

may bring back the state of affairs which existed on the average during the long period mentioned."

The fact that we are at present in a period of relatively low rainfall is, of course, well known, and as regards the Thames Basin, the following table is quoted, giving the average annual fall deduced from twenty-four well-distributed stations:—

Year	Inches	Year	Inches	Year	Inches	Year	Inches
1883 ...	28'41	1888 ...	28'45	1893 ...	22'08	1898 ...	22'07
1884 ...	22'90	1889 ...	25'65	1894 ...	32'33	1899 ...	24'78
1885 ...	29'15	1890 ...	22'81	1895 ...	26'32	1900 ...	27'88
1886 ...	31'07	1891 ...	33'31	1896 ...	25'82	1901 ...	23'47
1887 ...	21'32	1892 ...	23'02	1897 ...	27'79	1902 ...	21'91

The report points out that the mean rainfall for the ten years 1883-92 was 26.60, and for the ten years 1893-1902 it was 25.44, or more than an inch less. But it is not clearly pointed out that the means of the four consecutive periods of five years give the respective values 26.57 in., 26.65 in., 26.87 in., and 24.02 in., in other words, that on the whole the rainfall was increasing slightly for fifteen years, and fell sharply in the last five. Nor is attention called to the fact that the average rainfall of 28.50 inches for the Thames Basin was arrived at by Mr. Symons in 1893 from the consideration of a much larger number of stations than the twenty-four on which the subsequent values are based, for the ten years 1880-89, which period Mr. Symons showed probably gave the same mean value as the long period 1850-89. It is probable that the latter figures represent the average rainfall of the basin as accurately as so small a number of stations can, and they are at least comparable *inter se*, but it is by no means so sure that they can fairly be compared with the earlier mean value obtained by the consideration of a much larger number of stations. In fact, we are not inclined to look upon the decline in the rainfall as quite so serious as it appears to be from the report, and we are confident that in the course of time, and probably in a comparatively short time, the fall will again reach the average.

The report shows plainly that the diminution in the flow of the Thames (and the same holds good of the Lea) is greater than the diminution of the rainfall. Theoretical considerations suggest that this is what should occur, for the amount of water absorbed by vegetation must be approximately constant, and in a dry year evaporation is usually more active than in a wet one, while, when the water-level in the pervious rocks is lowered, the flow of springs cannot respond to the rainfall with the promptitude usual when the rocks are saturated.

It is a matter of regret that hydrology, as applied to the rivers of the whole British Isles, has not been taken up by any Government department. This report of the County Council shows the interest of the problems involved, and it may be that a more systematic treatment of statistics of rainfall and river-flow would answer the questions which is suggests.

HUGH ROBERT MILL.

ARCTIC GEOLOGY.

AS the report on the geological observations made during the recent Polar expedition of the *Fram*, recently read before the Royal Geographical Society by Mr. P. Schel, of which we have received a separate copy, is only a preliminary one, and the geological terms employed require some revision to make them intelligible to an English reader, a brief notice may suffice, though evidently the results will be very valuable. Under Captain Sverdrup's leadership,

Ellesmere Land was crossed, part of its southern and its western coast was traced, with the corresponding side of Grinnell Land, and journeys were made round Axel Heiberg and Ringnes Islands. The collections obtained, which were often considerable, show that the region explored, with the newly discovered islands, consists of formations which were known to occur on the two sides of Smith Sound and on the long chain of islands extending on or near the seventy-fifth parallel from North Devon to Prince Patrick Island, viz. a foundation of crystalline Archæan rocks, largely granitoid, followed by sedimentaries the oldest of which are of Cambrian age, the part immediately following the Archæan being occasionally, as might be expected, an arkose. In some places representatives of the Ordovician and Silurian occur, and, as in the other islands, Devonian and Carboniferous, including the representative limestone, are extensively developed. Mesozoic formations are represented, but apparently on no great scale, and large masses of sandstone, with lignites and shales, are identified by their plant fossils as Tertiary (Miocene or perhaps rather earlier), as in Greenland. In parts of Ellesmere Land and Heiberg Island are various eruptive rocks, porphyrites and diabases, cutting the Archæan and the older sedimentaries. Basalts and dolerites occur in Grinnell Land intrusive in Mesozoic strata, and surface lavas and somewhat similar rocks overlie Carboniferous rocks in Heiberg Island. They are older than the Tertiary shale mentioned above. The region has occasionally been much faulted, and locally crushed up against a "horst" of Archæan rock. It has also been affected by earth movements of late date, indicated by raised beaches and marine terraces, which are at various elevations up to nearly 600 feet, and so prove that the land has risen. There are no large masses of inland ice or signs of glaciers having formerly been on a much more extensive scale than at present. This is probably due, at any rate partly, to a rather small precipitation.

J. V. LABORDE (1830-1903).

DR. LABORDE (Jean Baptiste Vincent), who died recently at the age of seventy-two, was born at Buzet (Lot et Garonne), and received a good education at the Lycée of Cahors, after spending some time in a boarding-school at Casteljaloux. To satisfy his natural bent for medical studies he went to Paris, without any resources, and, in order to provide for his livelihood and his studies, he was obliged to give private lessons. However, he managed to be appointed *externe des hopitaux* in 1854, in the same promotion as Lancereaux, now president of the Académie de Médecine. Four years later, he obtained the *internat*, in which capacity he spent four years more in the hospitals of Paris, after which he was graduated doctor *médic.* for his thesis on "La Paralyse Infantile" (1864). Meanwhile he had obtained the gold medal of the hospitals, the Corvisart prize, and another prize from the Société Médicale des Hopitaux, and, lastly, in the very year in which he got his doctor's degree, the Godard prize, awarded by the Société Anatomique de Paris.

In 1872 Laborde gave up pure medicine to devote himself to scientific works, particularly to physiology, giving to his researches a solid and safe basis, by means of the experimental method. At first only an assistant to Prof. Béclard, he was soon appointed *chef des travaux de physiologie* at the Faculté de Médecine, and for many years the demonstrations he gave in his laboratory were attended by numerous pupils. It was in the course of this period that he published the

greater part of his works, always seeking in physiology pathological deductions for the use of practitioners.

As regards pure physiology, he studied the acid of the gastric juice, trying to show that it never existed uncombined (1874-77), the rhythmical function of the heart and its development in the embryo (1876), and more especially the function of the central nervous system, and of the bulb in particular (1877-1880). In this way he showed the existence of two bulbar centres, one acting upon breathing (it was the centre of Le Gallois and Flourens), the other upon the cardiac muscle, which clearly explained the two possible causes of death, either a stop of the respiratory movements with persistence of the beating of the heart or *vice versa*. He showed also the functional association of the eyes in the binocular vision, owing to the narrow connections between their motor nerves. As regards the physiology of the nerves, again, he revealed the existence of the tractus of crossed hemianæsthesy, published a few notes on the excitability of the nervous centres, the reflex movements, the functions of the semicircular canals (1881), and, lastly, a refutation of the theory which made the cerebellum the seat of muscular strength.

Not less numerous are the works that he published upon experimental and comparative pathology.

But his special study was experimental physiology applied to therapeutics and toxicology; he published works on the properties of many substances, such as the narceine (1866), which he considered as the best sedative of the nervous system; the bromides, the soothing influence of which he investigated (1867-1869); the eserine or alkaloid of the Calabar bean (1869); propylamine (1873); aconitine, the advantages of which he showed as a sedative of sensibility (1875); colchicine, sparteine, boldo, salts of strontium, &c.; lastly, in 1877, he published a study on the alkaloids of cinchona, which he named in the following order, according to their poisonous qualities: Cinchonine, cinchonidine, quinidine. In fact, he made a special study of poisons in general, animal as well as mineral, natural as well as artificial.

In concluding this cursory view of Laborde's works, we cannot do better than mention his ingenious method of the rhythmical tractions of the tongue, which was sufficient to make the name of its inventor known throughout all the world. There is no need to expatiate on this most simple and efficient process of setting the respiratory reflex to work. It is known and used everywhere, and it has called back to life numbers of apparently drowned or suffocated people.

In fact, Laborde was not only a savant, but a great philanthropist, and this quality, together with his profound knowledge of toxicology, brought him to the front as one of the best qualified in the controversy raised recently on the question of alcoholism.

For this reason, Laborde, who had been a member of the Académie de Médecine since 1887, was trusted by this learned body with the report on the essences to be forbidden as noxious, which the Government had required from them. In this work he exhausted what strength was left to him. He strenuously defended every one of his arguments against the objections of his colleagues, and at last succeeded in making them adopt every item of his report. But the work proved too much for him, and he died on April 5. He was vice-president of the Society of Biology, director of the Laboratory of Anthropology at the École des Hautes Études since 1893, and professor at the School of Anthropology. He was besides one of the oldest and ablest scientific journalists. He started *La Tribune Médicale*, a periodical open to all young medical men, which he edited to the last.

He was one of the few French savants who did not

belong to the Legion of Honour. Of course, the decoration was several times offered to him, but he thought it a distinction which should be exclusively military, and he never allowed his actions to contradict his opinions.

J. DENIKER.

NOTES.

A MEETING of the council of the International Association of Academies is being held this week at the rooms of the Royal Society, that society being the directing academy of the association for the three years' period ending with 1904. The meeting will be attended by delegates from nearly all the principal learned academies of Europe, and will discuss several matters of importance to international science and philosophy, preparatory to the meeting of the general assembly which is to be held in London next year. Representatives of both sections of the association, the natural science section, and the history and philosophy section, will attend the council. In connection with the meeting of the council there will be on Friday a meeting of a special committee appointed to deal with a proposal for the establishment of an international organisation for the investigation of the anatomy of the brain. The foreign delegates were to be received by the president and fellows of the Royal Society at Burlington House on Wednesday evening as we went to press.

THE reply given by Mr. Balfour in the House of Commons on May 26, in answer to a question as to what the Government proposed to do to ensure the safety of the National Antarctic Expedition, was a rebuke which should not be received in silence by the joint Antarctic Committee. Mr. Balfour said:—"The Government are prepared to contribute to the relief of the officers and men on board the *Discovery*, which is now ice-bound in the Antarctic seas. The course taken by the two learned societies responsible for the expedition in respect to the contribution of money and men made by the Government is greatly to be regretted. I have always leaned towards the principle of extending the very limited aid which the British Government have been accustomed to give towards the furtherance of purely scientific research; but such action can only be justified so long as the Government are able to feel absolute confidence that the scientific bodies approaching them have placed before them all the information in their possession as to the estimated cost of their proposed action, and the limits within which they intend to confine it. That confidence has been rudely shaken by the present case." This statement has naturally received much attention, and the Antarctic Committee cannot permit the charges it contains to pass without reply. The two learned societies referred to are the Royal Society and the Royal Geographical Society, and the management of the expedition is in the hands of a joint committee of these bodies. From the beginning, however, the Royal Geographical Society has exerted a preponderant influence in the organisation of the expedition, and the Royal Society has yielded to it against the advice of its own representatives. When vital matters connected with the conduct of the expedition were in dispute in 1901, we on several occasions criticised the methods adopted, and regretted that the Royal Society had not taken a firmer position. Because the council of the Royal Geographical Society would not accept the recommendations of the joint committee, the Royal Society allowed itself to be overruled, though Sir Archibald Geikie, Prof. E. B. Poulton and Mr. J. Y. Buchanan objected to the surrender. The whole story was told in a letter sent by Prof. Poulton to fellows of the Royal Society, and published in *NATURE* of May 23,