

And more the look of stars dissolved it wears.
 Volumes of heat, from its prodigious stores,
 To endless space, it never ceasing pours.
 Formless and void it seems, and yet it holds
 A coming world within its hazy folds.
 A sun lies spread within its depths and heights;
 Planets are there, and all their satellites.
 But still as yet they lie confused and blent,
 Like starry dust, lost in the firmament.

A fine reproduction of the Spiral Nebula in
 Canes Venatici made at the Lick Observatory
 faces the second page of the book, and then,
 celestial parturition having taken place,

Loosed now are all the planets on their ways;
 Each with its burden of collected haze
 To run a destined course; and left alone
 Spins the main core, a glowing central sun.

* * * * *

Here moves our planet, sun-held as the rest,—
 Our mother Earth; but on her molten breast
 No life as yet can dwell; and should the clouds,
 Which gird her round with wind-swept vapour
 shroud,

Condense and pour their rains, no solid floor
 Has she as yet on which to hold their store.

The birth of unicellular life, when at last
 the seas are formed, is told, and in rapid suc-
 cession the development from age to age of
 the floras and faunas of the successive geologic
 periods is depicted. The mutations of the
 surface of the earth and the emergence and
 subsidence of the land masses, particularly
 those of Europe, are sketched, and the strange
 forms of vegetable and animal life are por-
 trayed, as the great drama of development
 proceeds, issuing at last in the appearance of
 man upon the scene.

As an example of the manner of treatment
 employed by the author in delineating the
 main facts as to the animal life of the past,
 the following lines, culled from that part of
 the fourth canto which deals with the Jurassic
 age, may be quoted:

Great dinosaurs, like those of earlier days,
 Still haunt Europa's woods and waterways;
 And hold their own through all these Jura times,
 In spite of lands wiped out, and changing climes.

* * * * *

Whilst through Europa's land these monsters
 range,
 Upon Columbia's scenes are forms as strange.
 Here lumbers Stegosaurus on his fours,
 With high-arched back, a king of dinosaurs.

But forms surpassing Stegosaurus are seen.
 In point of size, and of as wierd a mien.
 Some here there are that look like plesiosaurs
 With elephantine legs, as on all fours they creep
 along,

and reference is then made to 'knobbed Cera-
 tosaurs,' 'necky Brontosaurus' and 'those long
 yards of life, Diplodoci.'

The illustrations of the book are particu-
 larly handsome, and represent the latest views
 of paleontologists of reputation. It would be
 invidious to draw comparisons, but the writer
 of these lines can not fail to express his pleas-
 ure at the rather spirited drawing by Miss
 Alice B. Woodward representing a *Diplo-*
docus, a beast with the bones of which the
 reviewer possesses considerable familiarity.
 Miss Woodward's sketches of *Mærittheria*,
Palæomastodon, and *Arsinoitherium* are re-
 markably fine. There is great animation in
 her drawings, and she has profited to some
 extent, no doubt, by having at her elbow her
 father, one of the most honored and distin-
 guished of living paleontologists, and his col-
 league Dr. C. W. Andrews, whose paleonto-
 logical researches have given him a world-
 wide reputation. Very meritorious are also
 some of the drawings of Smit, which are based
 upon the work of the well-known American
 delineator, Charles R. Knight. The repro-
 duction of the water-color sketch of 'A Frozen
 Sea' from the brush of Mr. E. A. Wilson, who
 has recently returned from the Antarctic
 voyage of the *Discovery* is appropriately in-
 serted in that part of the poem which deals
 with the glacial epoch.

Upon the whole the book is most interesting
 and suggestive, and is one of the most enter-
 taining contributions to popular literature
 dealing with paleontology and the doctrine of
 evolution which has recently appeared.

W. J. HOLLAND.

SOCIETIES AND ACADEMIES.

NEW YORK STATE SCIENCE TEACHERS'
 ASSOCIATION.

THE tenth annual meeting of this body was
 held at Syracuse, December 27-29. The offi-
 cers for 1905 were:

President—A. P. Brigham, Colgate University.

Vice-President—G. M. Turner, Buffalo.

Secretary—J. E. Stannard, Owego.

The important matter of a biological survey of the state of New York was proposed in a paper by Professor Charles Wright Dodge, of the University of Rochester, and advocated by Director John M. Clarke, of Albany. Messrs. C. W. Dodge, of Rochester, C. W. Hargitt, of Syracuse University, and C. W. Hahn, of the Commercial High School, New York, were appointed a committee to further the project. The completion of ten years of fruitful work on the part of the association was made the subject of a special session, in which the four sections were represented by Professor William Hallock, of Columbia University, Professor A. D. Morrill, of Hamilton College, Principal C. T. McFarlane, of Brockport Normal School, and Professor E. D. Roe, of Syracuse University. Their addresses reviewed progress and looked into the future.

The section meetings were strongly sustained, and were largely given to practical discussions arising from the new regents' syllabus in the several departments. The association expressed itself favorably as regards the federation of the educational bodies of the state, provided its identity is fully preserved and it retains full liberty in all matters, particularly time and place of meeting. Ithaca was recommended to the incoming officers as the place for the next annual session. The association recorded itself as favoring legislation now pending in congress in regard to the adoption of the metric system, and joins with other bodies in certain recommendations concerning the teaching about narcotics and stimulants. The president for the coming year is Professor John F. Woodhull, of the Teachers College, Columbia University.

A. P. B.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.

THE fourteenth meeting of the Society for Experimental Biology and Medicine was held in the Rockefeller Institute, on Wednesday evening, December 20. The president, Edmund B. Wilson, was in the chair.

Members present—Adler, Atkinson, Auer, Beebe, Brooks, Burton-Opitz, Calkins, Cramp-ton, Davenport, Dunham, Emerson, Ewing, Field, Flexner, Gibson, Gies, Hatcher, Jackson,¹ Levene, Levin, Lusk, A. R. Mandel, Meltzer, Morgan, Noguchi, Oertel, Opie, Pearce,² Salant, Shaffer, Wadsworth, Wallace, Wilson, Wolf, Wood.

Members elected—W. E. Castle, H. H. Donaldson, David L. Edsall, Thomas Flournoy, R. B. Gibson, Walter Jones, A. S. Loevenhart, John A. Mandel, Fritz Schwyzer, Frank P. Underhill, Francis C. Wood.

Abstracts of Reports of Original Investigations.²

The Action of Eosin upon Tetanus-toxin and in Tetanus, with Demonstrations: SIMON FLEXNER and HIDEYO NOGUCHI.

Eosin and certain other anilin dyes have the power of preventing in vitro the hemolytic activity of tetanus-toxin. Eosin destroys tetano-spasmin. Simultaneous injection of tetanus-toxin and eosin into rats delays or prevents the appearance of the symptoms of tetanus. When the symptoms appear they progress more slowly than in control animals.

The Action of Eosin and Erythrosin upon Snake Venom, with Demonstrations: HIDEYO NOGUCHI. (Communicated by Simon Flexner.)

The hemolytic principles of venom react differently to eosin, depending upon their native labilities. The hemolysin of *Crotalus* venom suffers most; that of *Daboia* next, while that of *Cobra* is most resistant. The toxicity of different venoms is more or less diminished by eosin in the light. Neurotoxin is little or not at all affected by eosin or erythrosin.

On Decomposition of Purin Bodies by Animal Tissues: P. A. LEVENE and W. A. BEATTY.

The authors have found that the presence of 0.5 per cent. of sodium carbonate in mix-

¹ Non-resident.

² The abstracts presented in this account of the proceedings have been greatly condensed from abstracts given to the Secretary by the authors themselves. The latter abstracts of the communications may be found in current numbers of *American Medicine* and *Medical News*.

tures of spleen pulp facilitates the decomposition of purin bodies to such an extent that even uric acid is broken up by that tissue. The products were non-basic in nature.

On the Biological Relationship of Nucleoproteid, Amyloid and Mucoid: P. A. LEVENE and JOHN A. MANDEL.

The authors have subjected nucleoproteids to decomposition in acids and alkalis. Among the products thus obtained were substances resembling glycothionic acids. This observation indicates that nucleoproteids, amyloids and mucoids are genetically related.

Imperfection of Mendelian Dominance in Poultry Hybrids, with Demonstrations by Photographs and Plumage Charts: C. B. DAVENPORT.

The author has observed that in poultry hybrids the dominant character is frequently modified by the presence of the recessive and in the direction of the latter. For example, white plumage color may dominate over black, but the white hybrid shows some black feathers; white dominates over buff plumage, but the hybrids have a buff cast. When the hybrids are interbred the recessive character reappears in about one fourth of the hybrids, but often so modified as to be scarcely recognizable. The fact of the mutual contamination of characters in hybrids justifies the warnings given by breeders as to loss of characters in hybridization and the care that they exercise to maintain pure races.

The Mechanism of Conduction and Coordination in the Heart, with Special Reference to the Heart of Limulus: A. J. CARLSON. (Presented by Russell Burton-Opitz.)

The author has shown that in the heart of *Limulus* the rhythm is neurogenic, not myogenic, and that the conduction and coordination take place in the nervous and not in the muscular tissue. The rate of conduction in the intrinsic heart nerves of this animal, as found by the author, is 40 cm. per second and the rate in the motor nerves to the limbs is 325 to 350 cm. per second.

Further Observations on the Effects of Alcohol on the Secretion of Bile: WILLIAM SALANT. In continuation of his studies on this sub-

ject the author has found that intravenous injection of alcohol causes diminished flow of bile. Introduction of alcohol into the gastrointestinal canal is almost always followed by increased flow of bile. Further experiments are in progress to determine the explanation of these facts.

Some Effects on Rabbits of Intravenous Injections of Nicotin, with Demonstrations: I. ADLER and O. HENSEL.

After eighteen daily injections of 1.5 milligrams of nicotin slight changes are apparent in the bulb and arch of the aorta. After thirty-eight daily injections very marked and characteristic macroscopic and microscopic lesions can be recognized. Aneurysmatic dilatations of the aorta are very distinctly visible. There may be either a single aneurysm, or, as is more frequently the case, several in various parts of the aorta. These dilatations as a rule do not involve the entire circumference of the vessel, but only a limited portion, thus presenting the appearance of aneurysmatic pouches. The more frequently the injections are repeated daily the more pronounced and extensive the alterations appear, but they are always of the same character. The lesions here referred to have nothing in common with human arteriosclerosis. The work is still in progress.

Tumors of Wild Animals Living under Natural Conditions: HARLOW BROOKS.

The author referred to the great importance of the etiology of neoplasms and the well-recognized fact that research along this line must now rest almost entirely on experimental studies of the lower animals. Of 2,645 living animals which have come under the observation of the author at the New York Zoological Park during the past five years, no case of true neoplasm has been found. 744 animals have died and, as is the routine custom at the New York Zoological Park, have been autopsied, either by the resident pathologist or by the author. In this series of 744 consecutive cases but one case of tumor has been found (white raccoon dog; myxo-sarcoma of the ovary). Tumors of parasitic origin, granulomata, tubercles, actinomycotic foci and

the like are, on the other hand, relatively common. Numerous examinations of various animals taken in the wild were made by the author, with the same negative result. Abnormal conditions of life unquestionably increase the relative occurrence of new growths.

The Cutaneous Excretion of Nitrogenous Material: F. G. BENEDICT. (Presented by William J. Gies.)

The author found that the average amount of nitrogen that was eliminated through the skin daily by healthy men at rest was 0.071 gram. At hard labor healthy men eliminated through the skin as much as 0.22 gram of nitrogen. The exact nature of the compounds in which the nitrogen was eliminated has not yet been ascertained, but the author thinks it highly probable that urea and ammonium compounds are the leading products. The author alluded to the great significance of these observations in any study of the metabolism of protein, especially in experiments in which the total amounts of nitrogen in the ingesta and egesta are smaller than normal, since the percentage error is thereby proportionally increased.

The Effects of Intravenous Injections of Solutions of Dextrose upon the Viscosity of the Blood: RUSSELL BURTON-OPITZ.

When small quantities (5 c.c.) of a concentrated solution of dextrose were injected intravenously, the viscosity of the blood became slightly greater. By the administration of large quantities (50-100 c.c.) the viscosity was markedly decreased at first, but reassumed its normal value in the course of about one hour. By producing artificial glycosuria, the viscosity was decidedly increased. In the latter series of experiments the surface of the pancreas was painted with solution of adrenalin. The specific gravity of the blood pursued in all cases a harmonious course with the viscosity.

WILLIAM J. GIES,
Secretary.

THE SOCIETY OF GEOHYDROLOGISTS, WASHINGTON.

THE first regular meeting of the society was held on December 20.

After the adoption of a constitution, Mr. G. B. Richardson, to whose initiative the organ-

ization of the society was due, was elected president and Mr. M. L. Fuller, secretary.

Mr. Fuller spoke on "The Use of the Term 'Artesian' as Applied to Wells in the United States." From circular letters sent out to geologists, geohydrologists and others working on artesian problems a table was compiled showing preferences as to the use of the term. It was recognized in nearly all the replies that the original application to flowing wells was on general grounds desirable, but in view of the difficulties of such an application in field work there was considerable doubt expressed as to the desirability of so restricting its use. The replies were summarized as follows:

From—	Favoring Retention.	Favoring Abandoning.
Field men.....	23	77
Men combining field and teaching experience.....	50	50
Teachers with limited field experience	71	29

The feeling in favor of retaining the original definition was in a general way inversely proportional to the amount of field experience, those dealing with field problems in most instances preferring a modified definition. The general sentiment was favorable to applying the term to all wells in which the water is under hydrostatic pressure, regardless of whether they flow or not. Some favored the dropping of the term altogether because of the indefiniteness of its present use.

Mr. C. A. Fisher spoke on 'A New River in Northern Nebraska.' Water first began to appear early last summer in low spots along a broad shallow valley-like depression in Cherry County, gradually increasing in amount until a stream was formed, which during the summer slowly pushed its way, it is reported, forward across Brown, Rock, Holt and portions of Wheeler and Antelope Counties, a distance of about one hundred miles. There is said to be no record of any water course in the valley since the region was settled and numerous more or less fantastic explanations have been advanced by the inhabitants to explain its appearance. In reality, it probably simply represents the surplus groundwater which has been accumulating during

several seasons of unusual rains, and the river, therefore, simply marks a rise of the ground-water level to a point above that of the valley bottom. It is believed that it will disappear when the ground-water is again reduced to its normal level.

M. L. FULLER,
Secretary.

UNIVERSITY OF COLORADO SCIENTIFIC SOCIETY.

DURING November and December, 1905, the society held seven meetings. The papers presented were as follows:

PROFESSOR M. F. LIBBY: 'Growth in Childhood and Adolescence.'

DR. E. BARBER QUEAL: 'The Causes of Dyspepsia.'

PROFESSOR CHARLES C. AYER: 'The Phonograph in Modern Language Teaching.'

DR. WILLIAM P. HARLOW: 'The Blood in Health and Disease.'

JUDGE JUNIUS HENDERSON: 'Extinct and Existing Glaciers of Colorado.'

DR. LUMAN M. GIFFIN: 'The Necessity for Pure Water.'

PROFESSOR M. S. KETCHUM: 'Sources of Water-Supplies and Methods of Distribution.'

DR. DESSIE B. ROBERTSON: 'Methods of Bacteriological Analysis of Water.'

DR. GEORGE H. CATTERMOLLE: 'The Pollution of Water-Supplies.'

PROFESSOR FRANCIS RAMALEY: 'Noted Typhoid Epidemics.'

Two evenings were given to the papers devoted to the subject of water supplies. An attempt is being made by the society to inform the public in regard to proper means of securing good water. At a city election held in Boulder shortly after these meetings the vote was overwhelmingly in favor of the extension of the water-works. It is thought that the influence of the society was considerable in bringing about this result.

FRANCIS RAMALEY,
Secretary.

BOULDER, COLO.,
December 22, 1905.

DISCUSSION AND CORRESPONDENCE.

MENDELIAN INHERITANCE AND THE PURITY OF THE GAMETES.

THE communication on the above subject by my friend and colleague Professor Morgan,

printed in the issue of SCIENCE for December 29, offers an ingenious if somewhat complicated interpretation of Mendelian inheritance that is at variance with the current conception in that it substitutes for a disjunction of allelomorphic characters in the gamete-formation a reversal of dominance in half the gametes (which evidently involves some kind of disjunction of the factors that determine dominance). That a complete elimination of the dominant character does not take place in the production of albinos (this character still being present in what Castle has called the 'latent' state) has been clearly recognized by several experimenters and is beautifully demonstrated by Cuénot's work on mice; but Professor Morgan's attempt to find a general basis for the explanation of this is a new and interesting contribution to the subject. I think, however, that his effort to explain the very case (that of Cuénot's yellow mice) that suggested his new interpretation, involves a negation of Cuénot's experimental results. This observer found that yellow was invariably dominant to all other colors, but that after crossing yellow mice with pure-bred grays (or other colors) the yellow mice of F_2 , contrary to his expectation, included no pure extracted dominants, nor could such a race be obtained from them. In order to explain this, Cuénot advances the hypothesis that the yellow-bearing gametes are sterile to one another or do not unite, *i. e.*, a selective fertilization occurs, such that the yellow-bearing gametes are fertilized only by those bearing other colors. The interest of the question in relation to sex-production (which I have discussed in a paper now in course of publication) leads me to offer a word of criticism, since I am unable to share Professor Morgan's belief that his assumption will take the place of Cuénot's hypothesis. This belief rests, I think, on a misconception of Cuénot's results regarding the behavior of the yellow mice of F_2 which possibly arose through a confusion of Cuénot's formulas with his statement of fact.

How was the constitution of these mice tested? As in all similar cases, by the nature of their offspring, and Cuénot clearly specifies two methods by which the test was applied,