asses. The idea that they are the remnant of the inner toe is, in my opinion, untenable, chiefly because this toe has been the first to disappear in all ungulates.

Lawrence Irwell.

Buffalo, N. Y., July 15, 1900.

TRANSMISSIBILITY OF ACQUIRED CHARACTERS.

To the Editor of Science With reference to the difficulties in the way of such heredity mentioned by Professor Sedgwick in his address printed in your issue of the 6th of this month, would not modifications induced by diet during a whole lifetime have the greatest chance of being transmitted and becoming permanent in the race? By such experiment would not the reproductive cells be equally affected with the rest? These modifications could be influential during the whole lifetime, commencing even in the embryonic and antenatal stages. Thus the influence of ancestral and homochronous heredity would be, as far as possible, obviated. To learn if such a test has ever been attempted, and for any particulars, I should be much obliged.

C. G. S.

23 Up. Bedford Place, London, W. C.

June 29, 1900.

CURRENT NOTES ON METEOROLOGY.

REPORT OF THE CHIEF OF THE WEATHER BUREAU.

Vol. I. of the annual Report of the Chief of the Weather Bureau has been issued. This volume contains the monthly and annual summaries for 1898, with the customary administrative report. In the latter, special attention is given to the West Indian service of the Weather Bureau. The following points seem worthy of note. In connection with the river and flood service it is stated that "during the next two years, if sufficient funds are available for the purpose, it is proposed to prepare a comprehensive work on the entire navigable water régime, giving a complete history of all river stations, elevations above tide-water, rate of flow of water, and data for flood forecasting." The health of the men in the West Indian division is stated to have been remarkably good. "Although almost all have suffered more or less from tropical fevers, and the debilitating effects of the climate, yet the continuity of observation has been interrupted by sickness only at Santiago."

THE AURORA AUSTRALIS.

In *Ciel et Terre* for May 16th, Arctowski publishes a short paper on his observations of the aurora australis made during the recent trip of the *Belgica*. There were in all 62 observations. The phenomenon generally appeared between 7 p. m. and 2 a. m., the maximum intensity coming most frequently between 9 and 10 p. m. The maximum frequency did not come during the months of polar night, and the intensity was manifestly greatest at the equinoxes. Arctowski finds a striking similarity in the appearance of the aurora borealis as observed by Nordenskiold on the *Vega* in 1878–79, and described by him, and the aurora australis as observed on the *Belgica* expedition.

R. DeC. Ward.

Harvard University.

NOTES ON OCEANOGRAPHY.

THE DANISH 'INGOLF' EXPEDITION.

Since the publication of Mohn's great work on the results of the Norwegian Atlantic Expedition, the most important contribution to our knowledge of hydrographic conditions in the North Atlantic has doubtless been Knudsen's recent memoir (The Danish Ingolf Expedition, Vol. I., Part 1, Copenhagen, 1899). Knudsen has made a substantial improvement on the Negretti-Zambra deep-sea thermometer. While salinity determinations are of first importance in establishing the relations between the waters of the Gulf Stream Drift and Arctic currents, it is interesting to note that he did not use the hydrometer except as a check, but relied exclusively on the use of the chlorine coefficient, calculating the total salts from the amount of chlorine found in each water-sample by titration. He agrees with Pettersson that this convenient method gives the most accurate results. The gas analyses are especially numerous and valuable. The content of nitrogen has been used, in connection with temperature, to distinguish polar and Gulf stream water; the degree of 'supersaturation' of the surface-water with oxygen has been found to be in pro-

portion to the abundance of diatoms and vegetable plankton in general, thus confirming the laboratory experiments of Knudsen on this subject. The 'Irminger' current of Nordenskiold has been delimited more clearly than heretofore; it follows the 'Reykjanaes Ridge,' skirts the southwest and west shore of Iceland, and then divides into two branches, one of which, turning to the southwest, completes the circuit of a large eddy that centers southwest of Iceland and is characterized by the cyclonic type of rotation. The other branch runs northward, hugging the Iceland coast, then eastward, and, north of the center of the island, dives beneath the surface. The complex stratification of the water east of this point, as well as in Denmark Sound and in Baffin's Bay, is illustrated in the memoir by a large number of sections. Pettersson reproduces some of these in his helpful discussion on recent works on this portion of the ocean (*Petermann's Mittheilungen*, pp. 1 and 25, 1900).

CURRENTS IN THE NORTH SEA.

DR. T. W. FULTON, the scientific superintendent of the Fishery Board for Scotland, has reported on the success which has attended his experiments with numerous bottle-floats to determine the currents of the North Sea. (Fifteenth Ann. Rep., Pt. III.) The circulation throughout the year seems to be that of a single great current which rounds the northern end of Scotland, turns southward, skirting the eastern coast of England to Yorkshire, and then turns eastward to the Danish shore, where it assumes a northerly trend. Part of the water enters the Skagerrack, but most of it goes to form the well-known coastal current of Southwest Norway. The explanation of this curved path is one of the problems which Dr. Fulton has set himself. The prevailing and dominant west and northwest wind cannot be the immediate motor, since it blows almost at right angles to the current with its north and south trends in British and Danish waters. Yet the wind is regarded as the indirect cause of motion. In the southeast portion of the sea there is banking of water by wind stress. Escape for the surplus water is impossible through the Strait of Dover on account of the small size of that opening, and a movement is instituted along the steeper surface gradient toward the north along the Danish shore. The remainder of the current curve is explained in largest part as the result of compensation of the movement just described. The earth's rotation may be accorded some share in turning the Gulf Stream water around the northern capes of Scotland, and in causing the clinging of the North Sea current so near to the shore as is actually the case. The influence of tidal streams is excluded by Dr. Fulton, chiefly on the ground that, on the east coast of Great Britain, the north-flowing ebb is stronger than the south-flowing flood.

THE GULF STREAM DRIFT.

DOES the Gulf Stream Drift persist on the surface at all seasons of the year through the Norwegian Sea? This question, so important to Norwegian fisheries, has, according to Hjort and Gran, been definitely settled. (Report on the Norwegian Marine Investigations, 1895–97, Bergen, 1899.) During the winter the relatively warm and dense 'Atlantic' water is partly displaced by the strengthened Arctic current which runs southeast past the east coast of Iceland, but does not reach the Shetlands. On the approach of summer the polar water retires from the surface and is not found south of Iceland. This annual periodicity in the Gulf Stream Drift is accompanied by changes of greater amplitude in time, but their laws have not yet been formulated. Detailed observations on the plankton organisms show that their occurrence has likewise a marked annual periodicity which is associated with that of the currents. Further proofs of a similar relation subsisting between the herring fisheries and current variations of periods ranging from one to several years, have recently been published by Pettersson and Ekman as one result of the international researches of 1894 and 1895 in the North Sea (Bihang till k. Svenska Vet.-Akad. Handl. 1890 Bd. 25, Afd. II, No. 1.)

HYDROGRAPHY AND FAUNAS OF SPITZBERGEN COAST WATERS.

A PRELIMINARY review of the material collected by the German Expedition to the North Polar Seas in 1898 has afforded some interesting conclusions as to the conditions of life in the

waters about Spitzbergen (see *Fauna Arctica* edited by F. Römer and F. Schaudinn, Vol. 1, Jena, 1900). On the eastern side of the island the fauna is richer, species and individuals more numerous than on the west coast; in the former tract, moreover, the fauna is markedly benthonic, in the latter planktonic. These contracts are referred to the action of currents. While Gulf Stream water occupies the sea west and north of Spitzbergen it is intimately mixed with the cold water of the polar current on the east. In this zone of mixture the stenothermic and stenohalinic organisms of the plankton are killed, and thus furnish an abundant rain of food for the bottom forms. So thickly planted were the hydroids and bryozoa that at times the heavy dredge did not penetrate to the true bottom at all, but came up full of these organisms. A table of hydrographical observations appears in the narrative of the voyage.

Reginald A. Daly.

Harvard University.

A NEW STAR IN AQUILA.

From an examination of the Draper Memorial photographs, Mrs. Fleming has discovered a new star in the constellation Aquila. Its position for 1900 is R. A. $=19^h\ 15^m\ 16^s$, Dec. $= -0°\ 19'.2$. It was too faint to be photographed on 96 plates taken between August 21, 1886, and November 1, 1898, although stars as faint as the thirteenth magnitude are visible on some of them. It appears on 18 photographs taken between April 21, 1899, and October 27, 1899. On April 21st it was of the seventh magnitude, and on October 27, 1899, of the tenth magnitude. Two photographs taken on July 7, and July 9, 1900, show that the star is still visible, and that its photographic magnitude is about 11.5. A photograph taken on July 3, 1899, shows that its spectrum resembled those of other new stars, while a photograph taken on October 27, 1899, shows that the spectrum resembled those of gaseous nebulæ.

On July 9, 1900, the object was observed with the 15-inch Equatorial by Professor Wendell, who estimated its magnitude as 11.5 to 12.0, and confirmed the monochromatic character of its spectrum.

E. C. Pickering.

Harvard College Observatory.

THE ESTABLISHMENT OF A BUREAU OF CHEMISTRY.

The following resolutions have been approved by Council of the American Chemical Society:

Whereas, the laws of the several states controlling food adulterations are largely ineffective because of the interference of interstate commerce laws, and can be made effective only through national legislation,

And whereas, by bills now pending in the Congress of the United States and particularly by bills numbered H. R. 9677 and Senate 2426, it is proposed to establish in the United States Department of Agriculture a bureau of chemistry, the director of which shall, under the direction of the secretary of agriculture, be charged with the chemical investigation of the foods produced and consumed throughout the country.

Therefore be it resolved by the Council of the American Chemical Society that the Congress of the United States be, and is hereby, urged to promptly enact into law the said bills, namely H. R. 9677, and Senate 2426, and provide adequate facilities for effective prosecution of the provisions of the said bills.

Resolved, further, that a copy of this resolution be forwarded to the president of the United States Senate; to the speaker of the House of Representatives; to the chairman of the Committees on Agriculture and on Commerce and Manufactures of the Senate of the United States; to the chairman of the Committee on Interstate Commerce of the House of Representatives; to the secretary of agriculture, who shall be charged with the enforcement of the provisions of said bills, and to the presiding officers of the various sections of the Society, urging their co-operation in the movement to secure the establishment of the bureau of chemistry, which shall be charged with the scientific and chemical work required in the enforcement of the provisions of the said bills.

SCIENTIFIC NOTES AND NEWS.

M. Giard has been elected a member of the Paris Academy of Sciences in the section of anatomy and physiology in the room of the late Milne-Edwards. He received 30 votes, 16