deer and bison. The coat tends to be coarse on the outside and fine below, but for the most part the change is effected in the individual fibre. It is manifest that heterotypism is to be regarded as the primary condition of the hair fibres in most mammals, carrying with it a physiological significance, and it is repeated in a simplified form in the down fibres or prototrichs of the Ovidæ. The curly tipped prototrichs are merely those which have lost their medullated thickening, and all stages are forthcoming from one extreme to the other, just as we have all stages towards complete medullation of the sickle fibre.

We thus arrive at the conception that the birth coat in the Ovidæ is a true down coat, a separate pelage of spiral tufts. The constituent fibres are distinct from the later definitive fibres, and are to be contrasted as prototrichs or down fibres. The stages shown by the prototrichs towards fine woolliness on one hand and coarse kempiness on the other establish the close relationship of the many different types of fibres met with in the Ovidæ (wool, heterotypes, gare, kemp) with those in other mammals where the pelage comprises gradations of only one type of fibre. The distinctive coat of the Ovidæ is brought into direct relationship with that of mammals generally; the component fibres of the two are but differentiations of a single type, even though for classificatory needs they may be grouped separately.

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¹ *J. Text. Inst.*, 18, 1927.

² Bull. No. 82, Dept. of Agric. S.A., 1930.

³ Bull. W.I.R.A., vol. 2, No. 2, 1931.

Weather Maps of the World

IN connexion with the special investigations arranged for the polar year, it is proposed to collect observations from sea and land in order to obtain effective charts for the whole of the northern hemisphere and perhaps, in time, of the southern hemisphere too.

The invitation to contribute observations is accompanied by an excellent outline chart of the northern hemisphere with contours of the land surface for 500, 1000 and 2000 metres.

The charts carry also, as specimens, meteorological information for the first week of March 1931, which includes isobaric lines over the sea, continued over the land as *sea-level* isobars. The practice of drawing isobars which, over the land, are merely hypothetical, has been customary in meteorological work now for some seventy years. Perhaps it began with north-western Europe where sea level is at least a near neighbour; but it has developed until, in the proposed charts, sea-level isobars are shown over the contours of the Rocky Mountains, the Alps, the Himalaya and Greenland, although sea level has a very restricted meaning for those countries and the change in the distribution of the meteorological elements with height is a primary meteorological problem.

The enterprise is a repetition, on a more advanced scale, of one which was undertaken by the Meteorological Council in connexion with the original polar

year, 1882-3. All the available information for the Atlantic and adjacent continents was collected and plotted on well-known charts, published by the Council.

Incidentally, that enterprise led to a mistrust of the closed isobars round cyclonic and anticyclonic centres as the controlling powers in weather; a mistrust which in Great Britain we have never been able to shake off. It will be interesting to learn whether the jubilee of the polar year will reconstitute them or discredit them further.

A real question about weather charts for the world turns, however, upon sea-level isobars carried over the land irrespective of its elevation above sea level. It is undeniable that, by that practice, pressure is separated from its associates temperature, humidity and wind, and the student of weather is left more or less 'in the air' while space on the map is occupied by lines without any definite meaning.

The contours on the outline charts suggest that the enterprise offers a golden opportunity for a definite step in weather study.

The contour line of 500 metres rails off the enclosures in the northern hemisphere within which sea-level isobars are ineffective. Would it not be possible to prepare the maps in the usual way for the region outside those enclosures and invite the denizens of the several regions inside: France, Austria, Switzerland, Italy and the Balkans for one, India, Persia, Russia and China for another, the United States, Canada and Mexico for a third, each to contribute a map for their enclosure that they would think most appropriate for a region above 1 km. level?

Such an opportunity may never recur; and what would be a rather questionable enterprise for an individual member of the international partnership would be real generosity on the part of each group, contributing to the advancement of knowledge for the benefit of the whole.

It might even result in changing the choice of level for charts over the sea itself, and choosing 106 metres, where the normal pressure is 1000 millibars, as suggested years ago by Köppen, for we all know that the surface is apt to mar the effective features of the atmospheric circulation.

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Oct. 24.

Heat Distribution in a Uniform Bar

THE theory of the potential distribution in a long cable when the head end is insulated after being maintained for some time at a steady potential has been given recently.¹ It was pointed out that the reasoning would apply equally well to the case of a long uniform bar which is allowed to cool after one end has been heated. The experimental confirmation of the theory is not easy in the electrical case owing to the fact that it is not possible to tap a long laid cable at intervals for the observation of the potential, and artificial lines are not available with the leakance sufficiently uniformly distributed. Moreover, the changes are very rapid, and in the practical example which was worked out in the above-mentioned paper, all transients had practically died away after the expiry of two seconds. In the heat analogue, on the other hand, the changes are very much slower and