We have been favoured with copies of three papers contributed by Mr. E. W. Adair to the *Bull. Soc. Entom. d'Egypte* for 1912 and 1913, published 1914. In the first (1912) of two relating to the life-histories of the insects of the family Mantidæ it is pointed out that the supposed additional metamorphic stage recorded by Pagenstecher in the case of *Mantis religiosa* was due to the newly emancipated imago being enveloped in the amnion of the ovum. In the third paper the author records "jumping seeds" of *Tamarix nilotica*, the movements of which were produced by imprisoned larvæ of a small weevil, *Nanophyes maculatus*. Hitherto similar movements have been known only in the case of the Mexican so-called "jumping beans," of which the moving power are the larvæ of certain tortricid moths, especially *Carposapsa saltitans*.

In an article contributed to vol. iv. (new series), part i., of the Transactions of the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne, Mr. R. S. Bagnall states that whereas a few years ago only a single representative of the centipedes of the group Symphyla was known from the British Isles, he had been enabled to raise the number to no fewer than twelve species and one subspecies, five of the former, of which three are described as new, belonging to the genus Scutigerella, and the remaining seven, of which six are new, together with the subspecies (also new) to Scolopendra. In a supplemental article published near the end of the same issue he describes a seventh new species of Scolopendra, from Cheshire, and raises the aforesaid subspecies to specific rank, thus recording a total of fourteen British species, of which, however, one Scutigerella has hitherto been detected only in hothouses.

In No. 1 of vol. v. of the Entomological Series of the Memoirs of the Department of Agriculture, Mr. C. C. Ghosh continues his life-histories of Indian insects, dealing in this instance with eleven species of butterflies, inclusive of the common British cabbage-white. The account of the rice-leaf caterpillar, and its butterfly, so injurious to rice-crops all over the Old World and Australia, is from MS. left by Mr. Maxwell-Lefroy, when Government entomologist. The nine coloured plates are admirably executed.

Fuller acquaintance with the insect-fauna of the eastern and north-eastern districts of the Transvaal and southern Rhodesia has enabled Dr. L. Péringuey to add considerably to the list of South African representatives of the hymenopterous family Mutillidæ. His first article on the subject was contributed to vol. i. of the *Annals of the S. African Museum* (1898): his latest forms part 15 of vol. x. of the same serial (1914).

Beetles of various families, inclusive of the Tenebrionidæ, Cetoniidæ, and Buprestidæ, collected during the Duke of Mecklenburg's travels, form the subject of articles by various specialists in Lief. 3 of the first volume of the Zoological section of *Ergebnisse der Zweiten-Deutschen Zentral-Afrika-Expedition*, 1910–1911. Many new species are named, and it may be well to note that the name of the Ubangi Valley has been adopted as a generic designation, "Ubangia."

An extensive collection of brittle-stars, or ophiurids, from the Caribbean Sea in the U.S. National Museum has enabled Prof. René Koeler not only to describe a number of new species, but, what is more important, to rectify the definition of previously known species and groups. His monograph, illustrated by eighteen beautifully executed plates in black and white, forms Bulletin No. 84 (173 4to pp.) of the U.S. National Museum. R. L.

OFFICIAL FISHERY PUBLICATIONS.[1]

IN its annual report for the year 1912, the fisheries branch of the Board of Agriculture and Fisheries made a marked change in the manner of reporting the results of their administration, and we are glad to note that this change is still more apparent in the report for last year. For the first time we are now presented with an account of the progress of the English sea fisheries, which is characterised by close insight into the conditions of the industry, and by a very attentive study of those tendencies that are making for the modification, in many ways, of the fisheries of England and Wales.

Part i. of the report is a document of great interest even to the ordinary reader interested in public affairs. It deals clearly and concisely with the industry in general, emphasising various matters of special importance arising during 1913. The remarkable herring fishery of the last two years; the great development, during this time, of the fishery for herring by means of the trawl net; the utilisation of by-products; the development of the internal combustion engine as a means of propulsion of fishing vessels; the application of wireless telegraphy in the deep-sea fisheries; the economics of the French sardine industry; the rapid development of scientific research by the Board: these and other matters, together with a good review of the year's fisheries and the administrative work of the Board, make up this interesting volume. Part ii. is a document for the specialist. It consists of statistical tables and synoptic charts, and those concerned with fisheries inquiries will welcome the increasing amount of detail exhibited in this representation of the year's fisheries. Still greater detail in relation to the less important fisheries is desirable, but it is apparent that, for this purpose, a much greater development of local administration by the Board may be necessary.

These reports are a contribution, though in a greatly modified and much more valuable form, of the former fisheries reports of the department. The third paper before us begins a new series of publications containing the results of scientific researches carried out by the officers of the Board. It is a statistical account of the English haddock fishery in the North Sea. The species is one which is most abundant in the northern parts of the North Sea, less abundant to the west of Great Britain, and practically absent, or capricious in its distribution and abundance, in the Irish Sea and the English Channel. Commercial statistics are utilised by Mr. Russell to give a picture of the distribution of the fish, and of its seasonal abundance, and the variations of abundance from year to year. These statistical summaries are most valuable; they indicate irresistibly those periodic fluctuations which are plainly to be correlated with periodic physical changes in the sea, or even with periodic cosmic changes. Measurements of length, of samples of fish taken at the great ports, are also summarised by Mr. Russell, and are so treated as to supplement the commercial statistics. In this way more than two and a half millions of fish have been dealt with. Biological observations have also been made, but a discussion of these is reserved for a future report.

Numerous determinations of average weight of the fishes landed are also summarised, with the object of throwing light on the variations in nutrition according to age and season. The author shows that the well-known length-weight formula now used in fishery

[1] Board of Agriculture and Fisheries. Annual Report on the Sea Fisheries for the Year 1913. Part i., Report; Part ii., Tables and Charts. [Cd. 7448-9] (1914.)

Fishery Investigations. Series ii., vol. i., part i., Report on Market Measurements in Relation to the English Haddock Fishery during the Years 1909-11. By E. S. Russell. (1914.)

investigations does not apply to his series. According to this formula, the weight of a fish at different ages is a function of the cube of the length. A mathematical investigation of Mr. Russell's average weights by Pearson's "method of moments" shows, however, that the weight of a fish at different ages is to be represented only by a series of the form,

$$a + bl + cl^2 + dl^3 + \ldots,$$

l being the length of the fishes. It is possible that these terms have each a physical meaning; the fish grows irregularly as its age advances, so that its weight is a function of length, surface, volume, and density, all of which dimensions vary in relation to each other in different phases of the individual life-history. J. J.

WATER SUPPLY.[1]

ONE of the difficulties besetting the agriculturist in the vast area known as the Great Plains and constituting the central region of the United States is the irregular rainfall. The land is fertile enough, but a recurring series of dry years militates greatly against its effective development. Attempts have been made to remedy the evil by means of artificial irrigation, but so far these efforts have been sporadic and local, and, consequently, they have not produced the completely beneficial results which might be obtained if all the ground water were systematically conserved and utilised.

The United States Government hydrological service, as the result of their investigations, are publishing from time to time a series of water supply papers specially devoted to a consideration of this problem as affecting various localities, and four reports before us (Nos. 345 A, B, C, and D), issued this year, deal with districts in Oklahoma, Kansas, and New Mexico. They are useful little pamphlets, affording much detailed information on the geological formation and available water resources of the respective areas. Not the least useful feature, perhaps, is a discussion on the depth and cost of wells, and on the power required for pumping. There is a much-needed caution to prospective irrigators to consider carefully the whole of the outlay likely to be involved in any system of artificial irrigation before embarking upon it, lest it should prove to be financially unremunerative and unsound.

Water Supply Paper, No. 340 A (Washington: Government Printing Office, 1914), of the United States Geological Survey, contains a list of the stream-gauging stations situated in the North Atlantic coast drainage basins, and a summary of the reports and publications relating to water resources within this area (1885–1913). It forms a convenient bibliographical index, and should prove most useful for reference purposes to anyone desirous of consulting the literature on the subject.

Three annual reports on the discharge of rivers in the United States are comprised in Water Supply Papers, Nos. 309, 322, and 324 (Washington: Government Printing Office). The first deals with the Colorado River Basin for the year 1911; the other two are for the year 1912, and cover the St. Lawrence River Basin and the basins of the South Atlantic coast and eastern Gulf of Mexico respectively. The numerous observations made have been carefully compiled and tabulated, and, in conjunction with those previously published, form a very useful scientific record of stream flow and discharge in the areas specified. Each pamphlet has an introductory note on the methods employed in gauging, and, in the 1912 reports, there are some interesting photographs and diagrams.

[1] Paper 345 *a*: Preliminary Report on Ground Water for Irrigation in in the vicinity of Wichita, Kansas. Paper 345 *b*: Ground Water for Irrigation in the vicinity of Enid, Oklahoma. Paper 345 *c*: Underground Water of Luna County, New Mexico. Paper 345 *d*: Ground Water for Irrigation in the valley of North Fork of Canadian River, near Oklahoma City, Oklahoma, Washington, 1914. Government Printing Office.

THE AUSTRALIAN MEETING OF THE BRITISH ASSOCIATION.

SECTION H.

ANTHROPOLOGY.

OPENING ADDRESS BY SIR EVERARD IM THURN, C.B., K.C.M.G., PRESIDENT OF THE SECTION.

A Study of Primitive Character.

CIVILISATION and "savagery"—for unfortunately it seems now too late to substitute any term of less misleading suggestion for that word "savagery"—are the labels which we civilised folk apply respectively to two forms of human culture apparently so unlike that it is hard to conceive that they had a common origin—our own culture and that other, the most primitive form of human culture, from which, at some unknown and distant period, our own diverged. But, assuming one common origin for the whole human race, we anthropologists can but assume that at an early stage in the history of that race some new idea was implanted in a part of these folk, that is, in the ancestors of civilised folk, which caused these thenceforth to advance continuously, doubtless by many again subsequently diverging and often intercrossing roads, some doubtless more rapidly than others, but all mainly towards that which is called civilisation, while those others, those whom we call "savages," were left behind at that first parting of the ways, to stumble blindly, advancing indeed after a fashion of their own, but comparatively slowly and in a quite different direction.

It is easy enough for civilised folk, when after age-long separation they again come across the "savages," to discern the existence of wide differences between the two, in physical and mental characteristics, and in arts and crafts; it is not so easy, it may even be that it is impossible, to detect the exact nature of these differences, especially in the matter of mental characters.

As a rule the occupant of this presidential chair is one who, whether he has seen much of "savages" at close quarters or not, has had much ampler opportunity than has fallen to my lot of comparative study of that great mass of anthropological observations which, gathered from almost every part of the world, has now been recorded at headquarters. I, on the other hand, happen to have spent the better part of my active life in two different parts of the world, remote from books and men of science, but in both of which folk of civilised and of savage culture have been more or less intermixed, but as yet very imperfectly combined, and in both of which I have been brought into rather unusually close and sympathetic contact with folk who, whatever veneer of civilisation may have been put upon them, are in the thoughts which lie at the back of their minds and in character still almost as when their ancestors were at the stage of savage culture.

While trying to adjust the mutual relations of wild folk and of folk of civilised stock, I have seen from close at hand the clash which is inevitable when the two meet—a clash which is naturally all the greater when the meeting is sudden. Moreover, having started with a strong taste for natural history, and