

Professor Arthur C. L. Brown: "Fire and Fairies with Reference to Chrétien's Yvain, vv. 4385-4575."

Mr. Phillips Barry: "A Garland of Ballads."

The following papers were read by title:

Professor William H. Holmes: "The Place of the Esthetic in Human Welfare."

Professor Junius Henderson: "Tewa Ethnology."

Mr. W. W. Robbins: "Tewa Ethnobotany."

Miss Barbara Freire-Marreco: "Notes on Tewa Medical Practise."

Mr. John P. Harrington: "The Mesquite and its Uses."

Dr. Walter Hough: "The Dog in Pueblo, Mexican and Peruvian Mortuary Customs."

Miss H. Newell Wardle: "The Cradle-board in Ancient Mexico."

At one o'clock on Wednesday, the twenty-eighth, the corporation of Brown University gave a luncheon in the Administration Building, President Faunce receiving. The afternoon of the same day was devoted to sight-seeing; visits were made to the John Hay Memorial Library, the John Carter Brown Library, the Ann Mary Brown Memorial and the Rhode Island School of Design, followed by a reception at the Providence Art Club.

GEORGE GRANT MACCURDY

YALE UNIVERSITY,
NEW HAVEN, CONN.

FIFTH ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF AMERICA

THE fifth annual meeting of the Entomological Society of America was held at the University of Minnesota, Minneapolis, December 27 and 28, in the school of mines building. The president, Dr. J. B. Smith, presided throughout the session. In the absence of the secretary-treasurer, Professor J. G. Sanders was elected secretary pro tem.

The following papers were read during the session:

"Notes on the Tingid *Leptobyrsa explanata* Heid.," E. L. Dickerson.

"Notes on *Sanninoidea exitiosa*," J. B. Smith

"The Structure of Spermatophores in Crickets," J. P. Jensen.

"The Biological Survey of the Insect Life of Kansas," S. J. Hunter.

"An Experimental Study of the Death-feigning Habits of *Belostoma (Zaita) flumineum* and

Nepa apiculata Uhler," H. C. and H. H. Severin.

"Announcement of Further Results secured in the Study of Tachinidæ and Allies," C. H. T. Townsend.

"Some Suggested Rules to govern Entomological Publications," T. D. A. Cockerell.

The report of the committee on nomenclature was received and ordered printed.

The report of the executive committee showed that nineteen new members had been received during the year and four lost through death.

The result of the mail vote ordered by the society at the Boston meeting was that the annual dues of the society should be two dollars, this to include a subscription to the *Annals of the Entomological Society of America*.

The following officers were elected:

President—Professor Herbert Osborn.

First Vice-president—Professor Lawrence Bruner.

Second Vice-president—Professor Alex. D. MacGillivray.

Secretary-Treasurer—Professor Alex. D. MacGillivray.

Additional Members of the Executive Committee—Professor J. H. Comstock, Professor J. B. Smith, Professor C. J. S. Bethune, Dr. W. M. Wheeler, Dr. H. Skinner, Dr. A. D. Hopkins.

The annual public address was given in Handicraft Hall by Professor F. L. Washburn, "The Typhoid Fly in the Minnesota Iron Range."

ALEX. D. MACGILLIVRAY,
Secretary-Treasurer

SOCIETIES AND ACADEMIES

THE NEW YORK ACADEMY OF SCIENCES SECTION OF BIOLOGY

A REGULAR meeting of the Section of Biology was held at the American Museum of Natural History, January 16, 1911, Chairman Frederic A. Lucas presiding. The following papers were read: *Cryptomeric Inheritance in Onagra*: C. STUART GAGER.

An abstract of this paper appeared in SCIENCE for February 3, 1911, p. 191.

Field Notes on Japanese Whales: ROY C. ANDREWS.

The speaker gave an account of a recent seven-months' stay at the Japanese whaling stations, telling of the methods employed in capturing and preparing the whales for commercial use; also of new notes on the habits of finback, blue and sei whales.

The latter species, called by the Japanese "sar-

dine whale," is referable to *Balaenoptera arctica* Schlegel, and although it has been taken for a number of years at the Japanese stations almost no material relating to it is extant. The species is so closely allied to *Balaenoptera borealis* Lesson of the Atlantic that further investigation will probably prove it synonymous.

Photographs of the rare North Pacific blackfish (*Globicephalus scammoni*) and of several species of dolphins were also shown. It was announced that a new porpoise of a most peculiar body shape had been secured, and would be described in a future number of the *American Museum Bulletin*.

At the regular meeting of the section held at the American Museum of Natural History, February 13, 1911, Chairman Frederic A. Lucas presiding, the following papers were read:

Climate and Evolution: W. D. MATTHEW.

The thesis of the paper is as follows:

1. Secular climatic change has been an important factor in the evolution of land vertebrates and the principal known cause of their present distribution.

2. The principal lines of migration in later geological epochs have been radial from holarctic centers of dispersal.

3. The geographic changes required to explain the past and present distribution of land vertebrates are not extensive and do not affect the permanence of the ocean basins as defined by the continental shelf.

4. The theory of alternations of moist and uniform with arid and zonal climates associated, respectively, with partial submergence and extreme emergence of the continental areas, as elaborated by Chamberlin, are in exact accord with the apparent course of evolution of land vertebrates, when interpreted with due allowance for the probable gaps in the geologic record.

5. The numerous hypothetic land bridges in temperate, tropical and southern regions, connecting continents now separated by deep oceans, which have been advocated by various authors, are improbable, inconsistent and unnecessary to explain geographic distribution. On the contrary, the known facts point distinctly to the permanency of the deep-ocean basins during the later epochs of geologic time, to the alternate connection and separation of the land areas within the line of the continental shelf and to the continued isolation of those land areas which are surrounded by deep ocean.

These theories are substantially an adaptation of the conservative views of Wallace and other zoologists to the geological theories of Chamberlin. They are defended by a consideration (1) of the nature and extent of the defects in the geological record; (2) of the relations of the zoological regions to each other and the changes effected by elevation or submergence of 100 fathoms; (3) of the principles of dispersal of land animals; (4) of the character of the fauna of oceanic islands (including Madagascar, Cuba and New Zealand) and the degree of probability which attaches to accidental transportation as a means of populating them; (5) of the present and known past distribution of the mammalia, group by group, in considerable detail; (6) of the distribution of the different orders of reptilia in a less detailed manner; (7) of the distribution of birds and fishes, with a few instances from invertebrate distribution which have been especially urged in support of hypothetical bridges; (8) of the objections to such bridges and an interpretation of the real significance of such evidence as has been adduced in support of them.

The speaker believed that the supposed cumulative evidence obtained in various groups of animals or plants for various continental bridges is due simply to identical errors in interpretation running through all such instances. On the other hand, to admit such bridges would seem to involve certain distribution results, which, in the groups which he has studied, assuredly do not exist.

The Limbs of Eryops and the Origin of Paired Limbs from Fins: W. K. GREGORY.

In a skeleton of the temnospondylous amphibian, *Eryops megacephalus* Cope, from the Permian of Texas, which is now being mounted in the American Museum, the limbs are of special interest. Many resemblances to the contemporary reptile *Diadectes* are seen: in the stout, long coracoscapula, the short, wide-headed humerus, with its very wide, prominent and backwardly directed entocondyle, in the short fore-arm, in the very heavy, solid pelvis, stout femur and fully ossified carpus and tarsus. In the character of its limbs *Eryops* was on the whole nearer to *Sphenodon* than to the Urodeles, though far more archaic than the former. As shown by the facets, the humerus and femur were held almost at right angles to the body, the opposite feet being held very widely apart.

The generalized character of the limbs of *Eryops* with respect to those of higher Tetrapoda invite renewed inquiry into the origin of paired limbs from fins. The limbs of known branchio-

saurs and microsaurids do not carry us very far back toward any known type of fish fin. In these orders the cylindrical shafts of the long bones, with cartilaginous ends, the cartilaginous carpus and tarsus, the weak shoulder girdle and pelvis suggest a secondary adaptation to aquatic habits.

From the work of Thacher, Goodrich, Dean, R. C. Osburn and others, it seems probable that the paired fins of fishes, like the median fins, have evolved from wide-based fins with serially arranged basal and radial cartilages. After the formation of the primary shoulder girdle and pelvis and of the pro-, meso- and metapterygia by fusion and growth of the basals, the various types of paired fins seen in plagiostomes, chimæroids, pleuracanth, dipnoans, crossopterygians and actinopterygians seem to have arisen in each case through the protrusion of the basal cartilages, differential growth and shifting of the radials, and in some cases (*e. g.*, pleuracanth, crossopterygians, dipnoans) also through the extension of the radials around to the post-axial side of the metapterygial axis. If the Amphibia have descended from forerunners of teleostomous and dipnoan fishes (as seemed likely) then it was entirely probable that their paired fins had been transformed into limbs through the extreme protrusion of the proximal cartilages, differential growth and regrouping of the more distal cartilages, reduction of the dermal rays. This structural change may well have been in large part effected before the air-breathing proto-amphibians had left the water, owing to the assumption of a new function in the paired fins, *i. e.*, pushing against solid objects such as roots, in the stagnant water, instead of merely steering. A study of the pectoral girdle and fins of *Sauripteris*, a rhizodont crossopterygian of the Upper Devonian, in comparison with those of *Polypterus* and with the limbs of primitive amphibians, had suggested the following provisional homologies:

<i>Crossopterygian</i>	<i>Tetrapod</i>
"Infraclavicle"	= Clavicle
"Clavicle" (of Parker)	= Scapula
"Supraclavicle"	= Cleithrum
"Coracoid" (hypocoracoid)	= Coracoid (or pre-coracoid?)
"Scapula" (hypercoracoid)	= Humerus
Proximal basals	= Radius and ulna
Distal basals	= Carpals
Radials	= Metacarpals and phalanges
Dermal rays (derived from scales)	= Nails, scales

The reduction and loss of the post-temporal may have accompanied the freeing of the shoulder girdle from the skull. These views differ radically from those of Owen, Parker and Gegenbaur. The paired fins of *Sauripteris* were the only ones known that seemed to foreshadow even in a remote degree the paired limbs of the Tetrapoda. In the pelvic fin of *Eusthenopteron*, another crossopterygian of the Upper Devonian, differential evolution of the basals and radials had brought about certain remote resemblances to the tetrapod limb. The ilium of tetrapods appeared to be a neomorph.

L. HUSSAKOF,
Secretary

THE AMERICAN CHEMICAL SOCIETY
NEW YORK SECTION

THE sixth regular meeting of the session of 1910-11 was held at the Chemists' Club on March 10, Professor Chas. Baskerville in the chair.

The election of officers of the section for the session of 1911-12 resulted as follows:

Chairman—A. C. Langmuir.

Vice-chairman—A. B. Lamb.

Secretary and Treasurer—C. M. Joyce.

Executive Committee—Chas. Baskerville, David Wesson, W. J. Evans and Rudolph Seldner.

The following papers were presented:

"The Sulphides of Iron," E. T. Allen.

"The Detection of Salicylic Acid," H. C. Sherman and A. Gross.

"A Study of the Factors involved in the Qualitative Determination of Barium," E. Frankel and L. J. Curtman.

"The Detection of the Platinum Metals by the Glow Reaction," P. Rothberg and L. J. Curtman.

"Some New Rare Earth Compounds," Charles James.

"Experimental Furnaces for Glass Melts," P. C. McIlhiney.

"Examination of Commercial Oxygen," Reston Stevenson and Chas. Baskerville.

Before the reading of the last paper, the chairman asked Dr. A. H. Sabin, the first chairman of the section, to preside. Dr. Sabin, in taking the chair, gave a short account of the early history of the section.

Dr. McMurtrie had hoped to be present to make some valedictory remarks on the occasion of the last meeting in the original quarters of the Chemists' Club but was obliged to send a written com-

munication instead, which was read by Professor Baskerville.

C. M. JOYCE,
Secretary

THE HELMINTHOLOGICAL SOCIETY OF WASHINGTON

THE third regular meeting of the society was held in the zoological division of the Public Health and Marine Hospital Service on January 6, 1911, Dr. Stiles acting as host and Mr. Crawley as chairman.

Dr. Pfender presented a paper entitled "A Few Brief Remarks on Medico-zoological Nomenclature, with Special Emphasis on the Correct Terminology of the Protozoon of Syphilis." The paper points out that persons engaged in preparing new material are in duty bound to use all means that might aid in a clear and correct presentation of their subject. In the medico-zoological field, failure to appreciate this fact has resulted in burdening the literature with numerous erroneous names the errors being due to medical men and zoologists alike.

In the case of the organism of syphilis, the original errors were made by zoologists, but since being corrected have been persisted in by medical men and other scientific men. Schaudinn in 1905 reported the discovery of an organism which he believed to be the cause of syphilis. Believing that this belonged in the same genus as *Spirochæta plicatilis* Ehrenberg, 1834, he proposed for it the name *Spirochæta pallida*, adopting the emended spelling of Cohn, 1872, for the generic name. About this time Stiles called attention to the fact that Cohn had emended the spelling without reason or authority, hence the correct name was *Spirochæta*. The same year, 1905, Vuillemin decided that the organism did not belong in the genus *Spirochæta* and proposed the name *Spiro-nema*, a change which was accepted by Schaudinn. Vuillemin, however, had not used due care in selecting his generic name, which was preoccupied by Meek, in 1864, for a genus of molluscs, and also, erroneously, by Klebs, in 1892, for a genus of flagellates. Being apprised of this fact, Schaudinn proposed the generic name *Treponema*. This name did not come to the attention of Stiles and Pfender in time to prevent their proposing the generic name *Microspironema*, this last name becoming a synonym under the law of priority. The correct name of the organism of syphilis is therefore *Treponema pallidum* Schaudinn, 1905, and not the popular *Spirochæta pallida*.

The conclusions to be drawn from this case are: (1) it is mandatory that the proper classification of an organism be determined before naming it; (2) every effort should be made to ascertain whether a contemplated name is pre-occupied before publishing it; (3) when errors of nomenclature have been made, it is the duty of medical men and other scientists to avoid their repetition, regardless of the popularity of the names; (4) the difficulty of complying with these conditions and with the rules of nomenclature indicates the need of a reform, and this may perhaps be found in the selection of a tribunal of authorities to which proposed names must be submitted for approval and by which the status of names may be settled.

Mr. Hall presented two short notes on gid. The first one, accompanied by the exhibition of a couple of skulls of sheep dying of gid, called attention to the fact that the skulls of yearling sheep and lambs are very thin, and that in the case of sheep having gid, this thinness is increased in the vicinity of the parasite, commonly resulting in actual perforation of the skull in a number of places. The natural thinness and the thinness and perforation resulting from gid make it easy for dogs to get at the parasite and become infected. Experiment shows that they do this either by crushing and eating practically the entire skull, or by inserting the tongue in the foramen magnum and licking out the brain.

The second note dealt with a case of unusual delay in the development of the adult tapeworm, *Multiceps multiceps*, in the dog after feeding the larval gid bladderworm from the brain of the sheep. In this case the dog was killed 82 days after the feeding, and examined post mortem, the feces up to this time having shown no tapeworm eggs or proglottids. Five specimens of the gid tapeworm were found in the dog, the largest having eggs in the uterus, but with no oncospheres as yet developed. The two smaller specimens were less than half an inch long. The dog had been on a diet limited to salt meats or cooked beef and bread, and had had no opportunity to acquire infection with any tapeworm except *Dipylidium*. The usual period of development of the gid tapeworm is given by various authorities as from four to eight weeks. The experiment indicates the unreliability of conclusions based on negative fecal examinations and statements as to the usual time required for the development of a parasite.

Dr. Stiles presented a paper entitled "The Influence of Hookworm Disease upon the Apparent Age of Children in the Cotton Mills." There is a wide-spread popular belief that many very young children are working in the mills, and that this life results in retarding their physical development and in producing what is called a typical "cotton-mill child." Regarding this point, it appears from numerous observations that among the rural tenant whites, children very commonly appear to be younger than they are. This is frequently due to hookworm disease retarding development. A study of the real and apparent age of 42 people, part of whom were employed in the mills and part not so employed, showed that these persons appeared on an average 3 to 3.8 years younger than they actually were. These cases show that the stunted growth of the "cotton-mill child" is found in persons who never worked in cotton mills and in those who had never even lived in a cotton-mill village. All these cases were marked hookworm cases and their stunted growth was apparently due to this disease. Considering these facts with other data, the conclusion to be drawn is that the "cotton-mill child" like "cotton-mill anemia" is a product, not of the cotton mills, but of soil pollution and of the resulting infection taking place before puberty. Owing to the presence of hookworm suspects, great care is necessary in judging the ages of mill children.

Even after making allowance for hookworm cases in judging ages, there are still a number of young children at work in the mills. These are in some cases actually below the legal mill-age limit. Of 464 hookworm cases and suspects where the exact or approximate age was obtained, 19, over 4 per cent., were below the legal mill-age limit (twelve years) of South Carolina, the ages running from nine to eleven years. Probably the ratio of children under twelve years of age to the total number of employees is between 2 and 5 per cent.

A number of the small children seen in the mills are not employed by the mills, but are "helping" their elders. The parent or elder sister is paid for the amount of work turned out. With the assistance of a younger brother or sister, who would otherwise be helping with the housework at home, more work can be turned out, thus increasing the earnings. The employees are chiefly responsible for this form of evading the law. Most mills would prefer not to have these "helpers," but if they are turned out, the family

involved moves to another mill. The practise can only be stopped by legal prohibition or mill-association agreement, the former being perhaps the better, as the employees resent restrictions made by the mills but accept in more or less good faith the restrictive laws.

Mothers often bring children four or five years old to the mills and the children play while the mothers work. Often the mother can not leave the child at home, and the kindergarten, provided by some of the mills, is not always open. To refuse to allow these children in the mills would increase the difficulty of a widowed or deserted mother in supporting herself.

The average child in the cotton-mill family is anxious to go into the mills. To this end many of them practise deception in regard to their ages.

Cases probably occur where parents compel children to lie about their ages; the large number of children claiming to be just above the legal age for mill work points to this.

Many of the children have no idea of their exact age and the fathers are often almost as ignorant.

It seems probable that a physical examination by local or state medical officials would be better than the present age limit laws. In this way many cases of disease would be detected, excluded from the mills and treated. It would exclude from the mills all persons who are now justly excluded.

Dr. Stiles presented a second paper entitled "Is the So-called 'Cotton-mill Anemia' of the Gulf-Atlantic States due to Lint or to Hookworms?" A common explanation of the wide-spread anemia among cotton mill hands in certain portions of the United States is that it is due to "breathing in the lint." If this be true, then since the cotton, and hence the lint also, are practically identical in all parts of the country, we would expect to find: (1) that the hands in the New England cotton mills show the same type and extent of anemia as those in mills south of the Potomac and Ohio Rivers; (2) that mills of a similar character in eastern, central or western parts of North or South Carolina, or in southern, central or northern parts of Georgia or Alabama, show approximately the same proportion of anemia; (3) that there is the same amount and severity of anemia in a given district among hands who are of the first, second or third generation of mill workers and removed by one, two or three generations from the farm, or if there were

any difference that the anemia would be less among the hands of the first generation; (4) that the greater proportion of severe cases of anemia will be found in such rooms as the card room where there is the greater amount of lint flying around, less severe cases in the spinning room, and no severe cases in the cloth or engine room where there is little or no lint; (5) that persons fresh from the farms will not be very anemic but will become more so the longer they work; (6) and that if the anemia is due to the lint it is not very extensive or severe in the knitting mills, the paper mills, or the orphan asylums, or among medical students or trained nurses, since the persons involved here have little or no contact with lint. Investigation shows that in a general way the contrary is true in the above assumptions.

(1) Not a single case of cotton-mill anemia was found in the New England mills, although over 2,000 had been seen in the southern mills. (2) In the Carolinas, Georgia and Alabama, there is a relatively low percentage of cases of anemia in the central clay lands, a greater number of cases and more severe cases are found in places where the hands come from the sand or mountain lands, the worst cases coming from the sand lands. (3) Even where they were located in new mills with better sanitary provisions, the generation fresh from the farms showed a greater percentage of anemia than the hands who were one or two generations removed from the farm. (4) In general the cases of cotton-mill anemia are more severe and frequent in the spinning room than in the card room, and the most severe case found in one mill was in the cloth room. (5) Of 59 cases, 39 per cent. had been in the mills less than a year and 61 per cent. had been there more than a year. It seems that 94 per cent. of these cases might theoretically be considered as hookworm infections persisting after removal from soil pollution, and in a number of cases of severe anemia the persons had just entered the mill. (6) The most anemia found in any establishment was in a knitting mill, where 68.8 per cent. had typical "cotton-mill anemia." This same anemia was found in paper mills and colleges, and 18 cases were found in an orphanage among children who had never worked in the mills.

The above findings lead to the conclusion that the "cotton mill anemia" has nothing to do with working in the cotton mills. It is due to hookworm disease, contracted in most cases on the farms as a result of the insanitary conditions existing in the rural districts, and brought to the

mills from the farms. There is less anemia among mill workers than among the farm tenants, owing to the fact that life under the improved sanitary conditions of the average cotton mill is better from the public-health point of view than life as a tenant on a soil-polluted farm of the sort from which so many of these people come.

Mr. Crawley presented a paper entitled "Experiments on the Transmission of Trypanosomes by *Glossina*," in which he reviewed the work of Bouet and Roubaud. These workers instituted a series of experiments with *Trypanosoma dimorphon*, *T. cazalboui* and *T. pecaui*, and the tsetse flies, *Glossina palpalis*, *G. tachinoides* and *G. longipalpis*. It was found that any one of the three species of *Glossina* functioned equally well as host for *T. cazalboui*. Observations with the other trypanosomes have not been completed. Flies bred in the laboratory, and hence free from parasites, were permitted to feed on an infected animal and later were fed each day on a series of "clean" animals. It was found that the first feed or "infecting repast" was followed by a latent period of six days, during which the trypanosomes in the fly are innocuous. The fly then becomes infective and for some time at least the number of trypanosomes within it undergoes a progressive increase. The fly presumably remains infective as long as it lives.

An examination of the infected flies showed that the infection was confined to the proboscis. In the labrum, the flagellates are of the *Leptomonas* type and are fixed to the wall. These develop into trypanosomes which occur in the interior of the hypopharynx. They are either attached to the walls by the ends of the flagella, or free and motile in the interior of the organ. They never ascend beyond the common canal of the salivary glands, but always amass in considerable numbers in the vicinity of the opening of this canal into the hypopharynx.

These trypanosome forms appear in the hypopharynx forty-eight hours after the infecting feed, and are abundant by the fourth day. The authors regard these as the infecting elements, and call attention to the fact that the incubation period is not marked by morphological changes, but rather by changes of a physiological nature as regards the virulence of the parasites.

In all, 20 per cent. of the flies fed on infected animals became infected.

MAURICE C. HALL,
Secretary