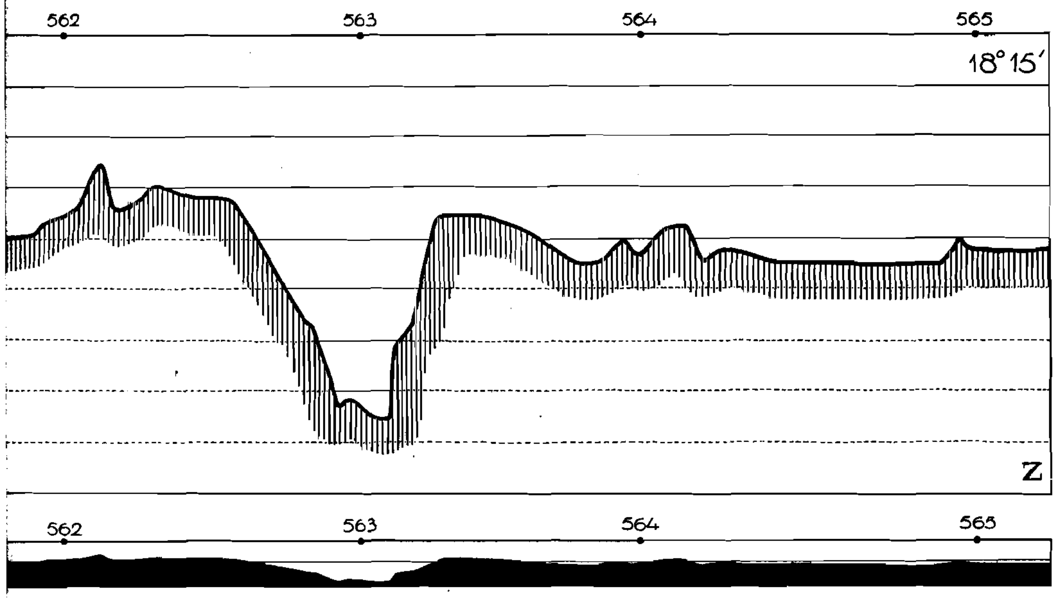
No. 26, West of Lisbon.



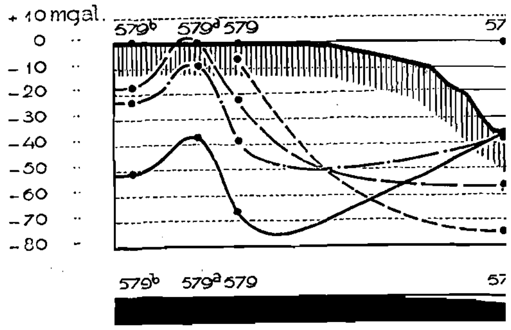


No. 32, Virginia (U.S.A.).

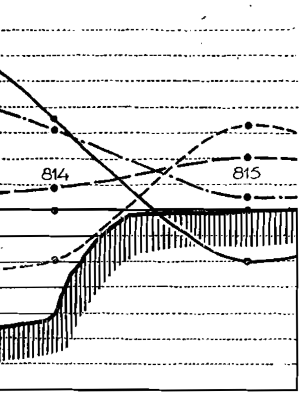
No. 33, Mexico,



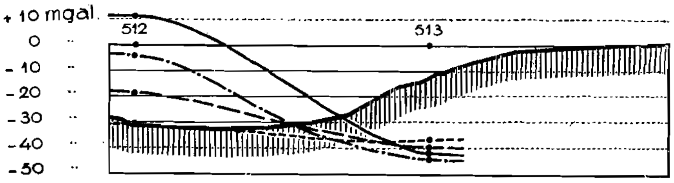
lo. 38a, Over Romanche Deep.



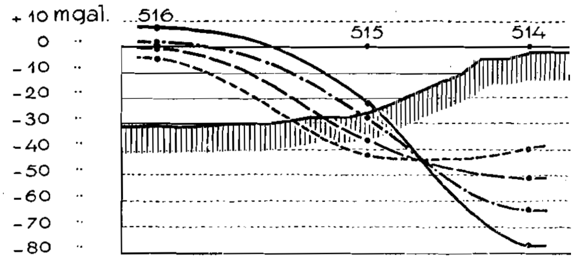
No.



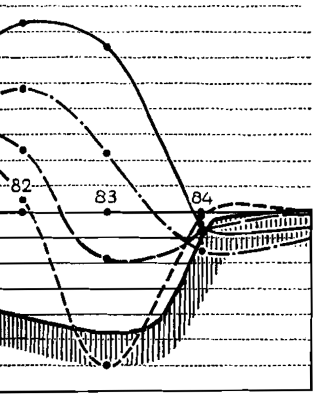
Lisbon.



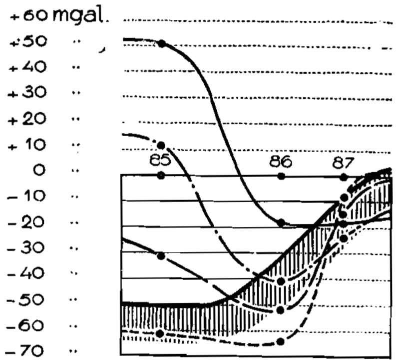
No. 27, West Africa, near Canary Is.



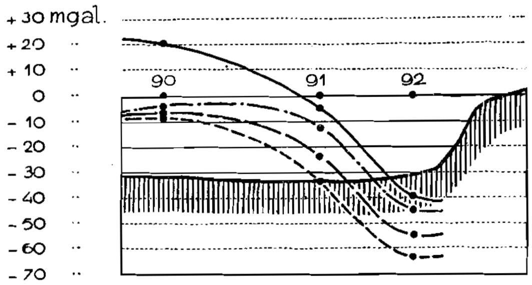
No. 28, West Africa, near V.



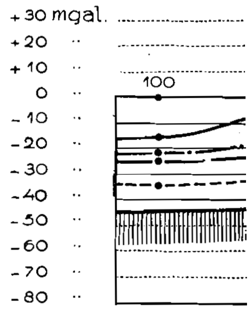
Mexico, 98° W.L.

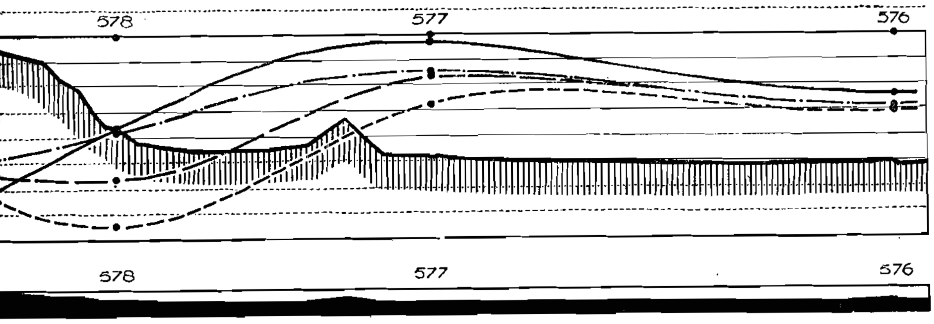


No. 34, Mexico, 103° W.L.

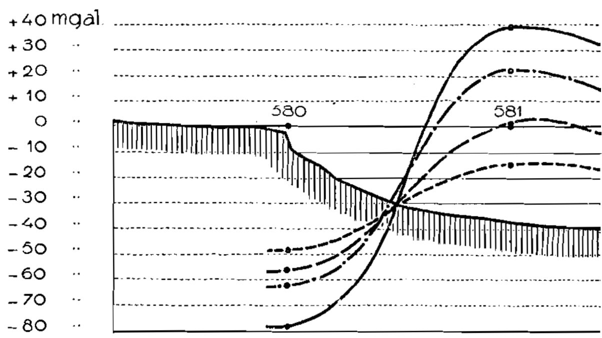


No. 35, Lower California, 27° N.L.





No. 39, Brazil, over Pernambuco.



No. 40, Brazil, east of Macei

0

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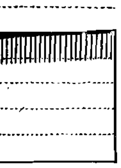
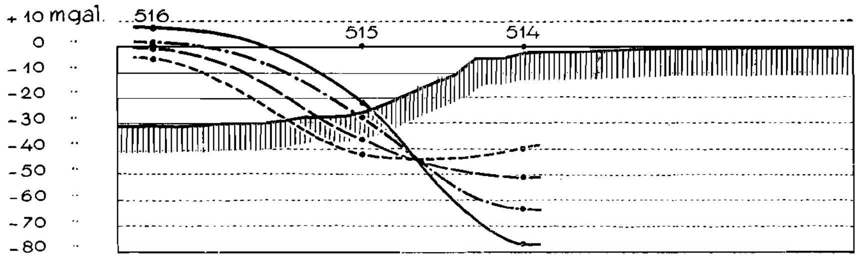
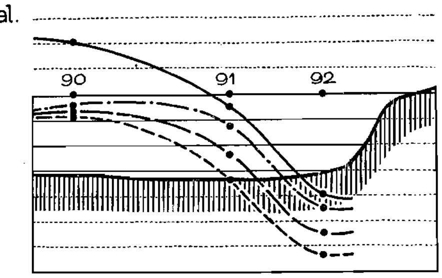
vert
line-



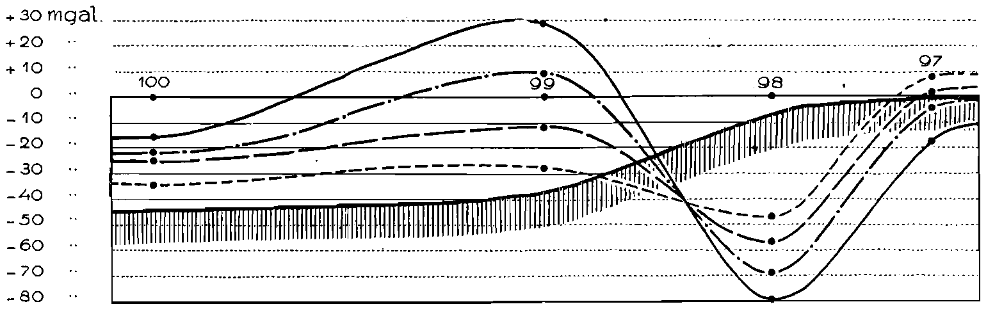
Is.



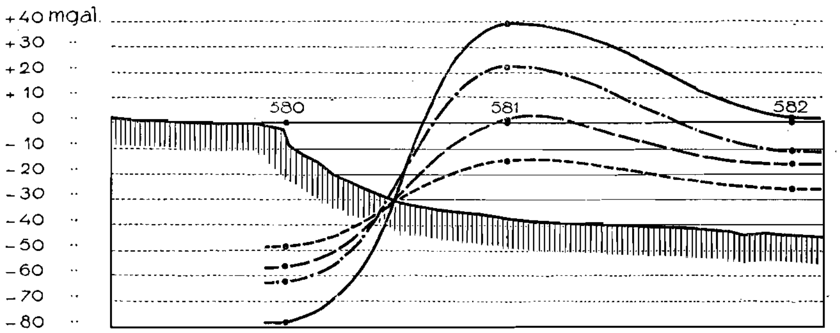
No. 28, West Africa, near V. Cisneros.



35, Lower California, 27° N.L.

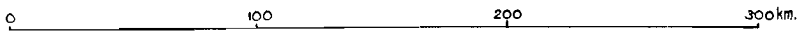


No. 36, West of San Francisco.



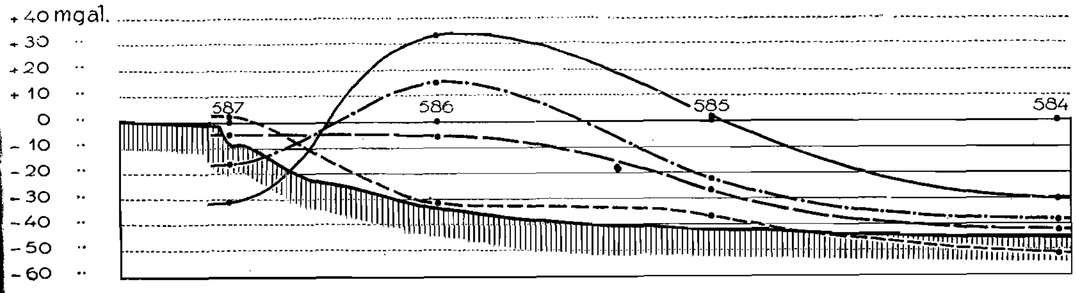
No. 40, Brazil, east of Maceio.

local isostatic anomalies, T = 20 km.
local isostatic anomalies, T = 30 km.
regional isostatic anomalies, T = 30 km, R = 116,2 km.
regional isostatic anomalies, T = 30 km. R = 232.4 km.

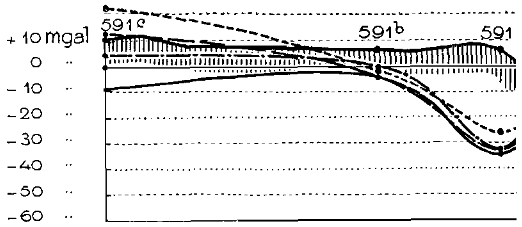


horizontal scale 1 : 3.000.000
vertical scale 1 : 300.000;
line-interval = 1000 m = 10 mgal.

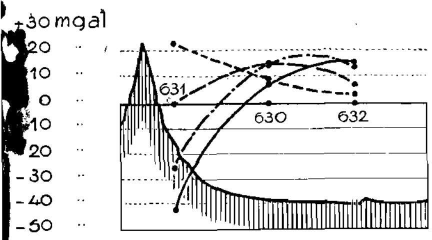
PLATE IV



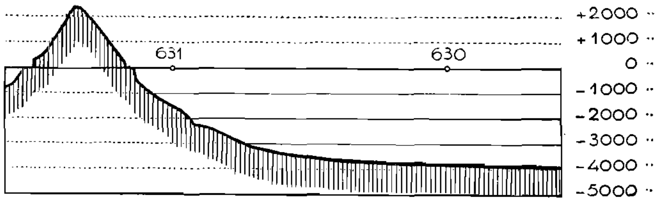
No. 41, Brazil, east of Belmonte.



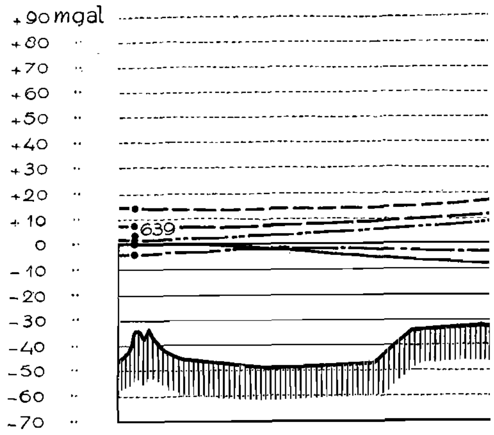
No.

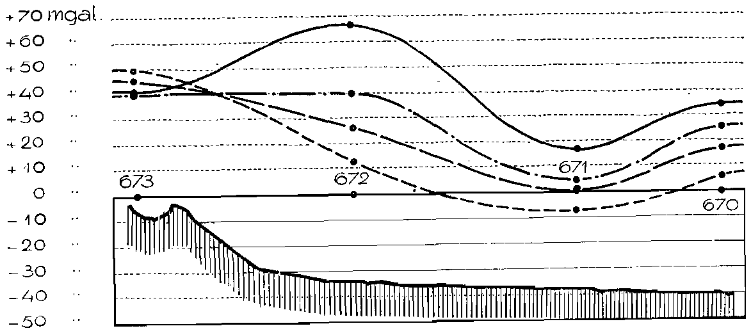


No. 47, Tristan da Cunha.

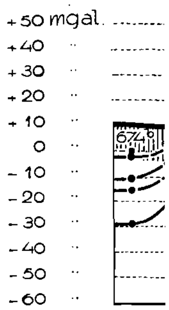


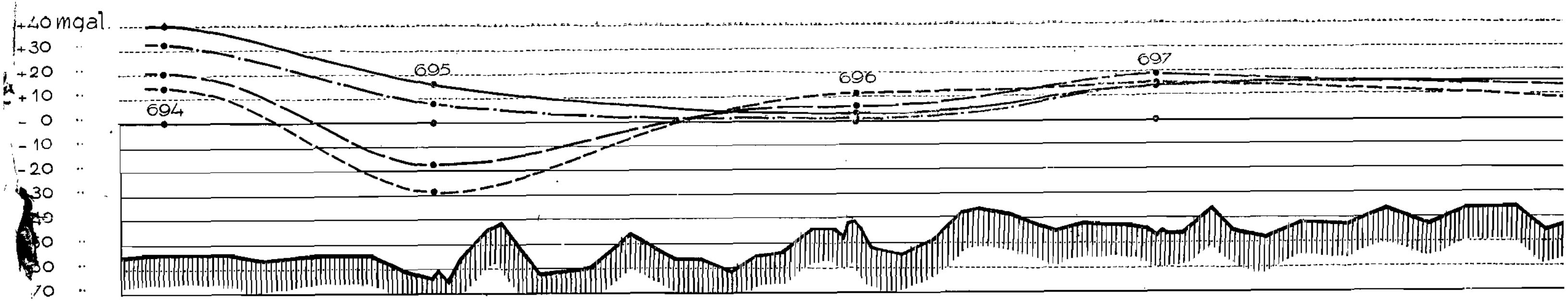
No. 47a, Tristan da Cunha.





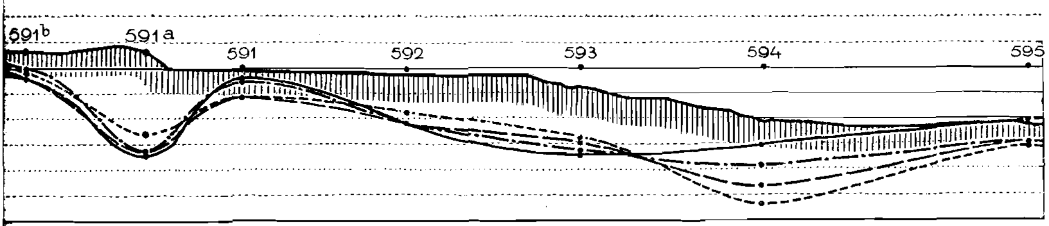
No. 51, South Africa, SE. of Bashee River.



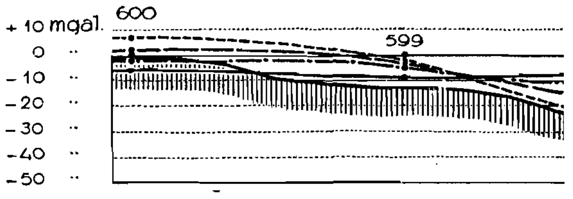


No. 55, Mauritius basin towards SE.

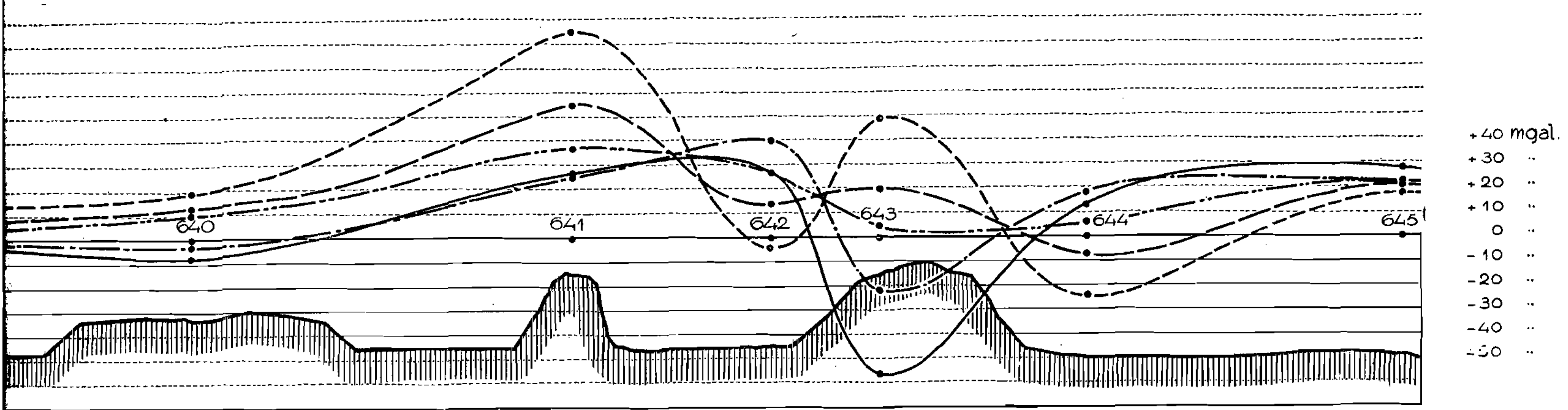
P



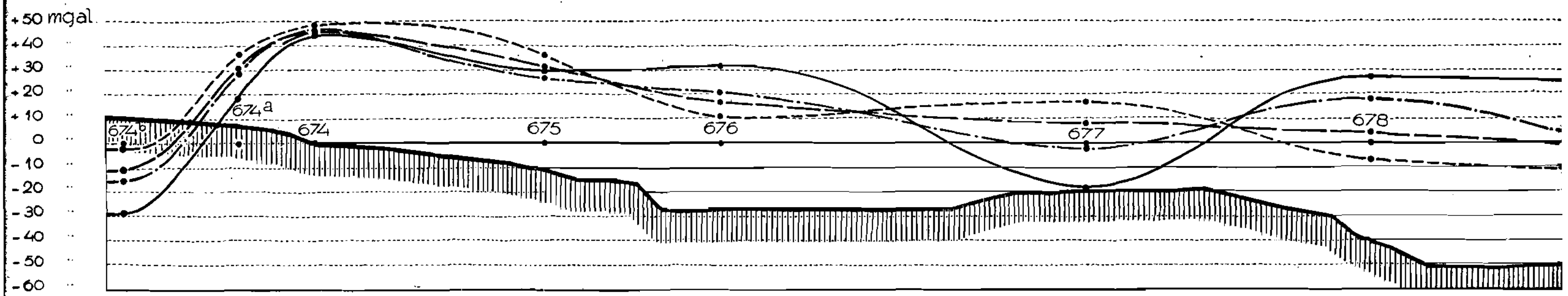
No. 42, Brazil, over Rio de Janeiro.



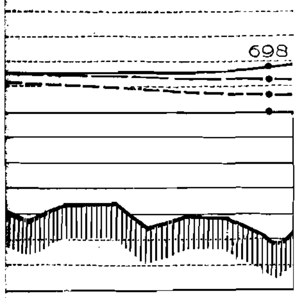
No. 43, Brazil, east of Domin

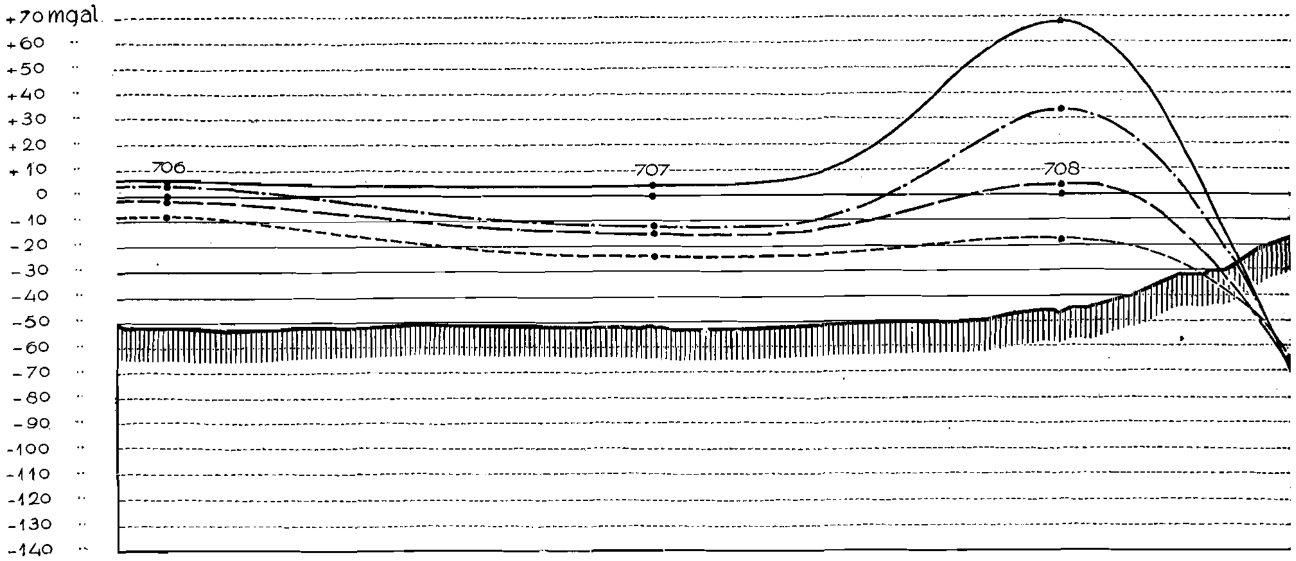


No. 48, Over Walvis Ridge at 32° S.L.



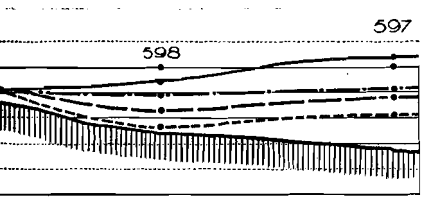
No. 52, South Africa, over Durban.



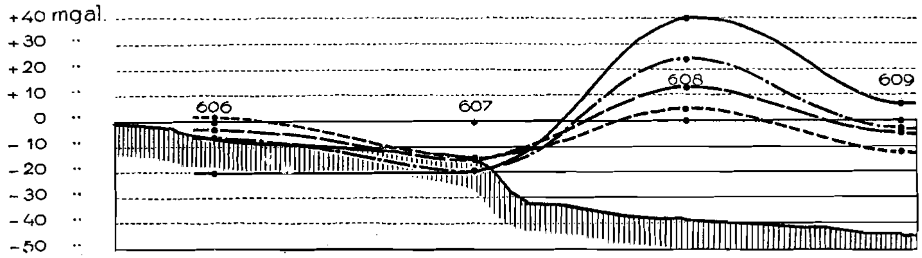


No. 56, West Australia, over Fremant

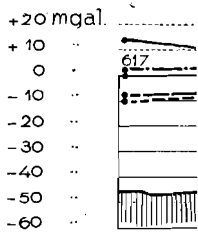
Profiles Continental Margins, a.o.



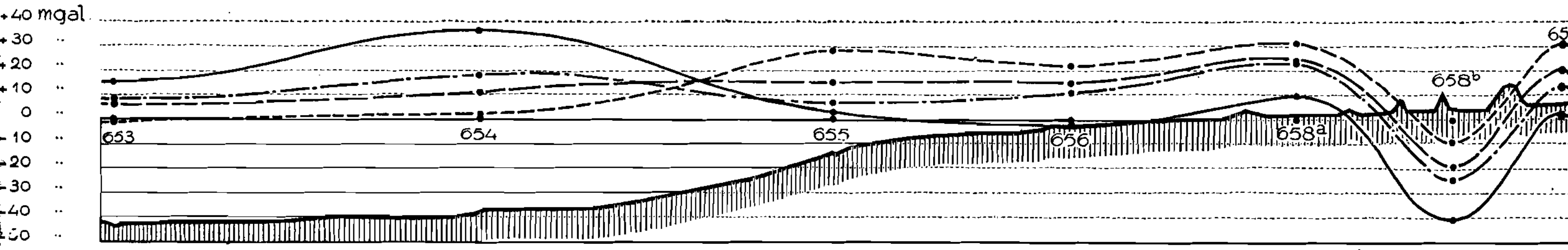
Domingo das Torres.



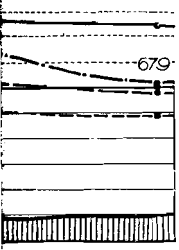
No. 44, Argentine, east of Mar del Plata.

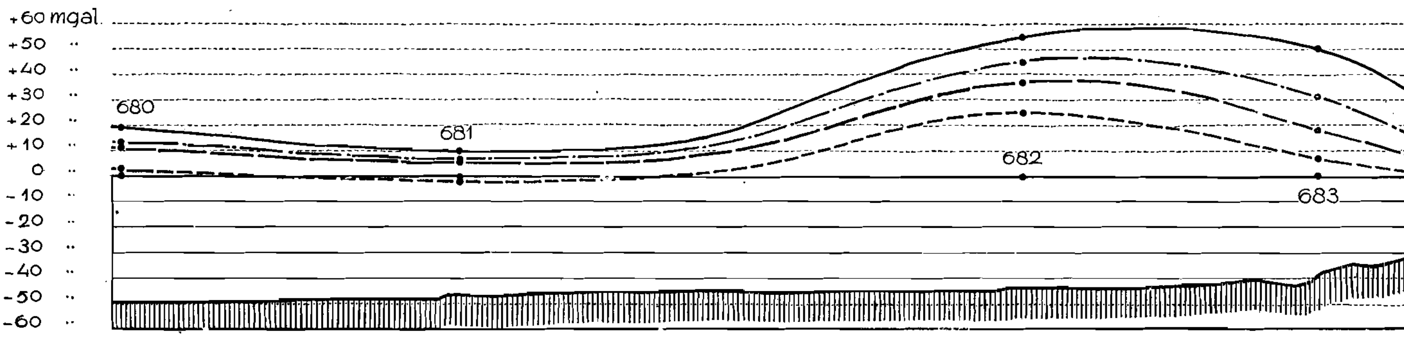


No.

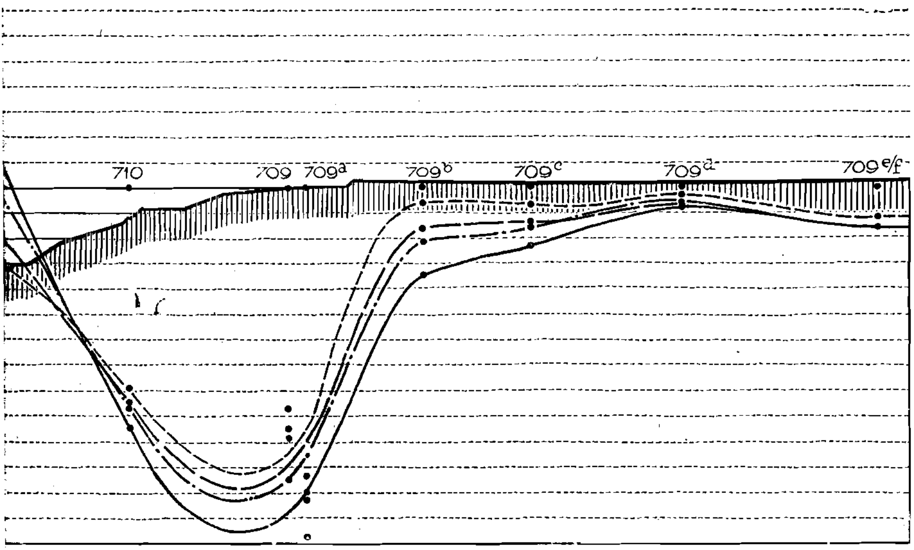


No. 49, South Africa, over Malmesbury (N. of Capetown).

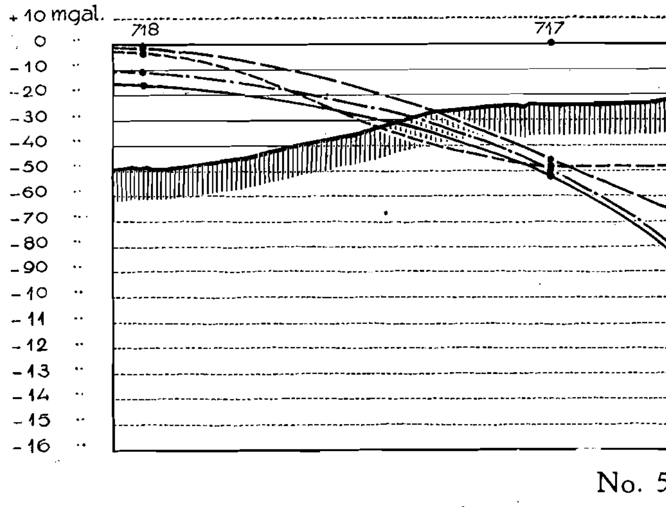




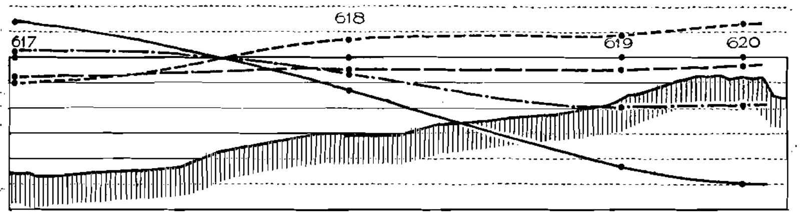
No. 53, Over Madagascar Ri



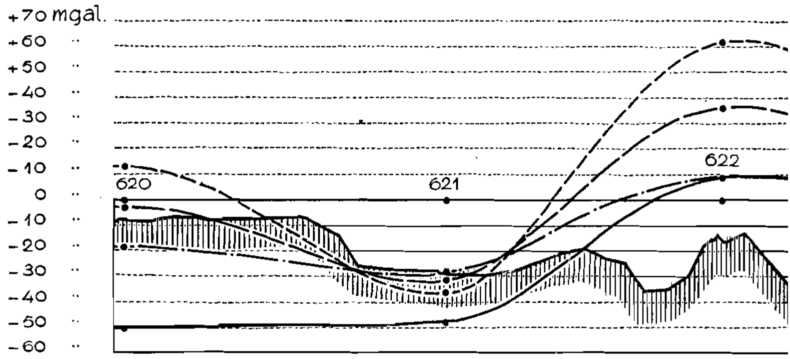
Fremantle.



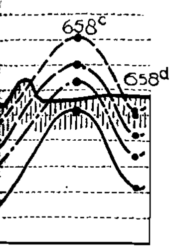
No. 5

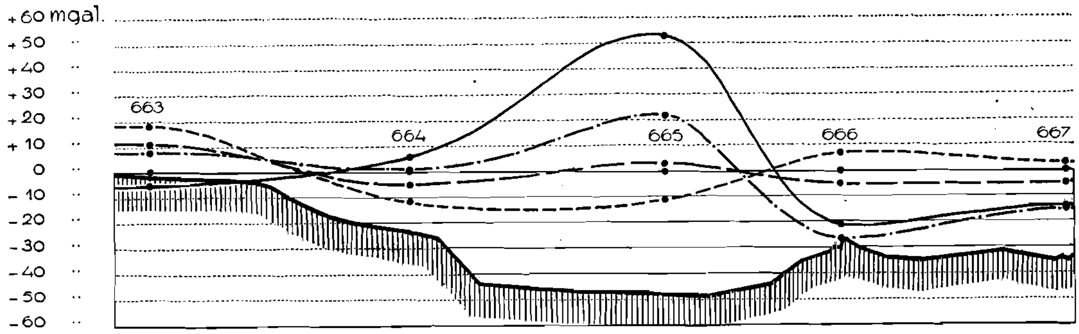


No. 45, From Bromley Plateau towards SSW.

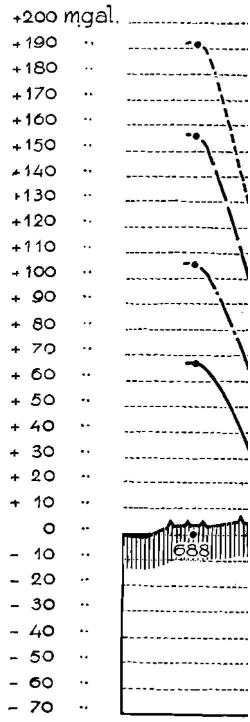


No. 46, From Bromley Plateau towar

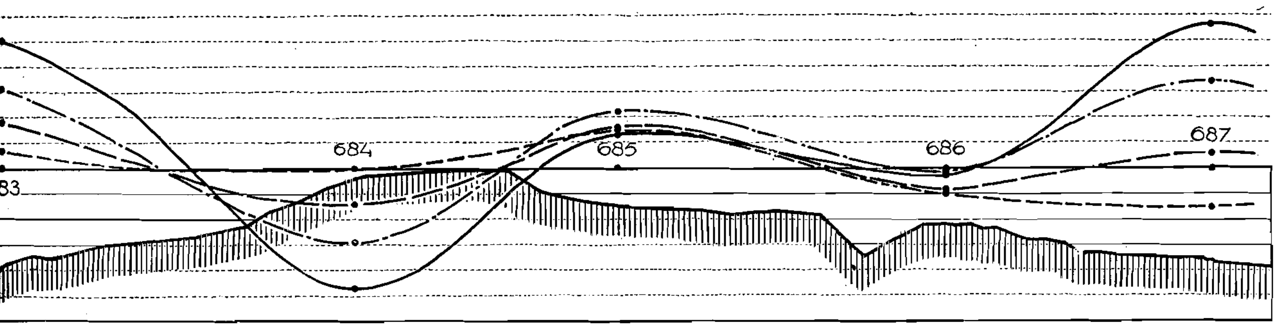




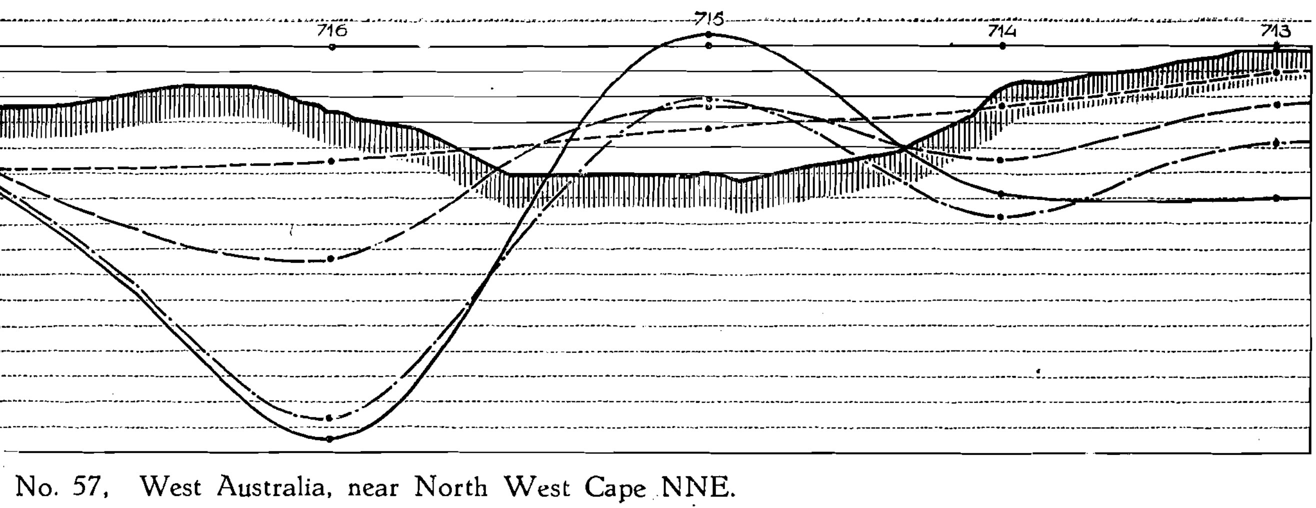
No. 50, South Africa, SE. of Humansdorp.



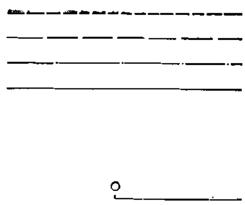
No. 54,



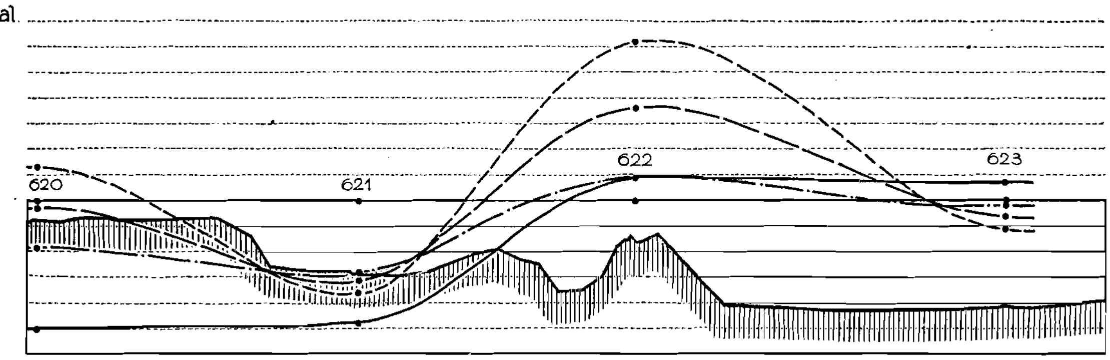
scar Ridge at 26° S.L.



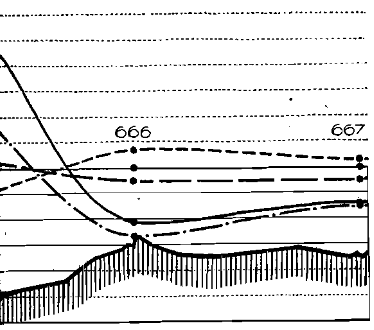
No. 57, West Australia, near North West Cape NNE.



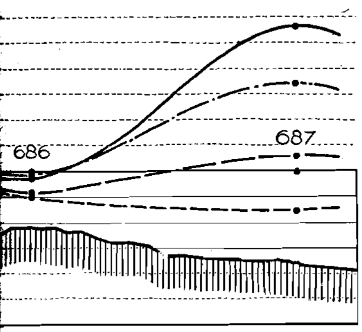
horizontal scale
vertical scale
line-interval =

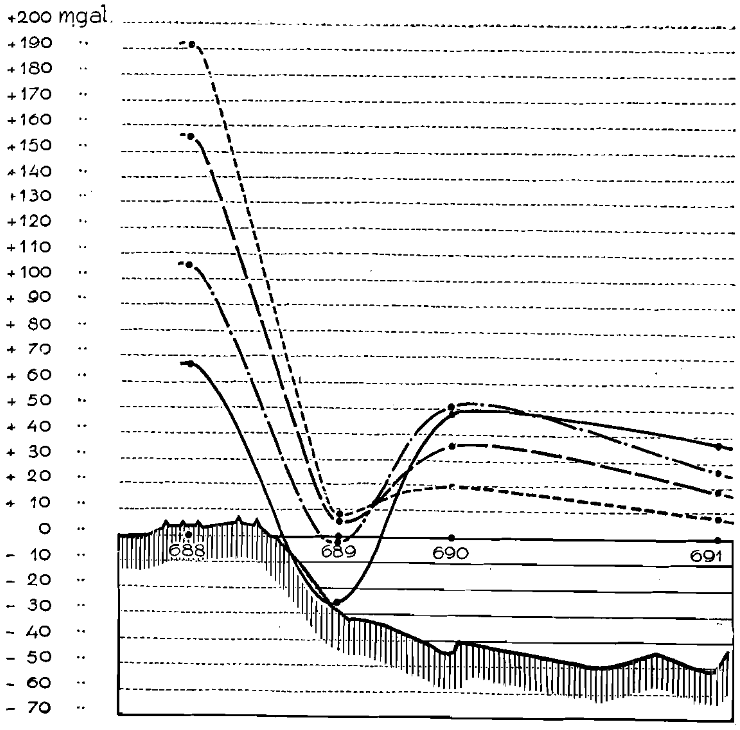


No. 46, From Bromley Plateau towards SSE.

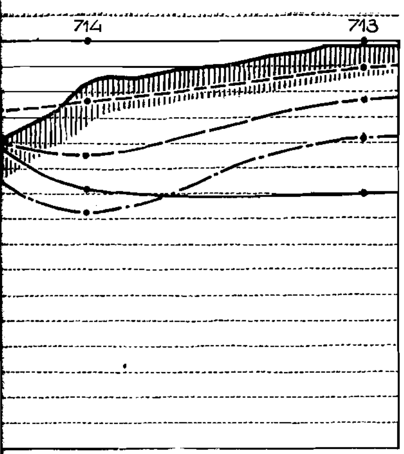


nansdorp.





No. 54, Mauritius towards SSE.

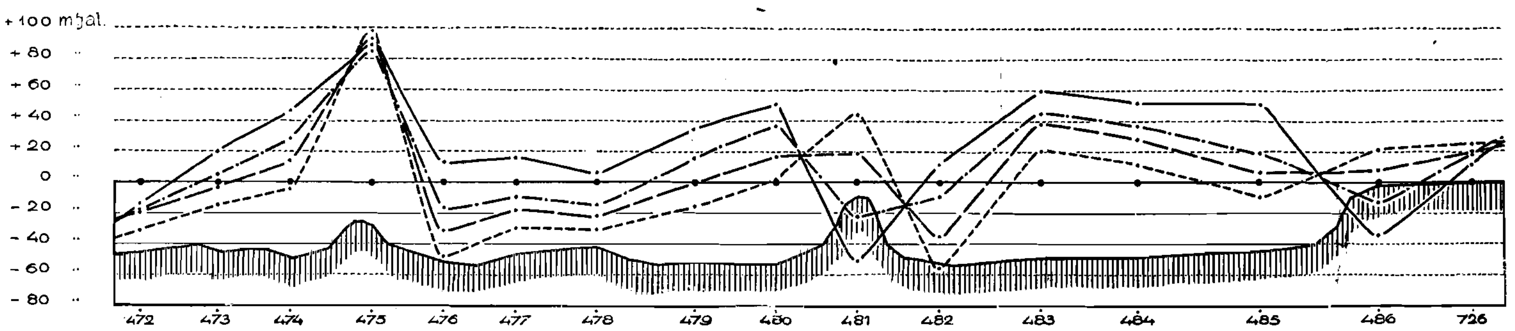


local isostatic anomalies, T = 20 km.
local isostatic anomalies, T = 30 km.
regional isostatic anomalies, T = 30 km, R = 116,2 km.
regional isostatic anomalies, T = 30 km, R = 232,4 km.

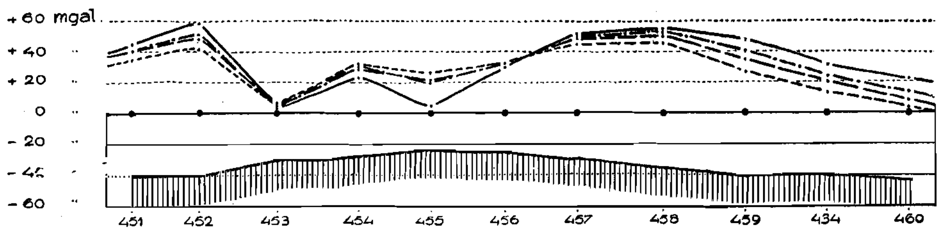
0 100 200 300 km.

horizontal scale 1 : 3.000.000
vertical scale 1 : 300.000;
line-interval = 1000 m = 10 mgal.

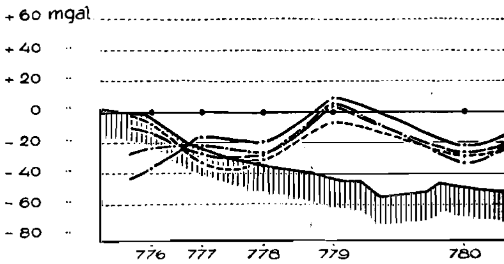
PLATE V

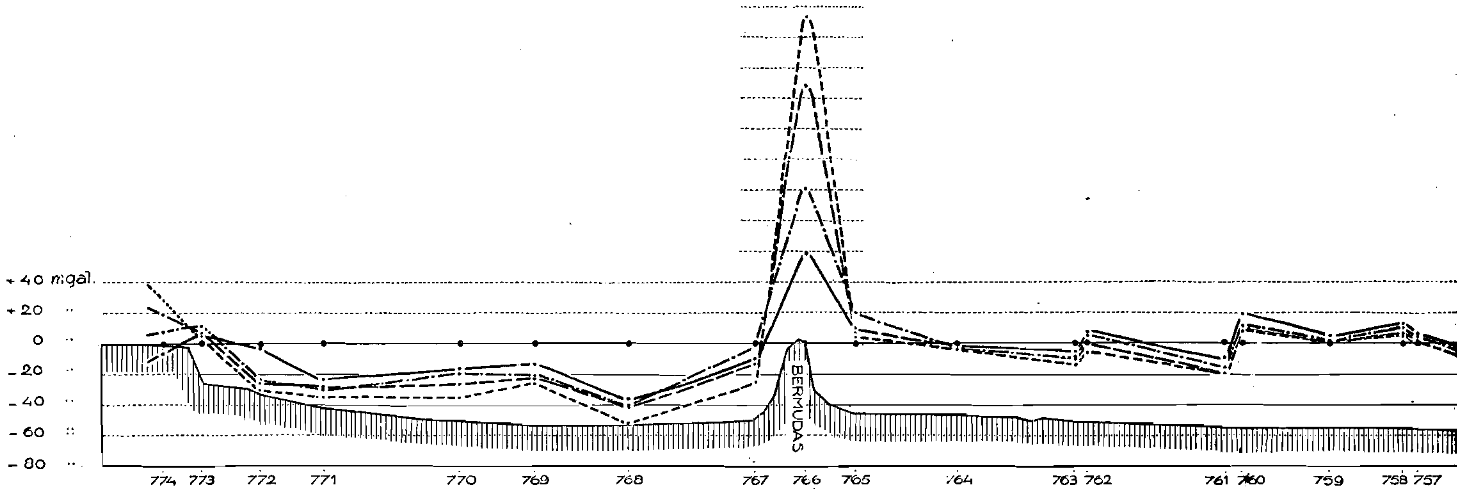


No. 58, East of Madeira towards English Channel.

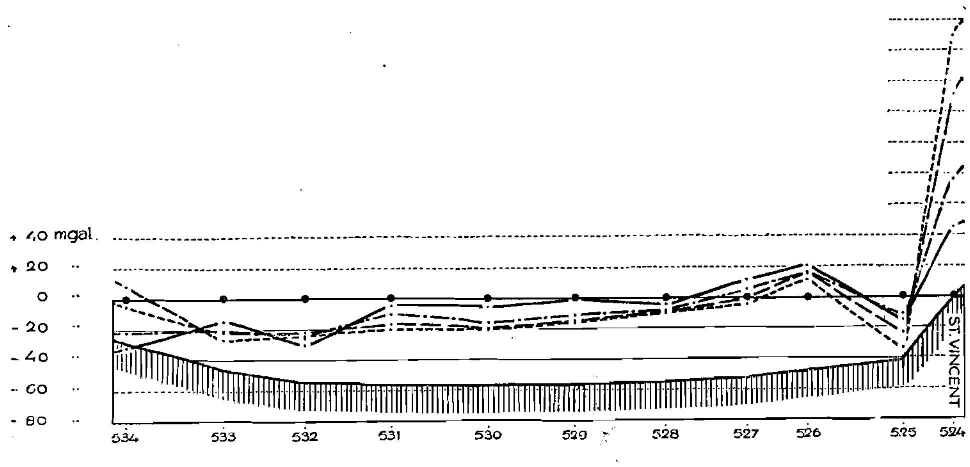


No. 62, W-E profile over Mid-Atlantic Ridge N of Azores.

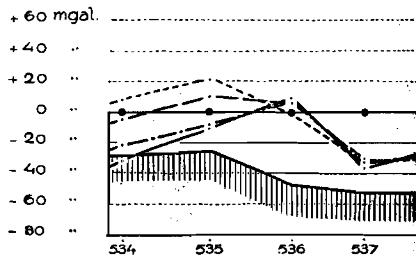




No. 65, Virginia (U.S.A.) over Bermudas towards

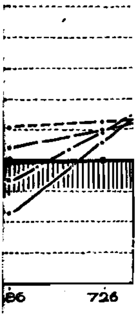


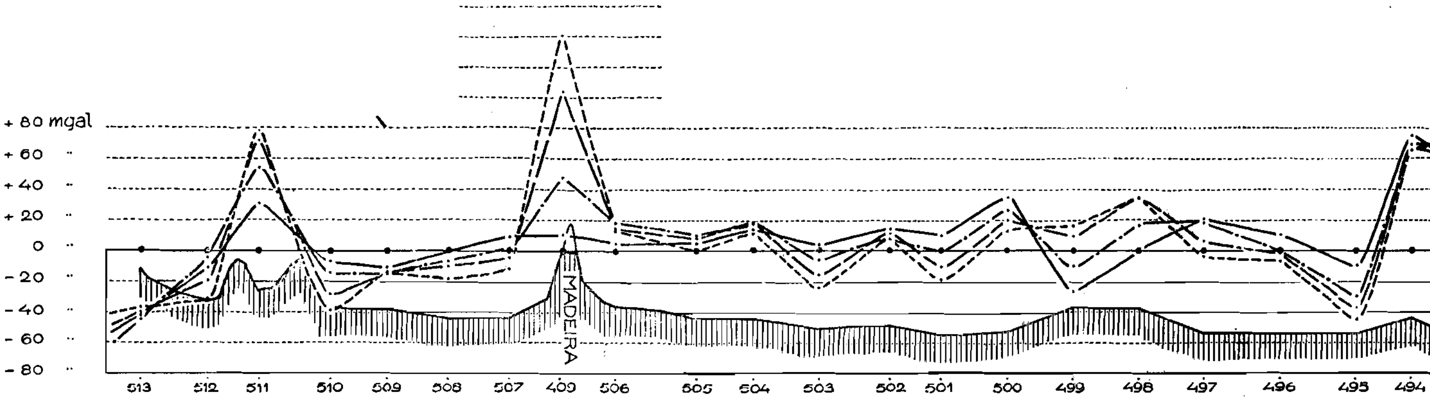
No. 67, Mid-Atlantic Ridge towards St. Vincent (Cape Verde Is.).



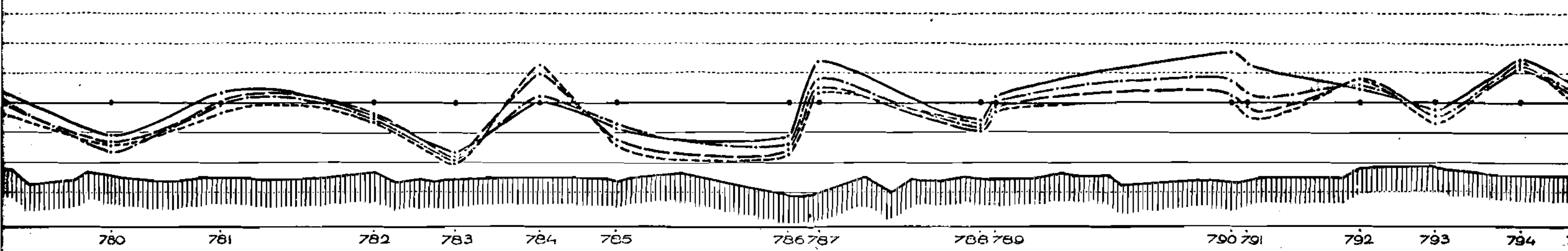
No. 68,

Profiles North a

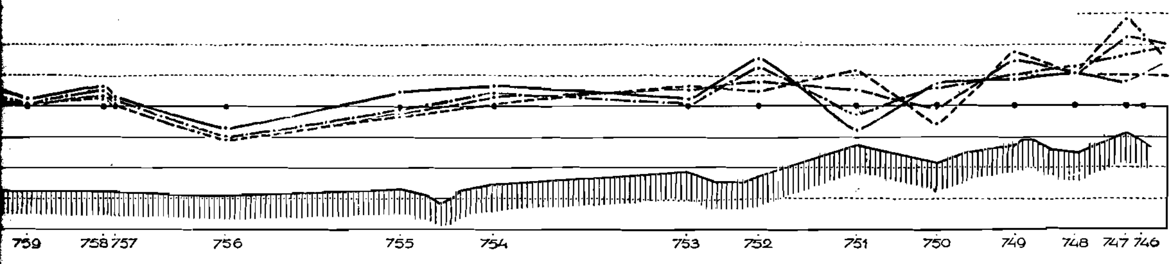




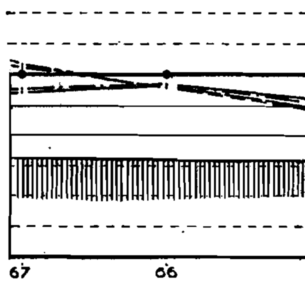
No. 59, W. Africa over Canary Is. and Madeira towards English Ch

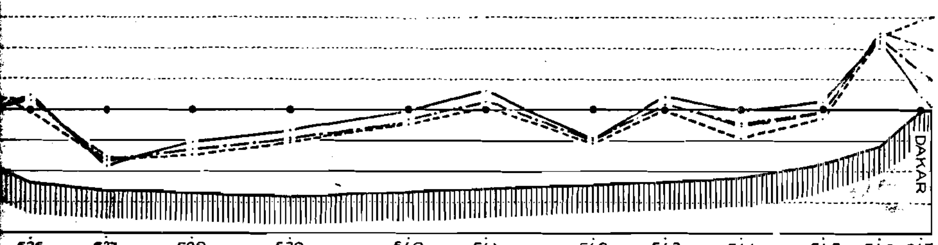


No. 63, Virginia (U.S.A.)

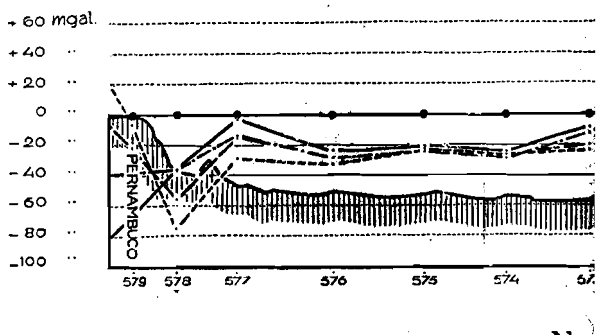


as towards Mid-Atlantic Ridge.



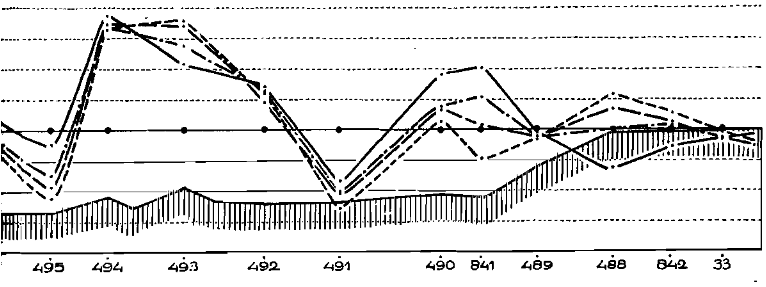


No. 68, Mid-Atlantic Ridge towards Dakar.

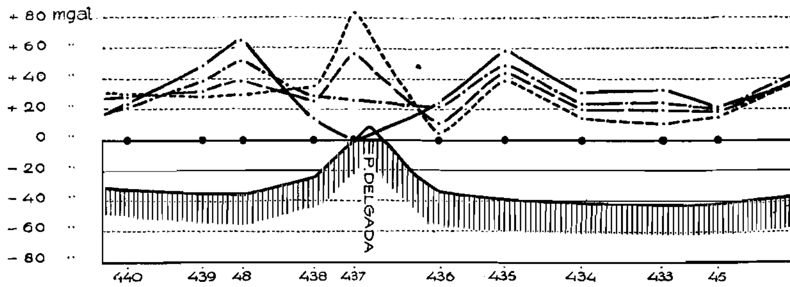


No.

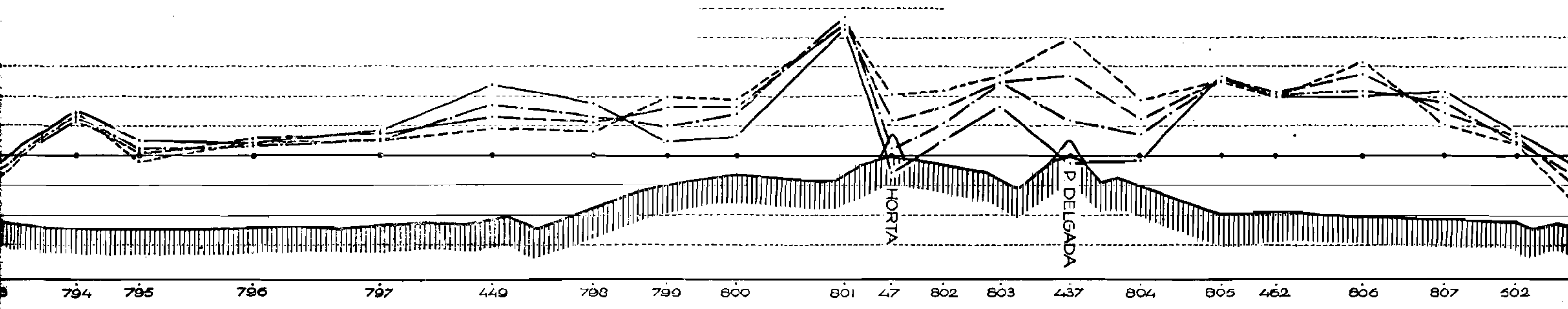
rth and Central Atlantic.



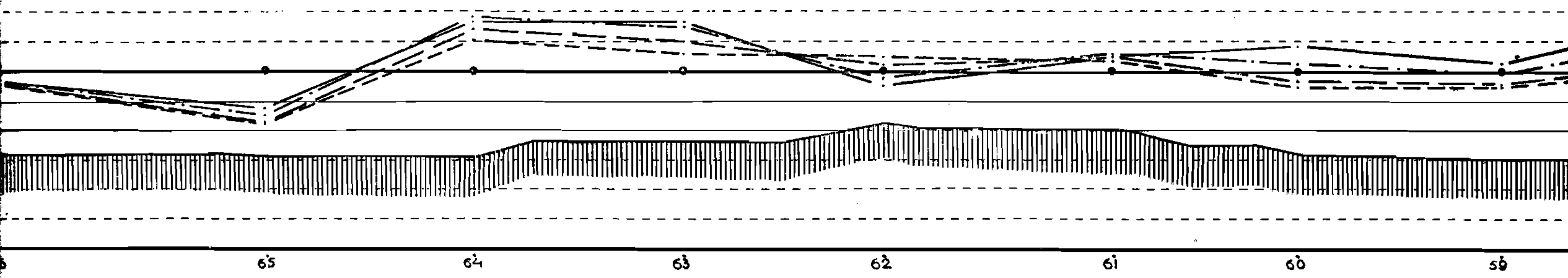
English Channel.



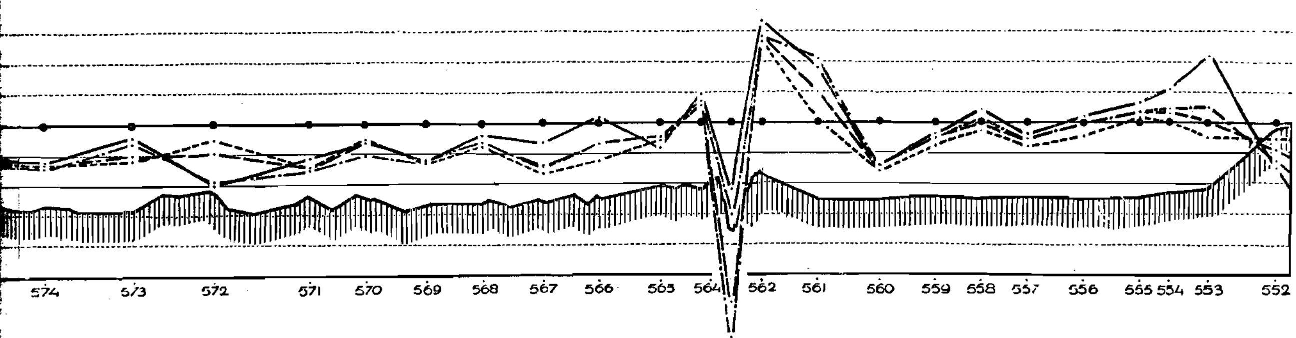
No. 60, Over San



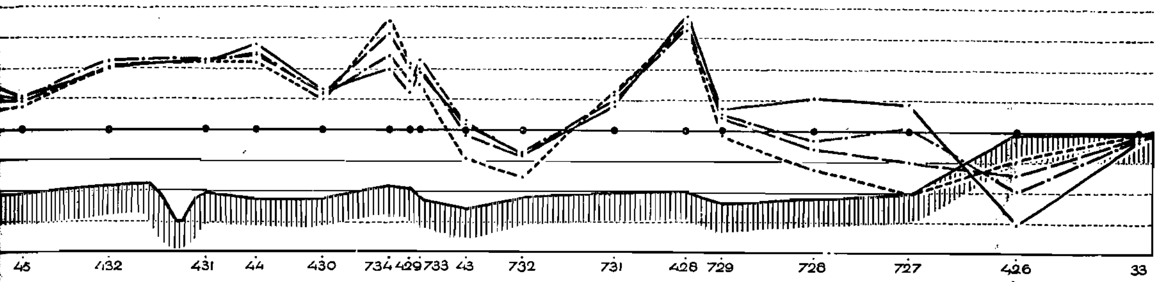
ia (U.S.A.) over Azores towards Lisbon.



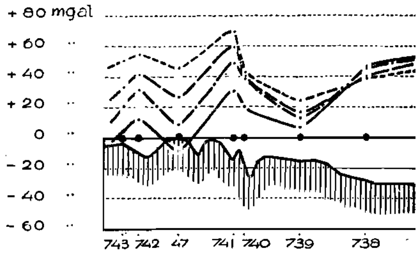
No. 66, N. of Puerto Rico Trough towards Canary Is. and



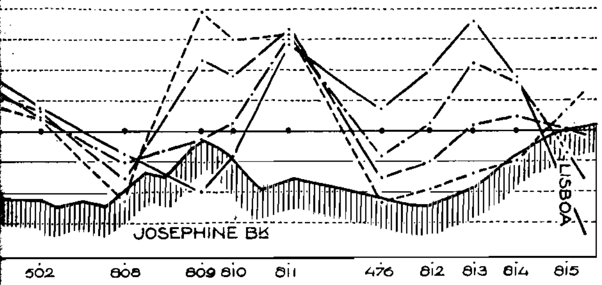
No. 69, Pernambuco towards Konakri (W. Africa).

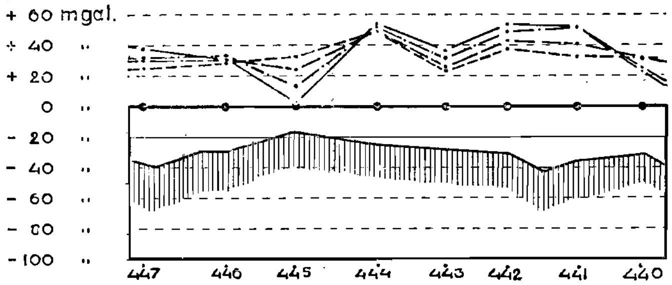


...er San Miguel (Azores) towards English Channel.

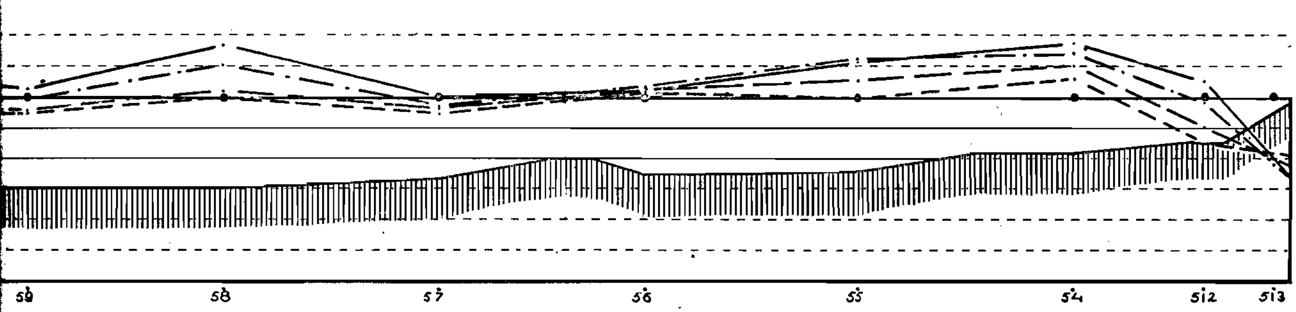


No. 61,
Azores, SW-NE profile over Horta...





No. 64,
W-E profile over Mid-Atlantic Ridge S of Azores.



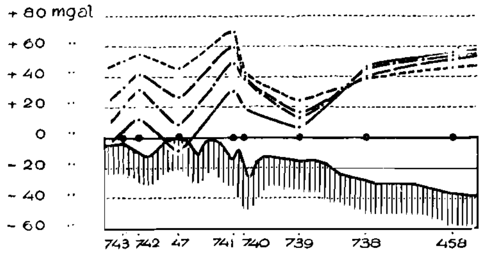
...Is. and W. Africa.

local isostatic anomalies, T = 20 km.
local isostatic anomalies, T = 30 km.
regional isostatic anomalies, T = 30 km, R = 116,2 km.
regional isostatic anomalies, T = 30 km, R = 232.4 km.

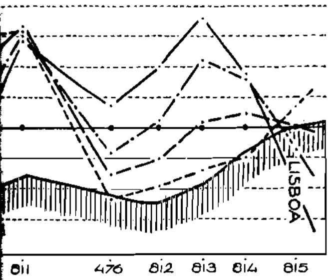
0 500 1000 km.

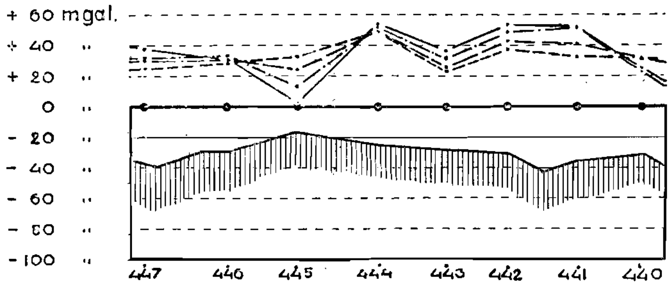
horizontale scale 1 : 15.000.000
vertical scale 1 : 500.000
line-interval = 2000 m = 20 mgal.

es) towards English Channel.

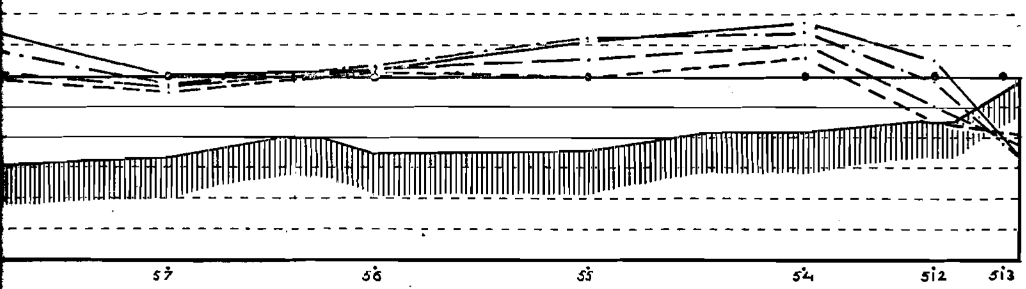


No. 61,
Azores, SW-NE profile over Horta (Fayal).

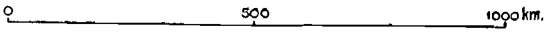




No. 64,
W-E profile over Mid-Atlantic Ridge S of Azores.

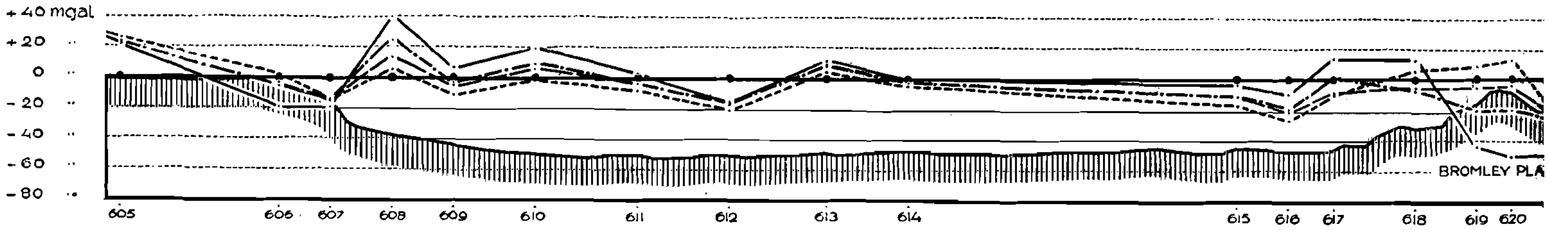


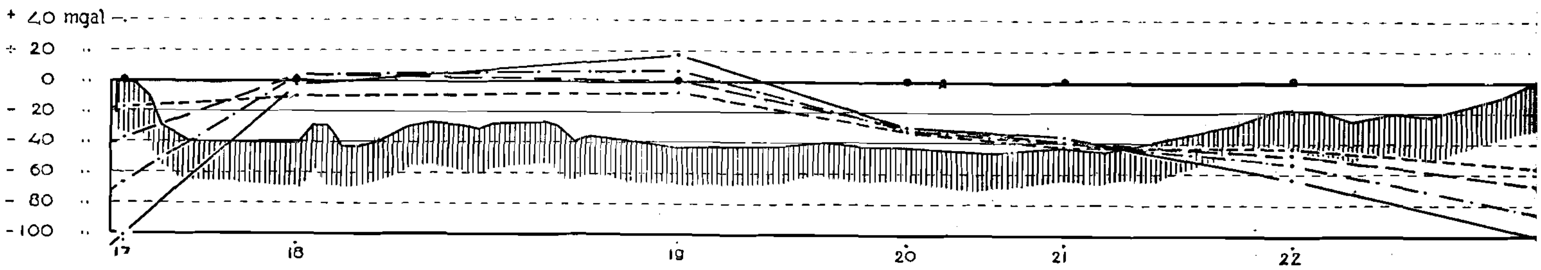
local isostatic anomalies, T = 20 km.
local isostatic anomalies, T = 30 km.
regional isostatic anomalies, T = 30 km, R = 116,2 km.
regional isostatic anomalies, T = 30 km, R = 232.4 km.



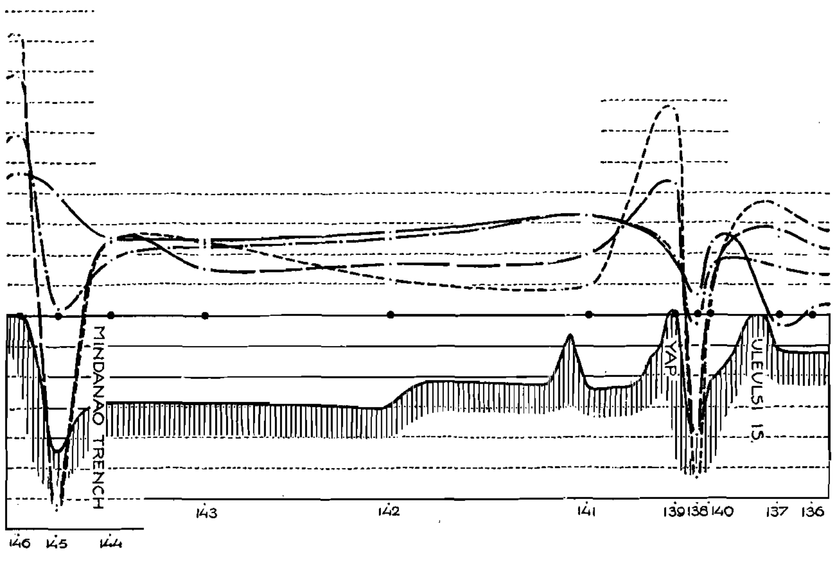
horizontale scale 1 : 15.000.000
vertical scale 1 : 500.000
line-interval = 2000 m = 20 mgal.

PLATE VI

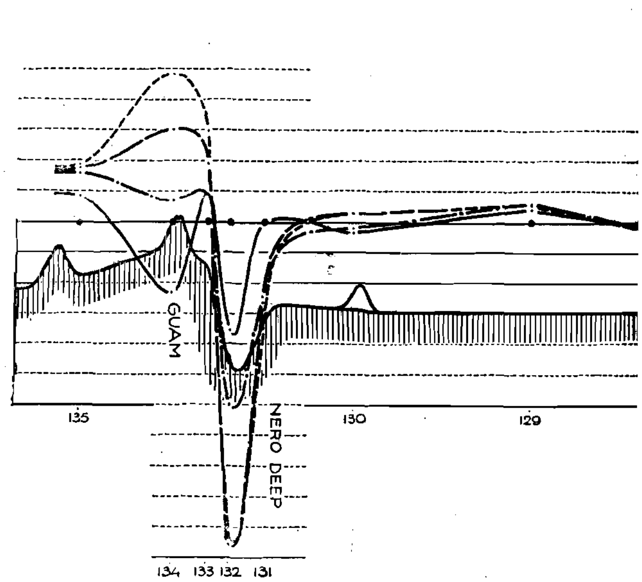




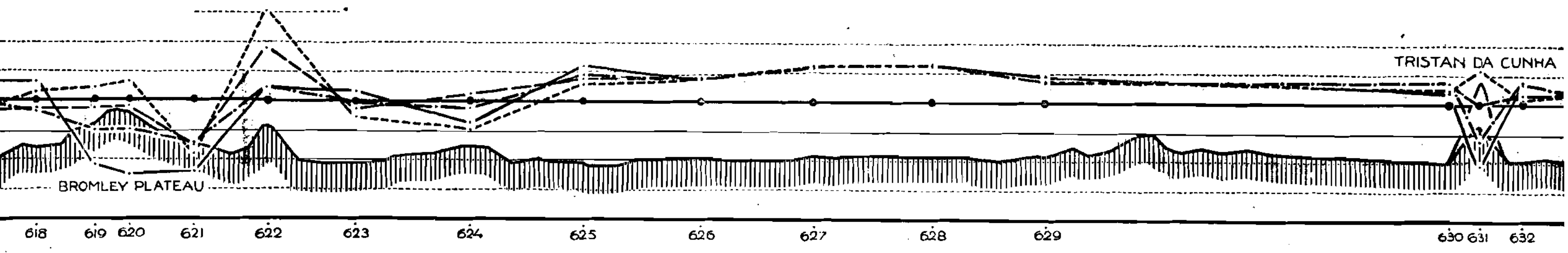
No. 71, Socotra over Maladive Is. and Ceylon toward



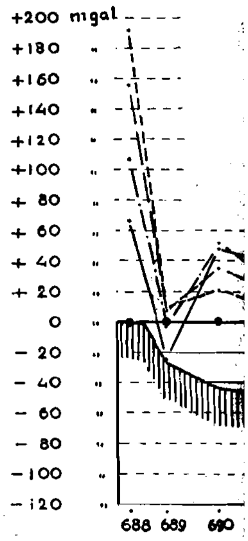
No. 76,
Strait Surigao (N. of Mindanao) over Yap towards Uleuthi Is.

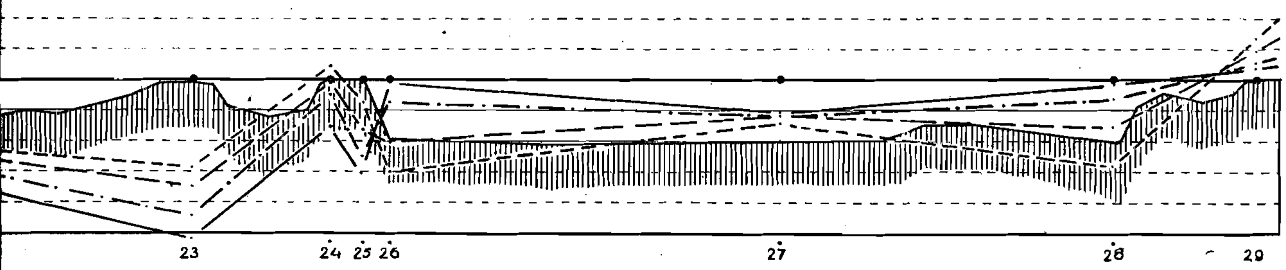


Profiles South Atl

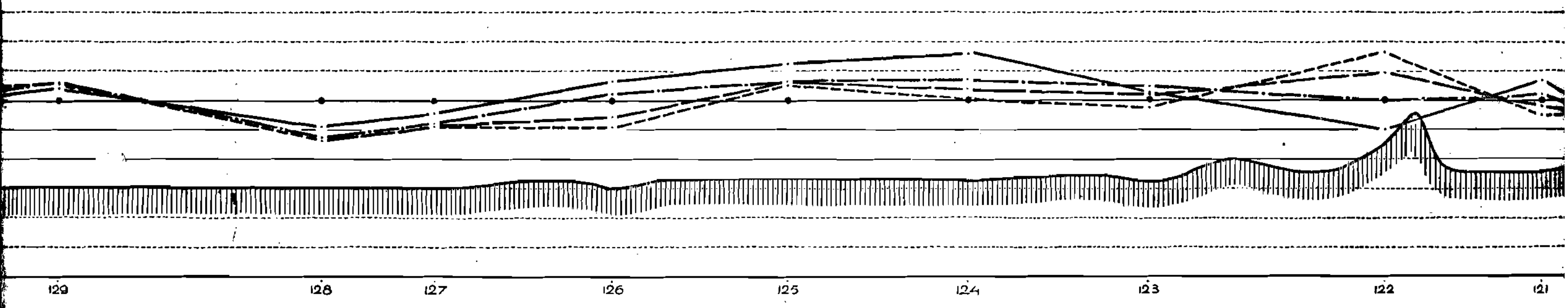


No. 70, Mar del Plata (Argentine) towards Capetown.

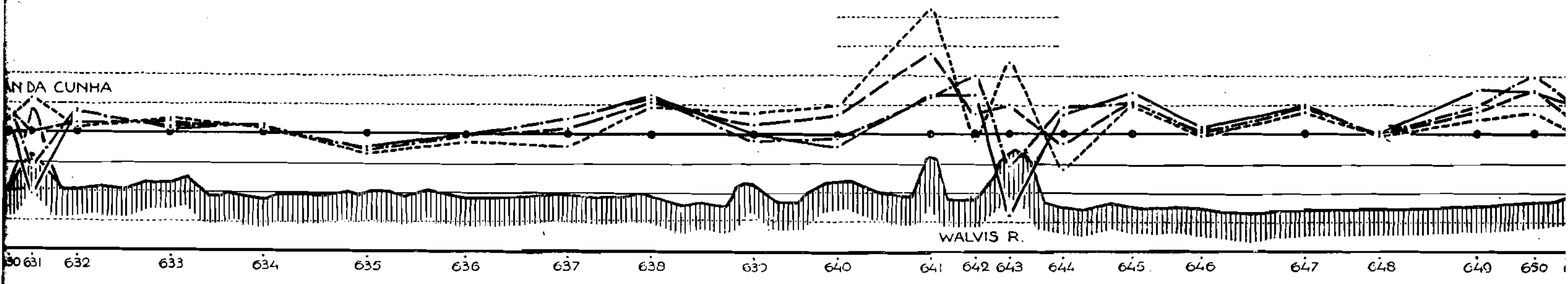


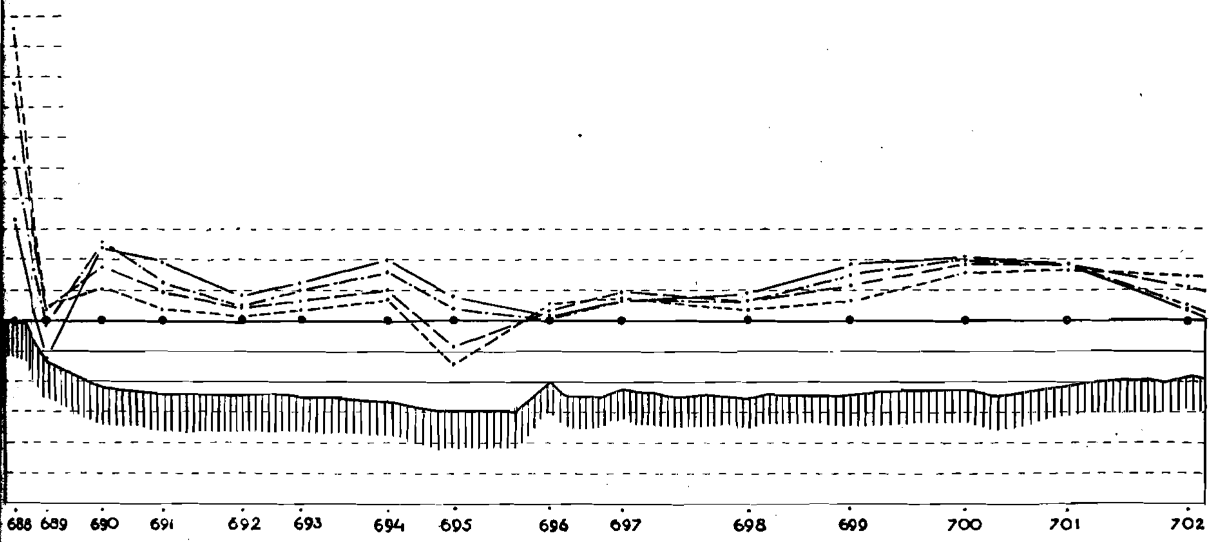


Ceylon towards Sabang (N. Sumatra).

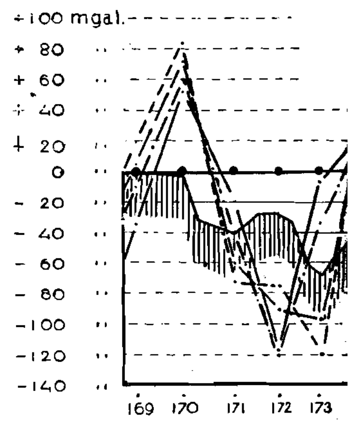


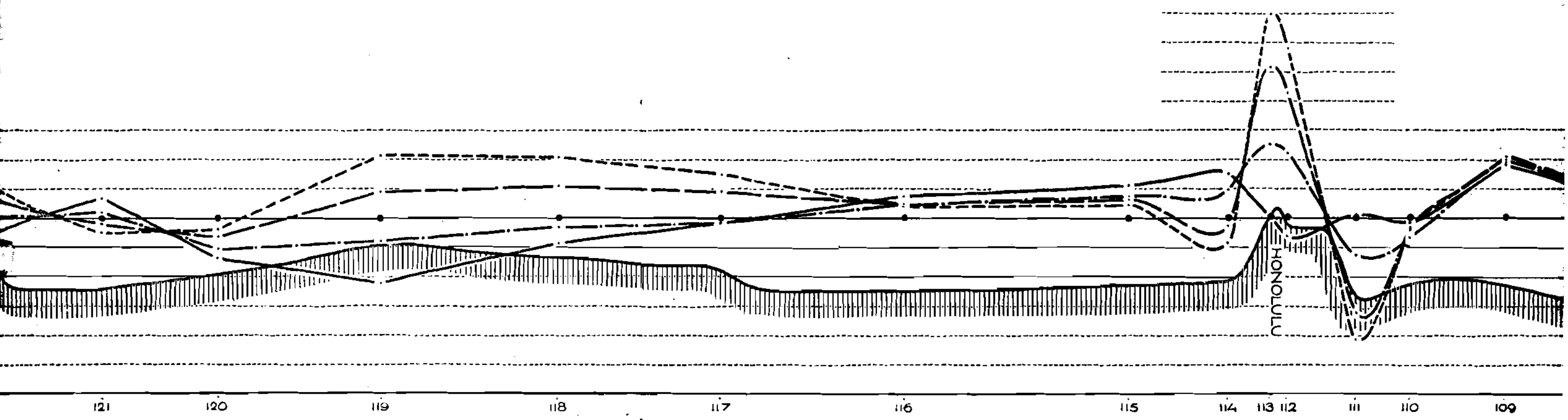
Atlantic, Indian Ocean and Pacific.



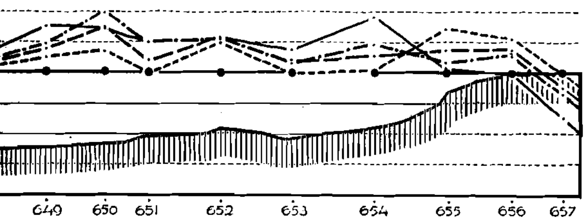


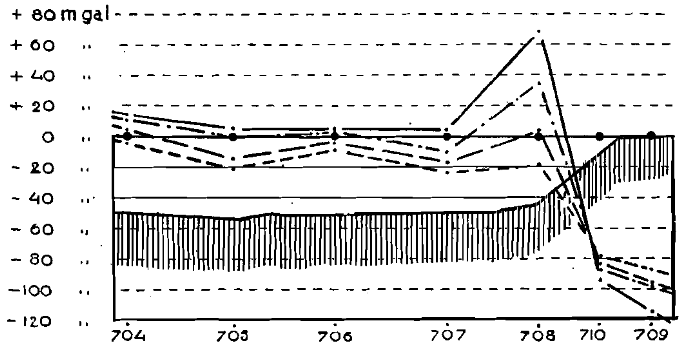
No. 72, Mauritius towards the south east.



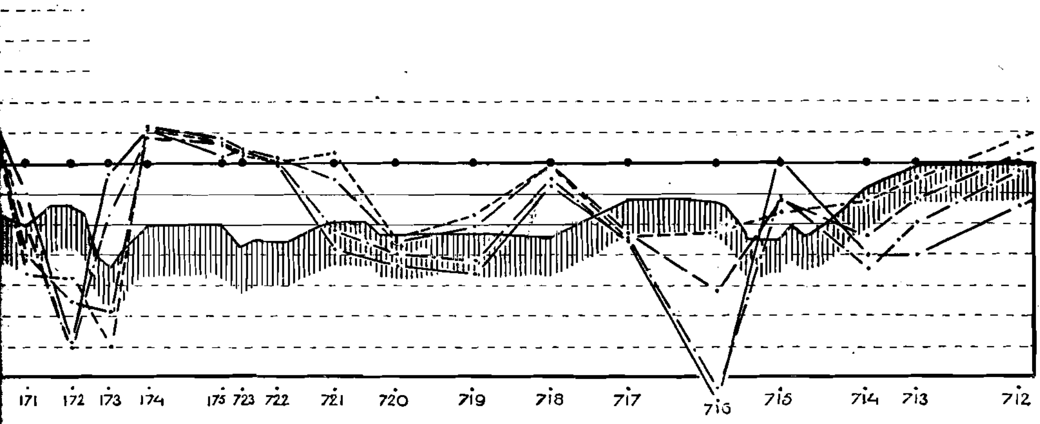


No. 75, Guam over Honolulu towards San Francisco.

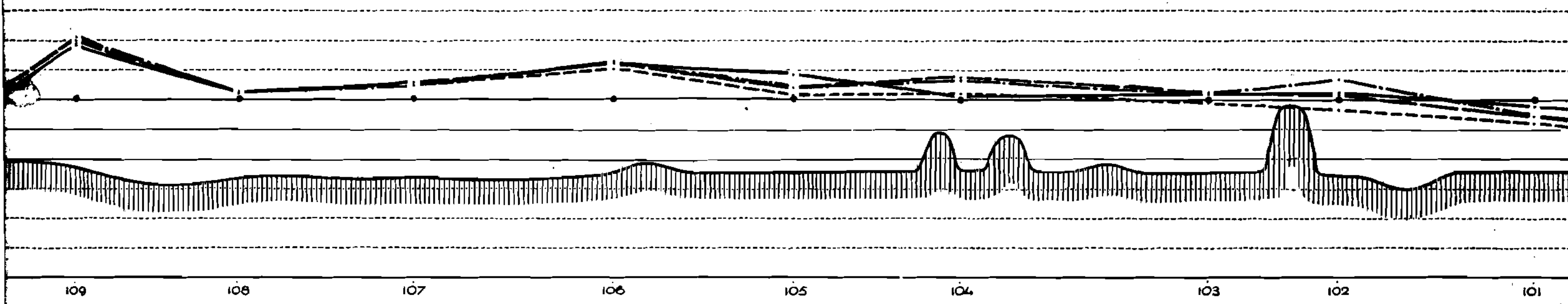




No. 73, West of Fremantle (West Australia).



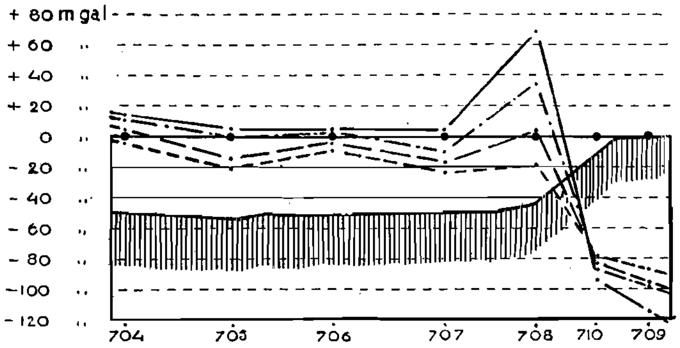
No. 74, Strait Bali towards West Australia.



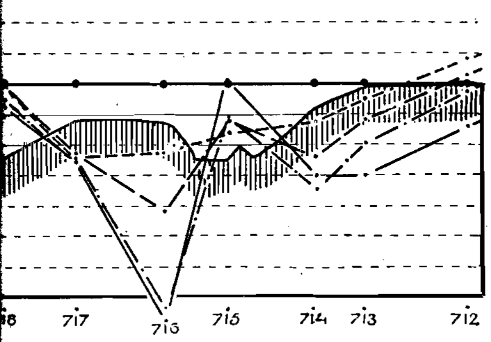
0 500 1000km

horizontale scale 1 : 15.000.000
vertical scale 1 : 500.000
line-interval = 2000 m = 20 mgal.

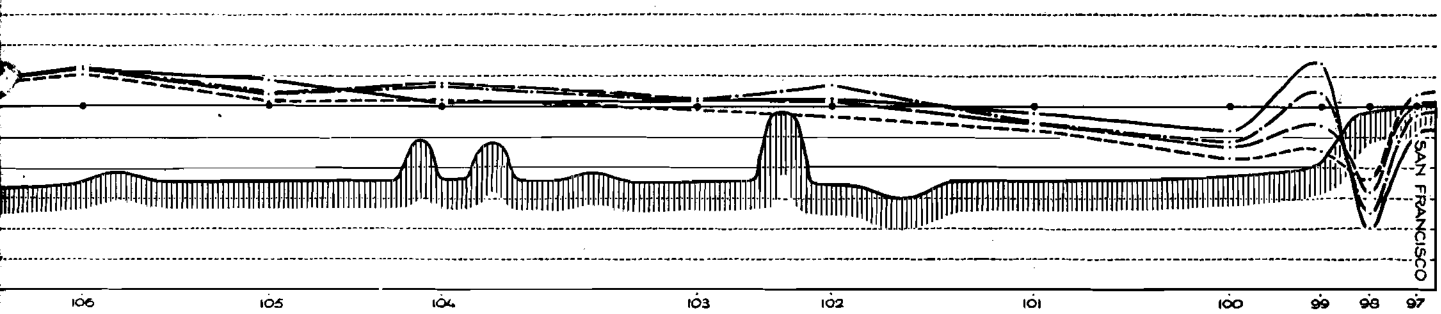
local isostatic anoma'ies, T = 20 km
local isostatic anomalies, T = 30 km
regional isostatic anomalies, T = 30
regional isostatic anomalies, T = 30



No. 73, West of Fremantle (West Australia).



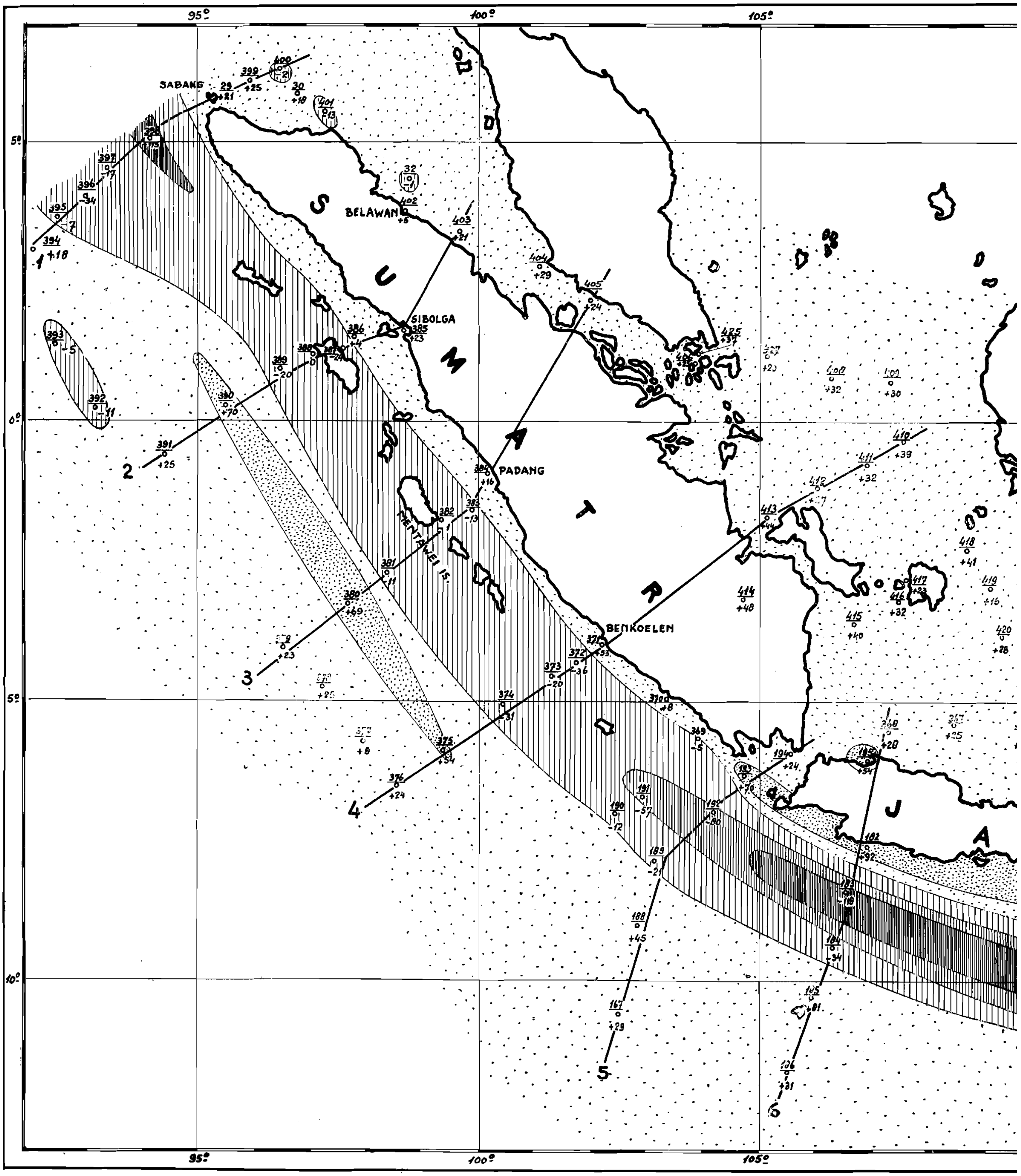
st Australia.



1000km

local isostatic anoma'ies, T = 20 km.
local isostatic anomalies, T = 30 km.
regional isostatic anomalies, T = 30 km, R = 116.2 km.
regional isostatic anomalies, T = 30 km, R = 232.4 km.

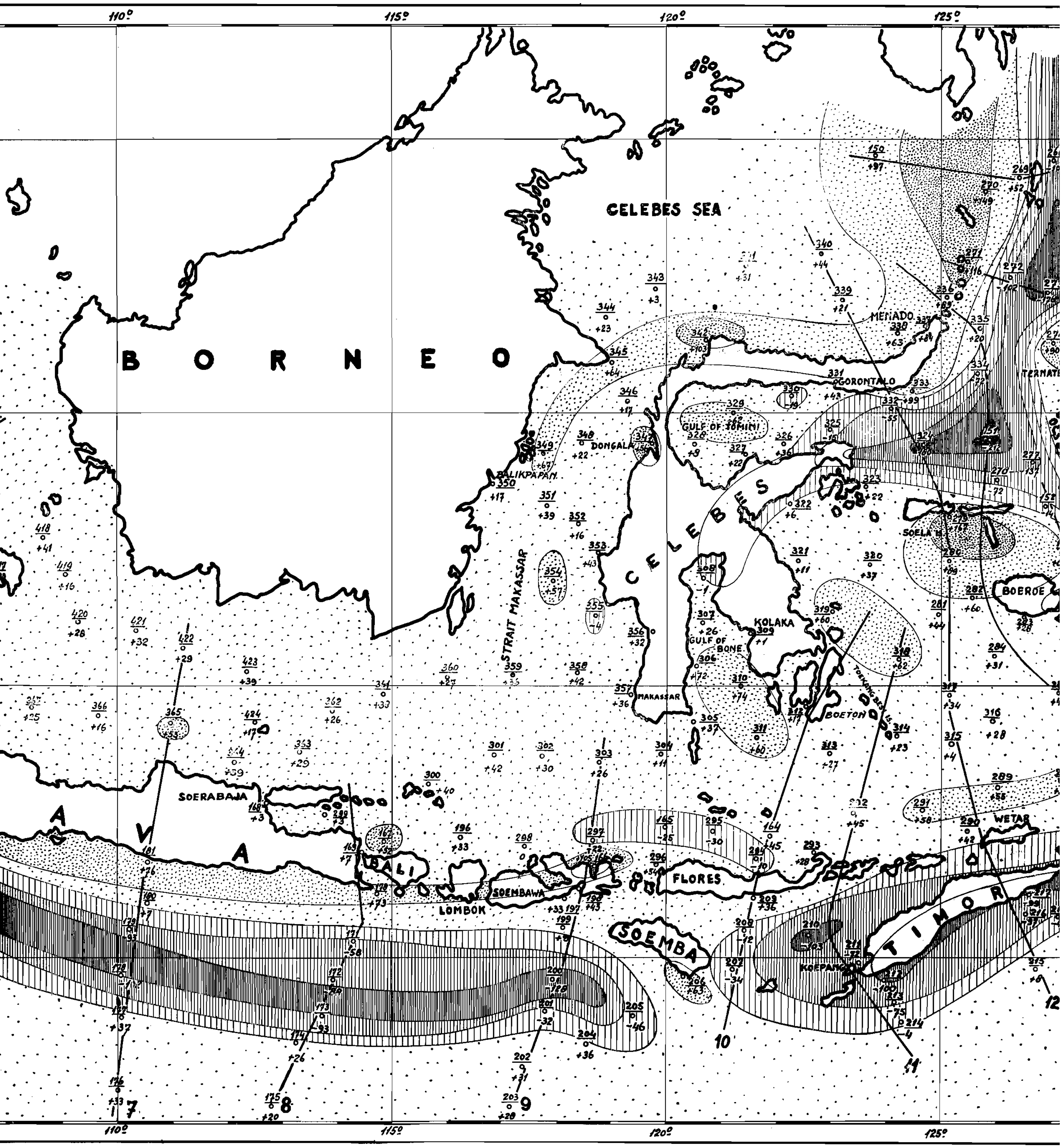
0.000
0
= 20 mgal.



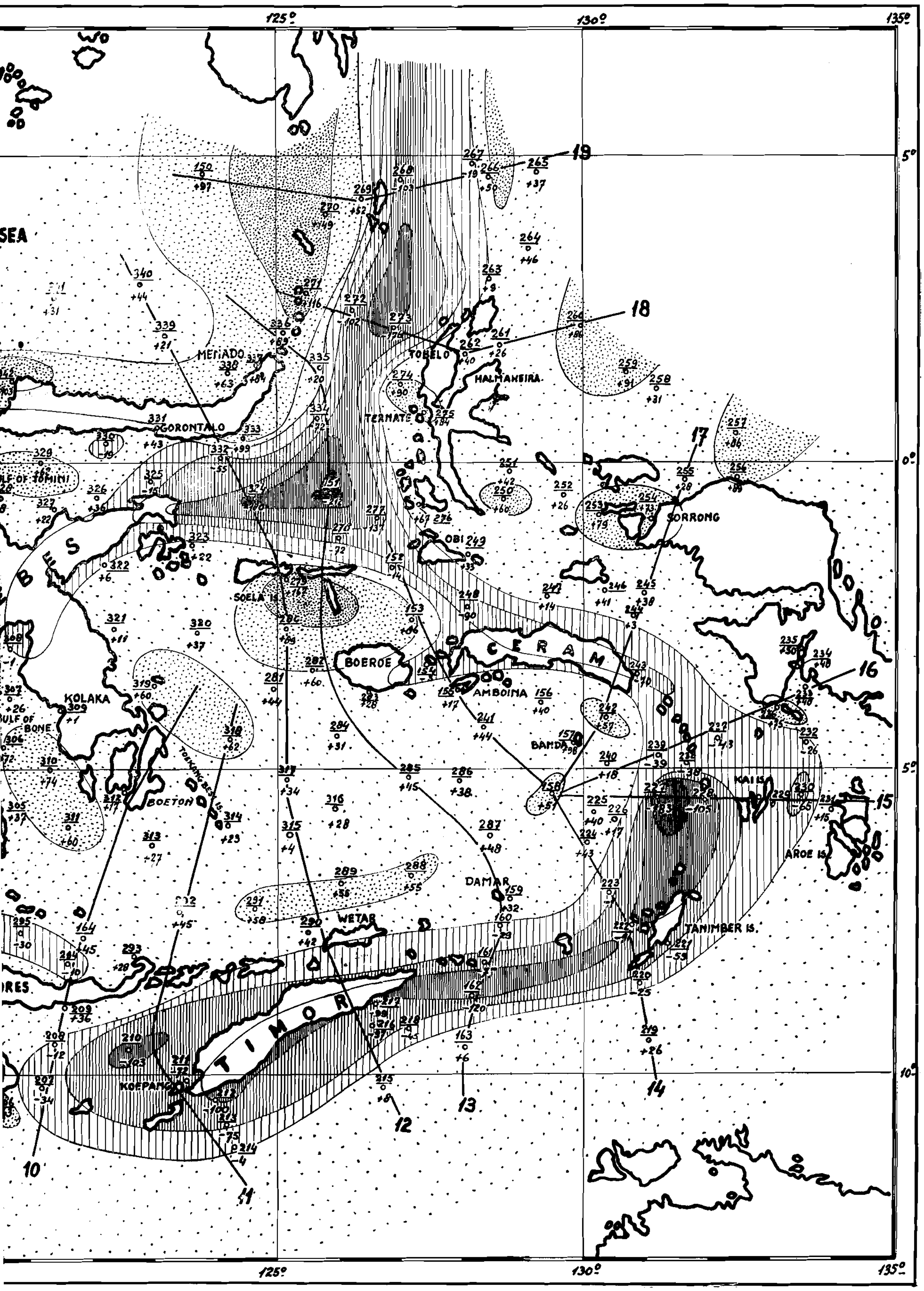
Station-numbers, local isostatic anomalies (T

East Indies, no. 1

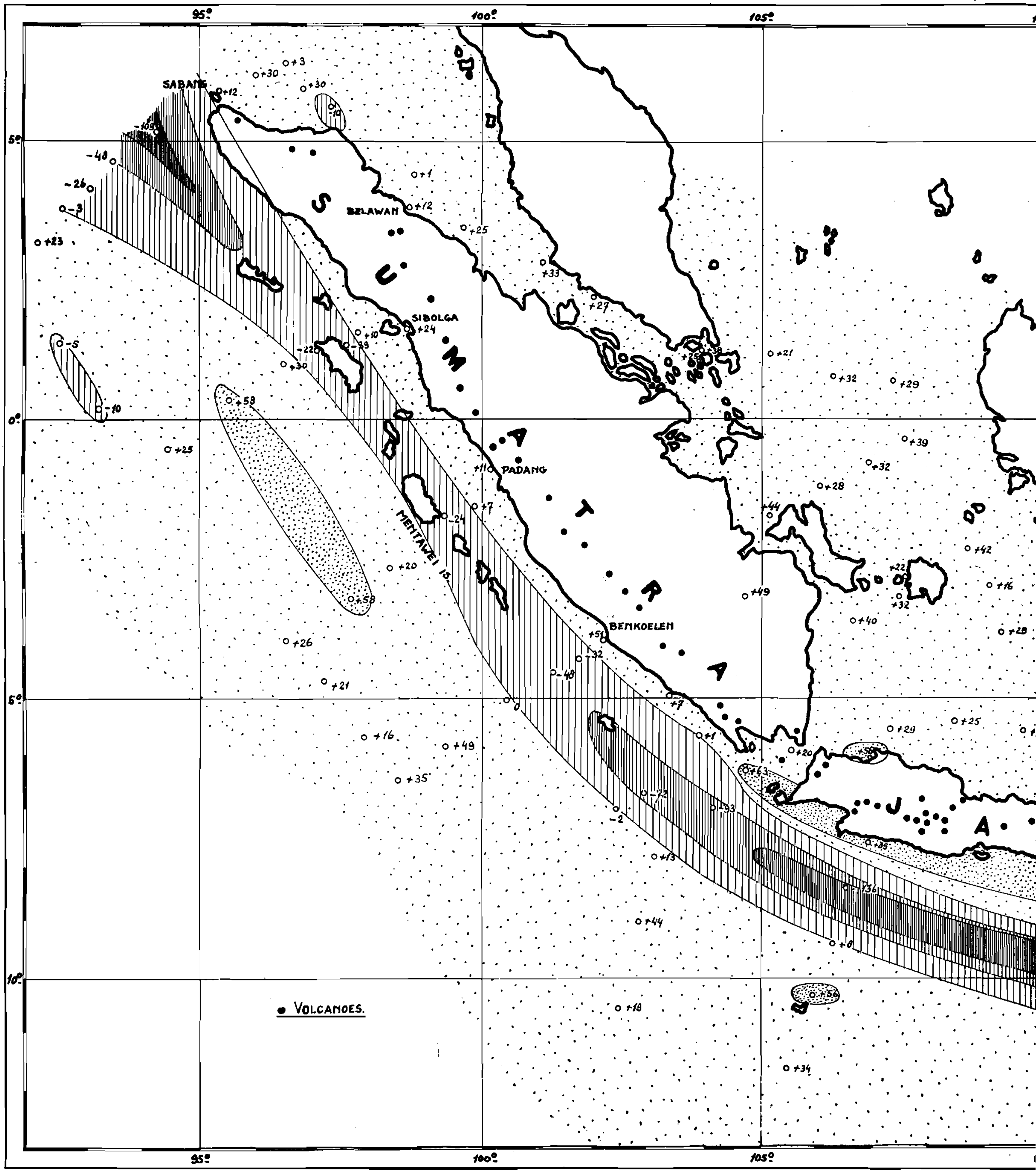
Scale 1 : 10.000.000



nomalies ($T = 30$ km) and Gravity Profiles of Plates nos. I and II; for anomalies see legend of map no 3.



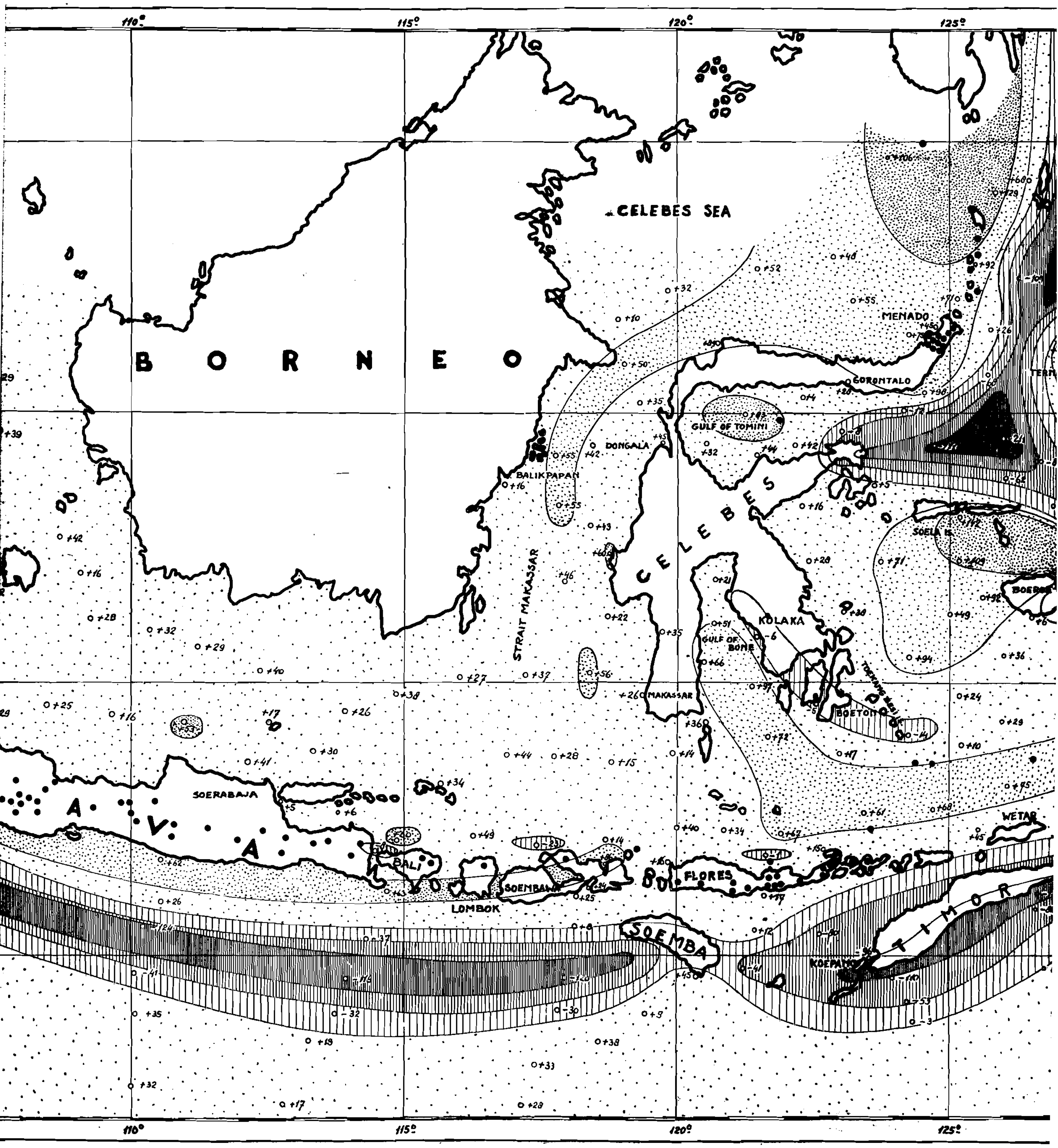
e legend of map no 3.



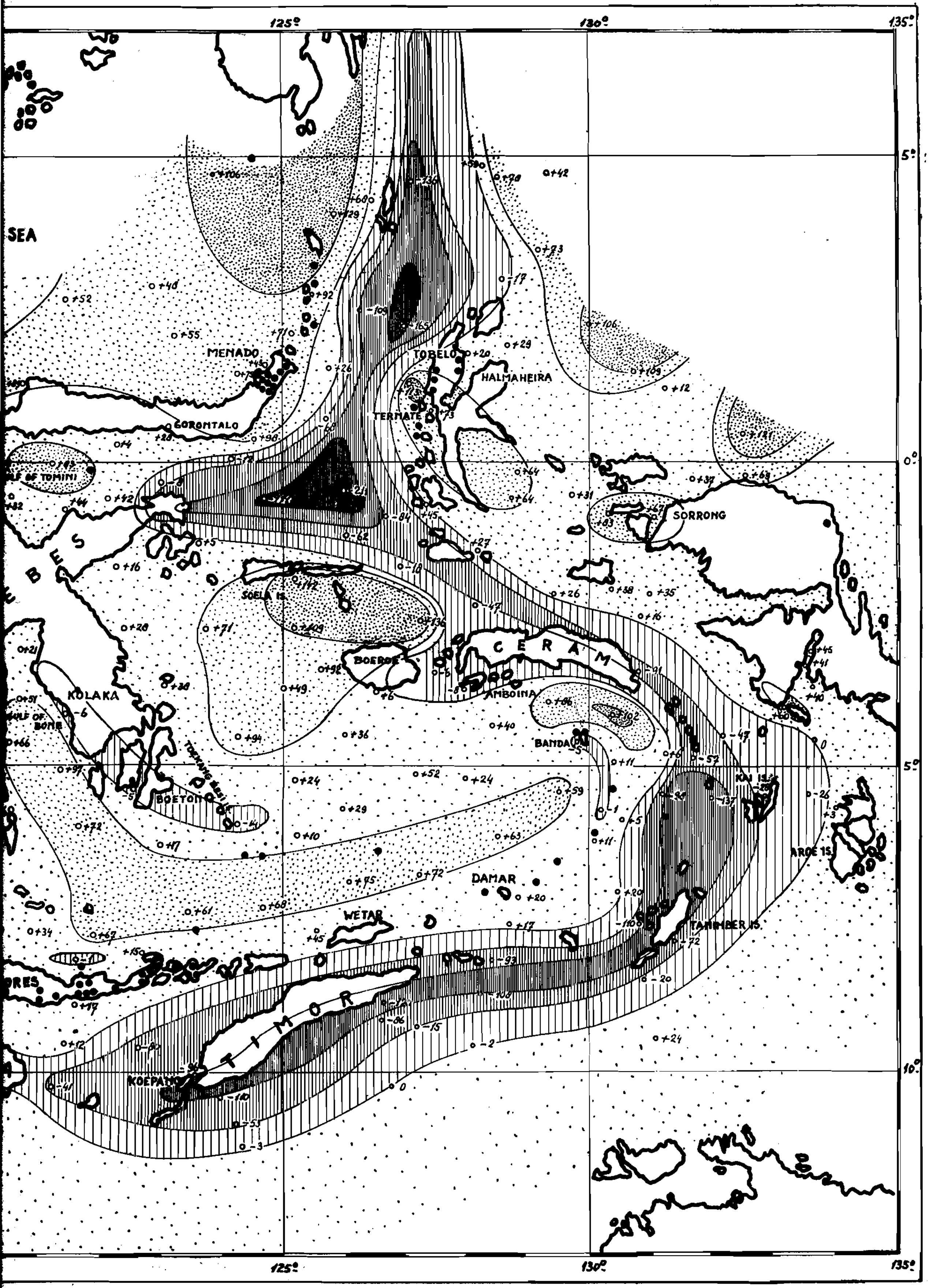
Volcanoes and regional isostatic

East Indies, no. 2

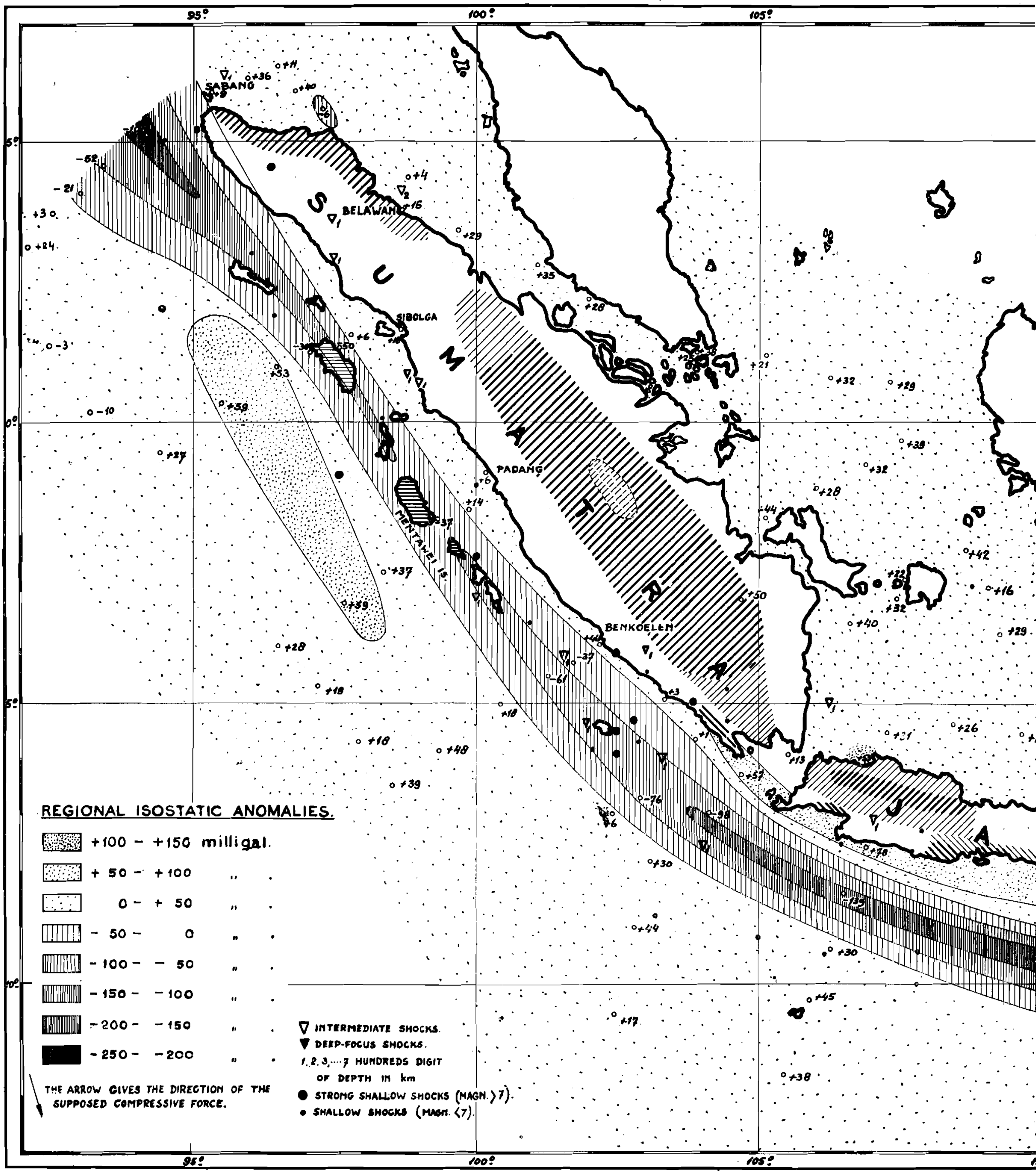
Scale 1 : 10.000.000



egional isostatic anomalies ($T = 30$ km, $R = 116.2$ km); for anomalies see legend of map no 3.


125°
130°
135°
5°
0°
10°
SEA
MENADO
GORONTALO
TOBELO
HALMAHEIRA
TERNATE
SORRONG
SOELA IS.
BOEROE
CERAM
AMBOINA
BANDA
KOLAKA
BOETON
KAI IS.
AROE IS.
DAMAR
WETAR
TANIMBER IS.
TIMOR
KOEPANG

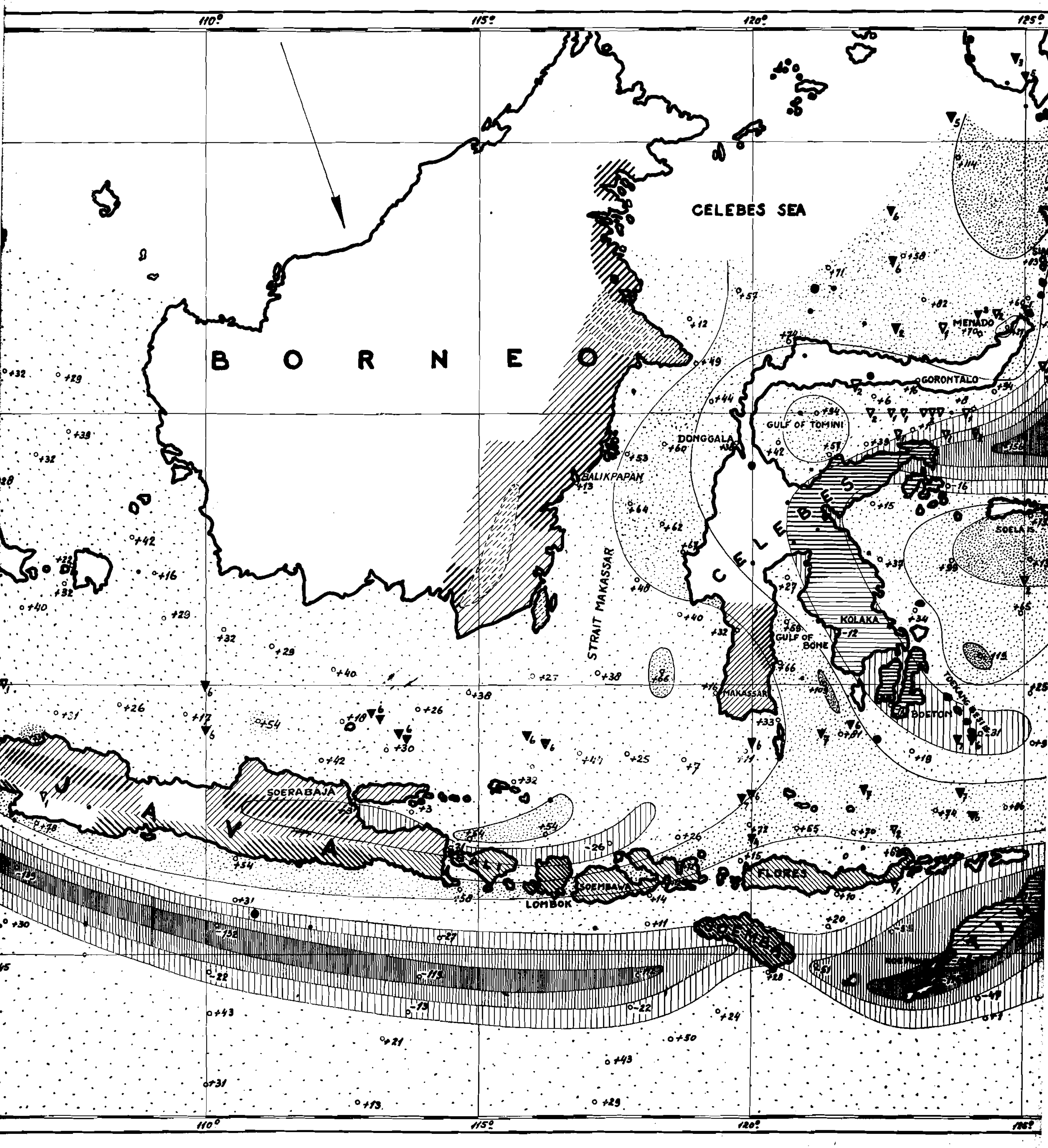
map no 3.



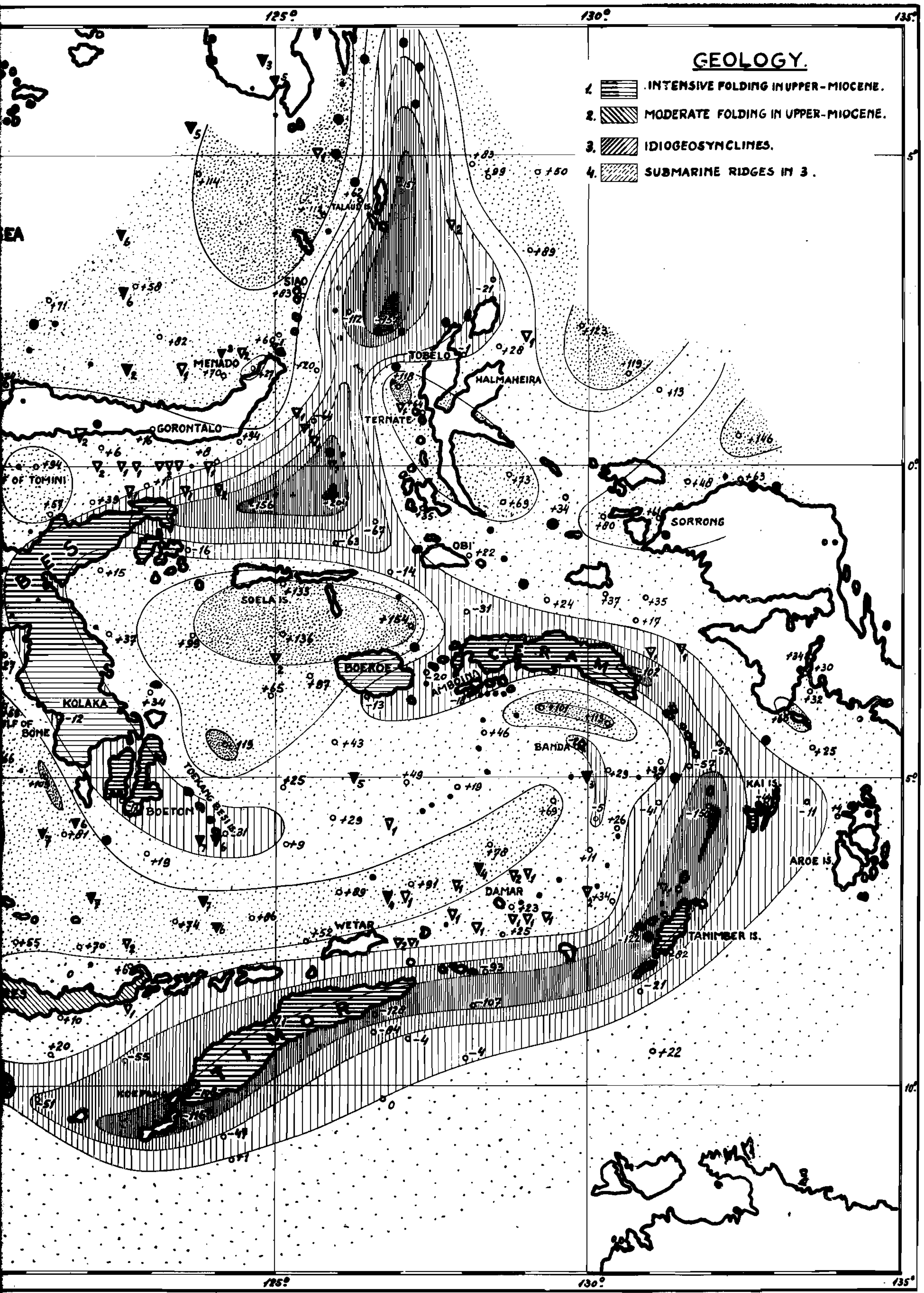
Geology according to Umbgrove, 1947, Earthquake foci according to Gutenberg, 1945,

East Indies, no. 3

Scale 1 : 10.000.000



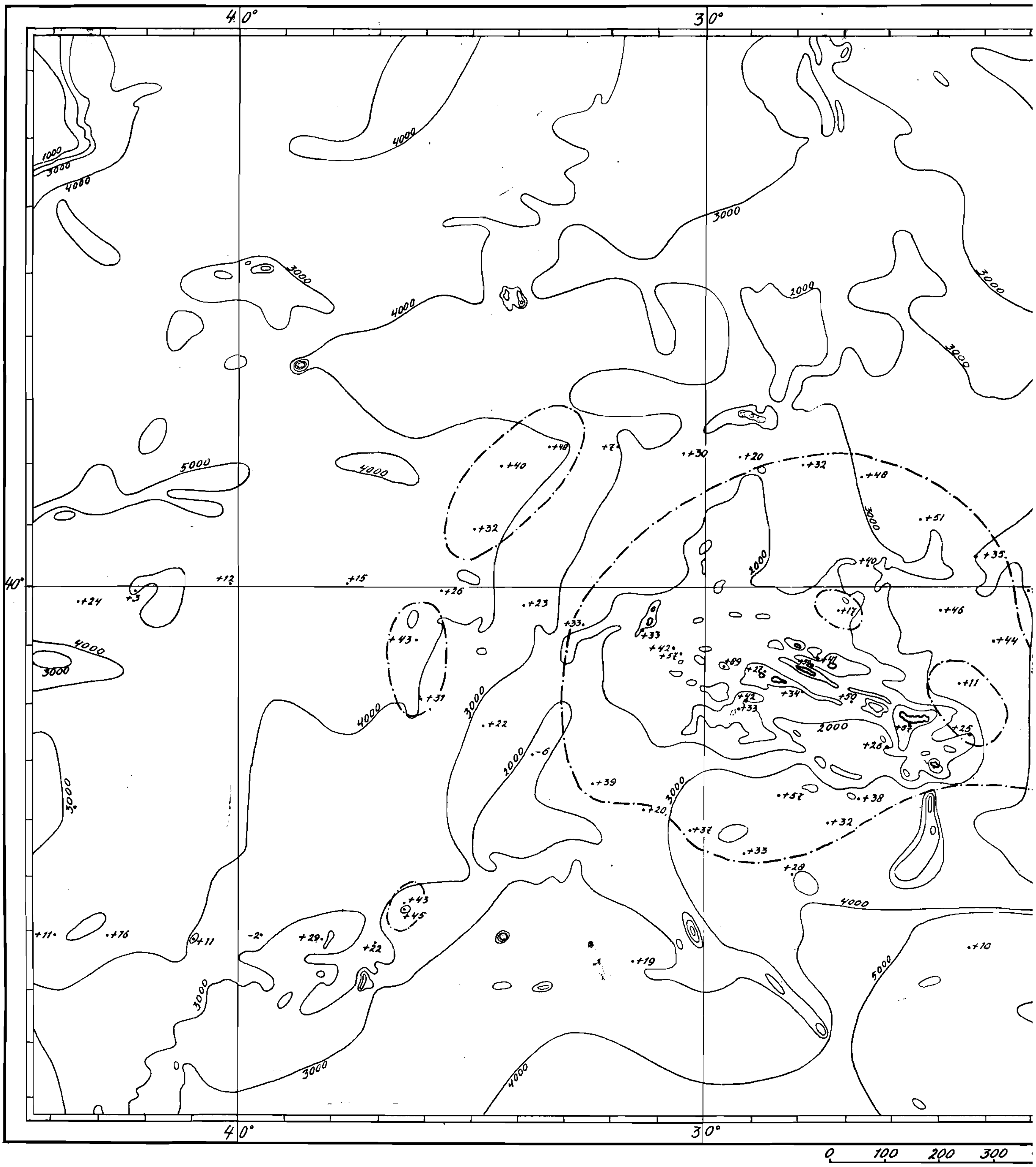
ding to Gutenberg, 1945, and regional isostatic anomalies ($T = 30$ km, $R = 232.4$ km). Arrow gives supposed direction of relati



ives supposed direction of relative movement of crustal blocks.

North Atlantic,

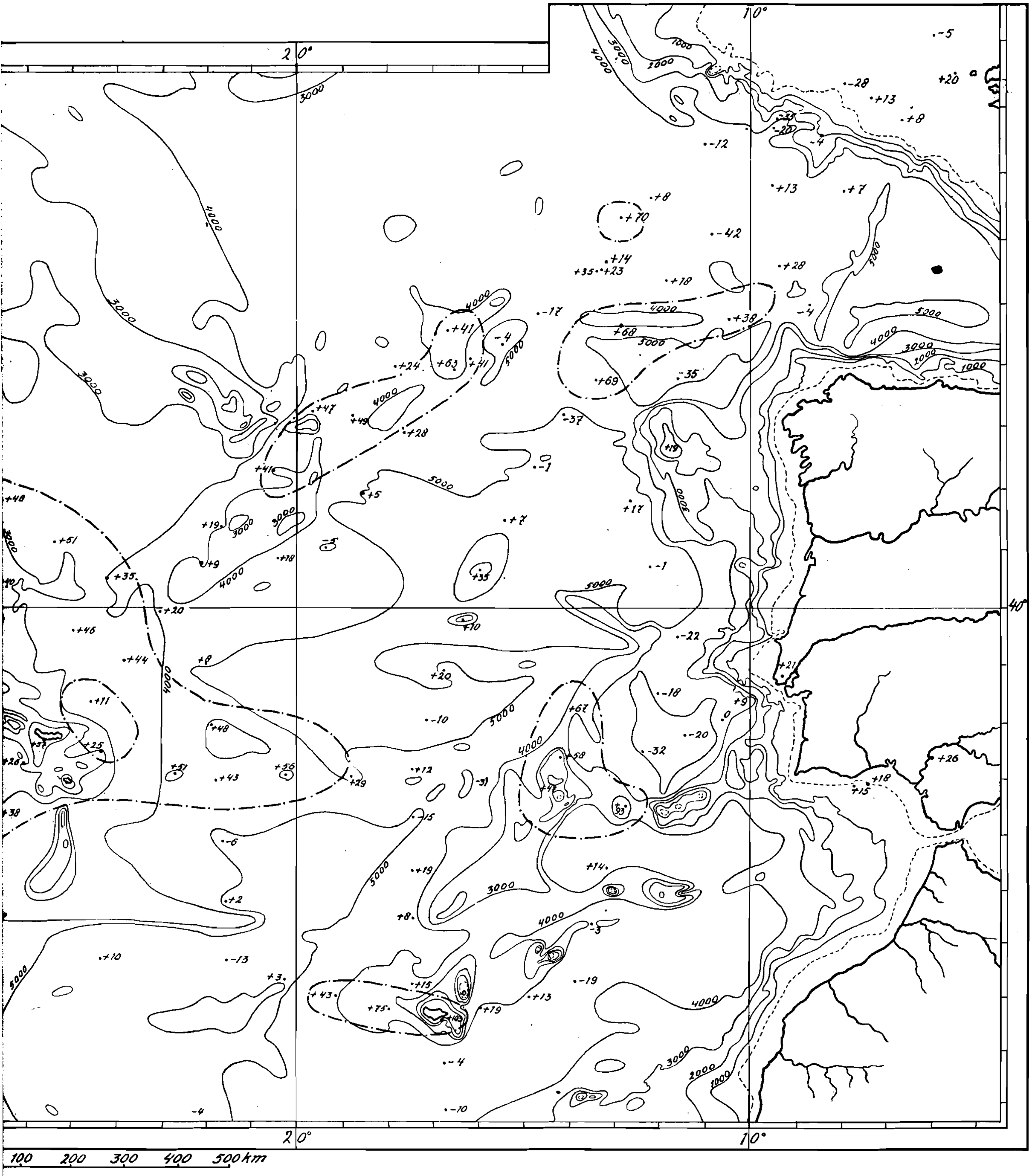
Scale 1 : 10.000.00



Local isostatic anomalies ($T = 30$ km), c

:th Atlantic, no. 1

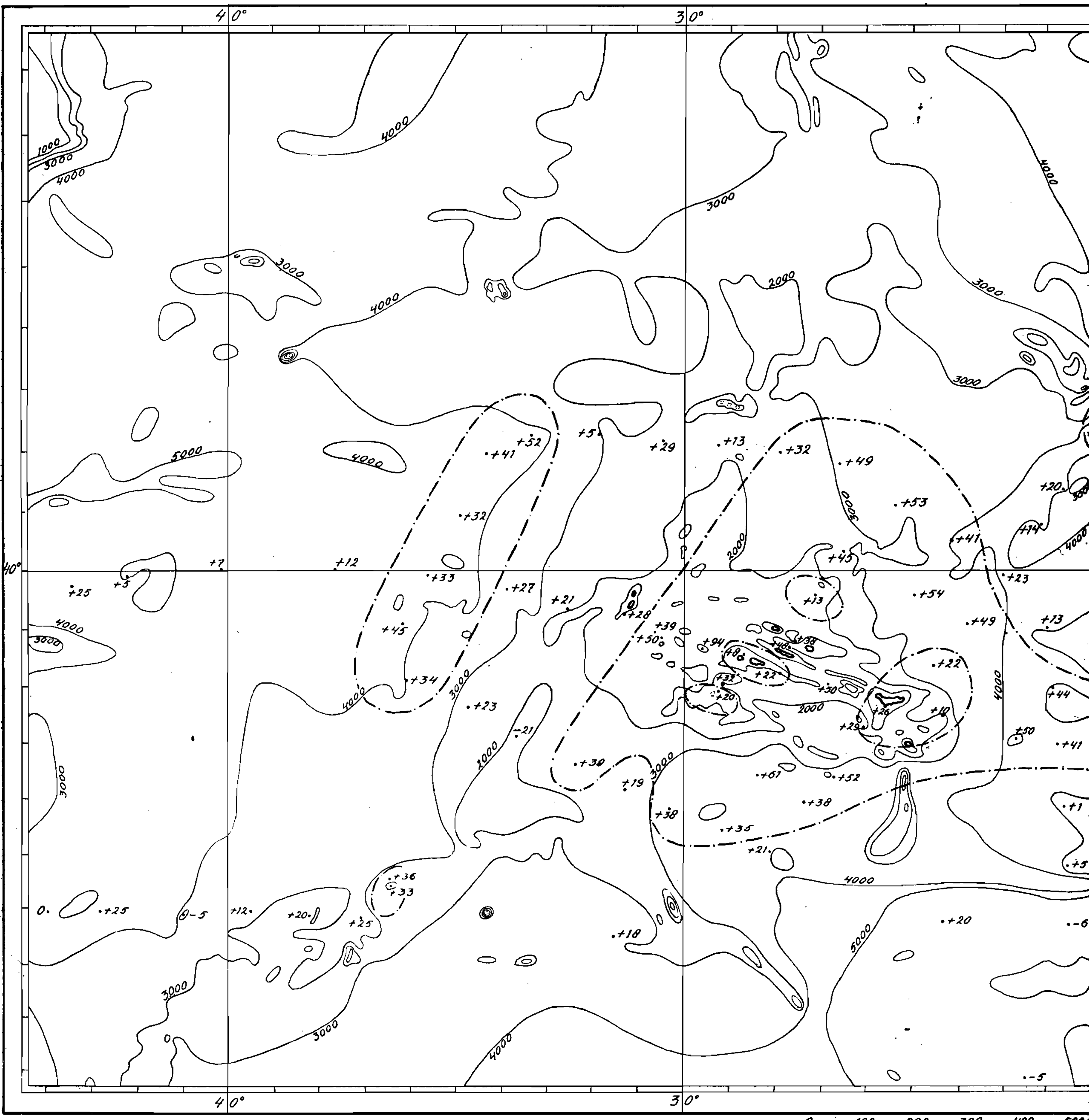
Scale 1 : 10.000.000



lies ($T = 30$ km), contour for + 30 mgal.

North Atlantic, no. 2

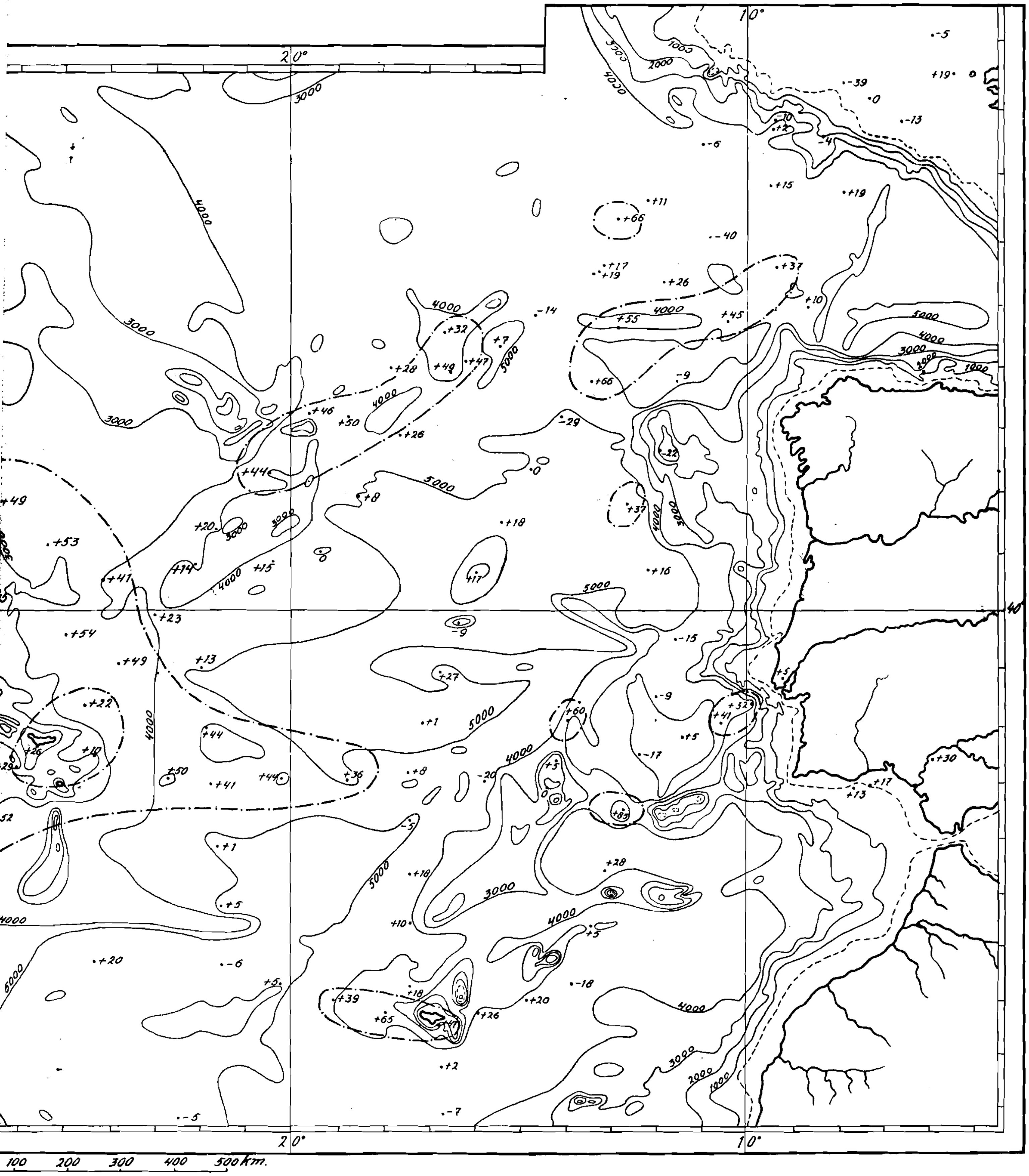
Scale 1 : 10.000.000



Regional isostatic anomalies ($T = 30$, $R = 116.2$ km), con

h Atlantic, no. 2

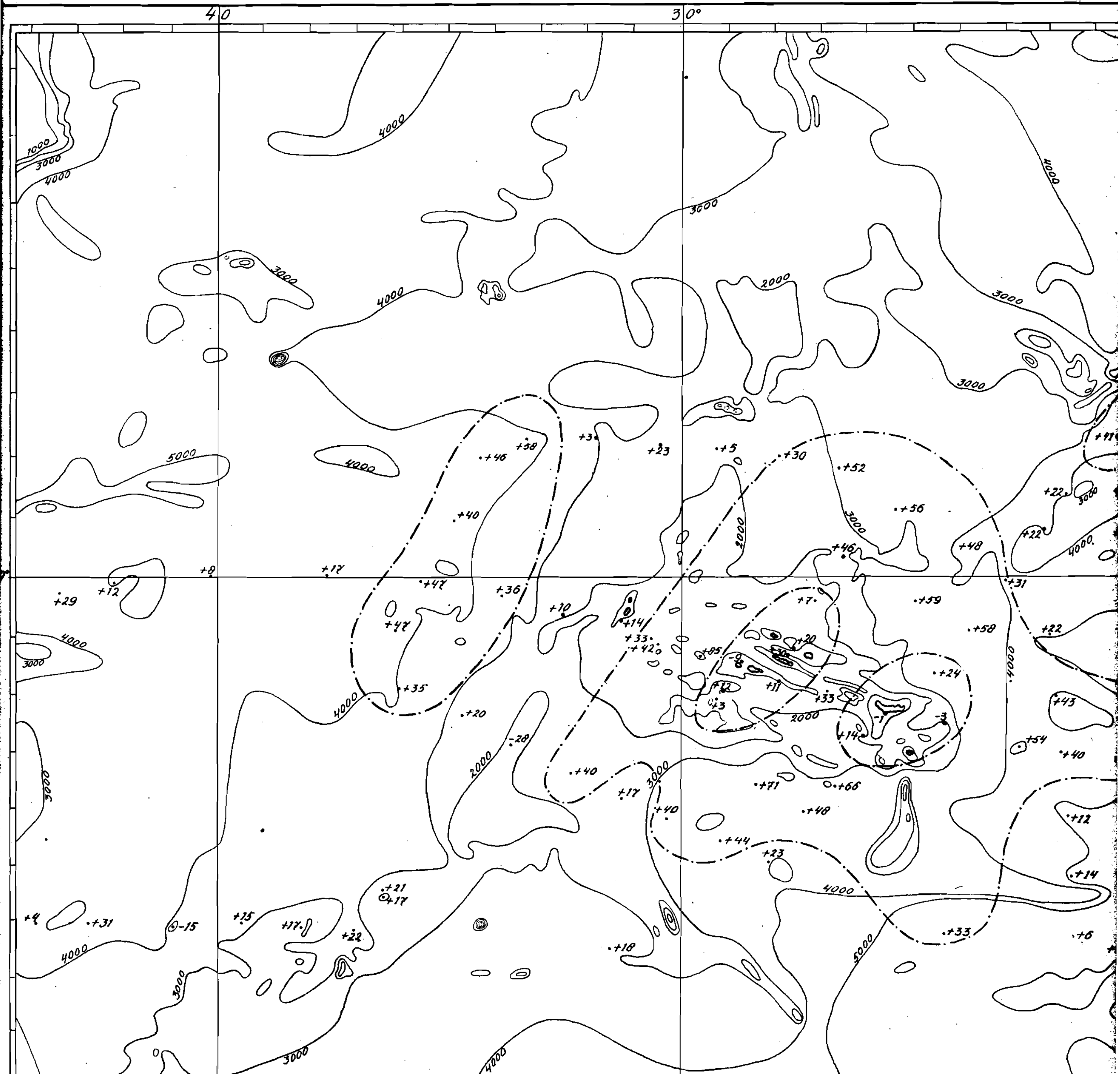
Scale 1 : 10.000.000



($T = 30$, $R = 116.2$ km), contour for + 30 mgal.

North Atlantic, no. 3

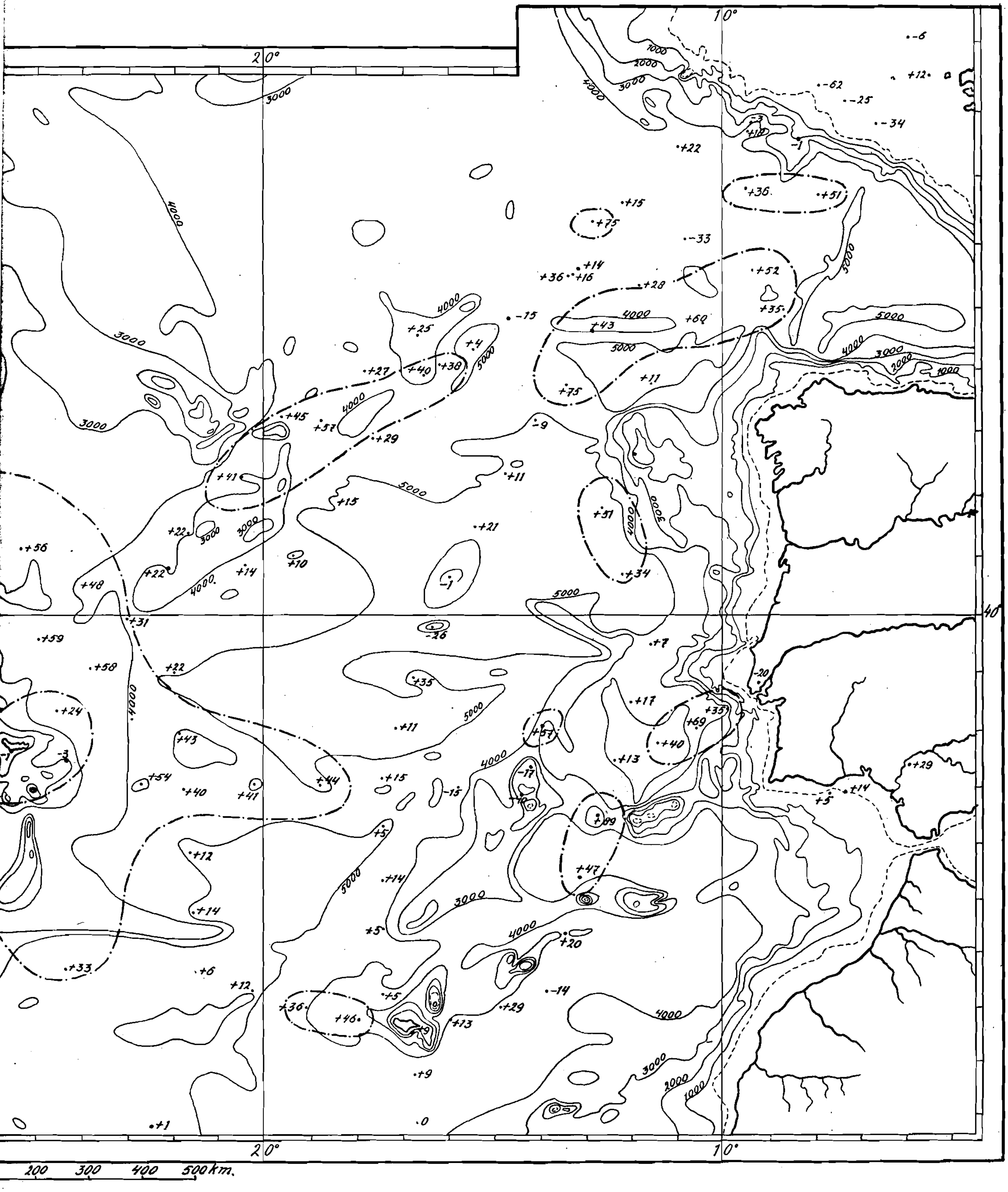
Scale 1 : 10.000.000



Regional isostatic anomalies ($T = 30$, $R = 232.4$ km), conto

Atlantic, no. 3

ale 1 : 10.000.000



= 30, $R = 232.4$ km), contour for + 30 mgal.