The paper includes useful tables giving the pressure and the density at different heights, the variation of temperature on surfaces of equal pressure, and the temperatures in different quadrants of cyclones and anticyclones.

It is full of interest, and stands as an example of the "thorough" policy of Prof. Hann, to whom, indeed, it would not do discredit. E. GOLD.

## THE GULF STREAM DRIFT AND THE WEATHER OF THE BRITISH ISLES.

ALTHOUGH it has been known for very many years that the climate of these islands and of northern Europe generally is far milder than it would otherwise have been owing to a large body of warm water flowing past its shores from the south-west, it is only within recent years that attempts have been made to trace any detailed connection between the state of the Gulf Stream Drift[1] and the weather.

Now that systematic hydrographic observations have been accumulating for a number of years it is becoming possible to attack seriously this interesting problem, and the results so far obtained certainly look promising.

The immediate causes of the weather in the British Isles are undoubtedly to be sought in the various atmospheric disturbances which arrive from the Atlantic, but there can be no doubt that another very important factor to be considered is the temperature of the adjacent seas. This is influenced by the Gulf Stream Drift.

The problem is, however, complicated by the fact that there is some doubt as to whether the Gulf Stream Drift may not be a direct result of the atmospheric circulation in the huge cyclonic system which rests over the North Atlantic, with its centre at Iceland.

Be that as it may, there is undoubtedly a very intimate connection between the oceanic and atmospheric circulations in the North Atlantic region, so that if the atmospheric circulation becomes more vigorous, the Gulf Stream Drift moves faster, and *vice versâ*. This is well shown in a paper by Meinardus in the *Meteorologische Zeitschrift*, xxii., 398, 1905. Such a connection was, however, to be expected, not only if the Gulf Stream Drift were directly due to the atmospheric circulation, but also if, as seems more probable, both were due to the same cause, namely, the excessive cooling at the poles of the earth, coupled with the rotation of the earth about its axis. On this view both the oceanic and atmospheric circulations are of the nature of convection currents, and primarily due to the same cause, but in the course of ages these two distinct circulations have so adjusted themselves that any change in the one rapidly causes a corresponding change in the other.

It seems probable, therefore, that the Gulf Stream Drift, owing to its inertia and its great heat capacity, should have a similar effect to that of the flywheel of an engine, and tend to obliterate the disturbances due to the more unstable and variable atmospheric circulation. In this case the Gulf Stream Drift should have a very considerable regulating influence on the *general* type of weather prevailing in the British Isles.

Let us consider the probable influence on the temperature and on the rainfall. In the winter the temperature of the Gulf Stream Drift is higher than that of the land, while in the summer it is lower. Consequently during the winter time the winds blowing from the Atlantic tend to raise the temperature of the land, while in the summer they tend to lower it, and it is clear that variations in the temperature of the Drift must be expected to affect the temperature of the winds blowing over it, and consequently the temperature on land as well. Such effects on the land temperature will probably be far more important in the winter than in the summer, owing to the relatively greater power of the solar radiation during the summer.

The effect on the rainfall will be equally marked, for the amount of moisture carried by the winds and available for precipitation as rain depends largely upon the temperature of the sea over which they have blown. The warmer the sea the more moisture is taken up and the more precipitation may be expected on the neighbouring land.

In this way, for instance, it is possible to account for the low rainfall last year in the western parts of Great Britain and Ireland—parts which are usually very wet—for during 1909 the temperature of the Gulf Stream Drift was below the normal, and hence the winds blowing from it were not so heavily charged with moisture as usual.

The somewhat lower land temperature seems to have just about compensated for this by the time the winds reached the east of Great Britain, so that the rain fell there instead of in the west. The result of this was an abnormally high rainfall in the east, and with the low one in the west the rainfall over the British Isles as a whole was exactly equal to the average.

It will be very interesting to see if this is what may be generally expected in years when the Gulf Stream Drift is weaker than usual.

There is clearly a possibility of being able to predict the *general* character of the weather in these islands several months in advance from the results of hydrographic observations. It is, of course, a very complex question, and at present one cannot be too confident, but I am certainly of the opinion that such predictions will be possible.

In another place I have thrown out the suggestion that, as the February hydrographic observations made in the Irish Sea this year were almost identical with those of last year, there was some probability that the weather during 1910 would be somewhat similar to that of last year. It was never expected that the suggestion would attract the attention it has done, but it is interesting to note that the May hydrographic observations are also very similar to those of last year—if anything, even less favourable.

H. BASSETT.

[1] The warm water flowing round the British Isles to Scandinavia used to be called the Gulf Stream. The Gulf Stream proper is now considered not to extend further east than Newfoundland, while its fan-like extension which crosses over to Europe is known as the Gulf Stream Drift.

## PROF. G. V. SCHIAPARELLI.

PROF. SCHIAPARELLI, whose death we briefly announced last week, for many years occupied a prominent position in the world of science. Half a century has passed since he began his career as second assistant in the Brera Observatory of Milan, and nearly as many since he was elected to fill the position of director. In that position he exhibited much energy, and increased the reputation of the observatory. But his greatest success came to him early, and though he worked long and diligently, giving evidence of patient industry and practical skill as an observer, he will be remembered mainly for having satisfactorily established the connection between meteors and comets. It was a brilliant discovery founded on acute penetration and sound reasoning. It was, moreover, a discovery that the public were able to appreciate, and by popular applause he was lifted at once into the front rank