SCIENCE

FRIDAY, DECEMBER 7, 1900.

CONTENTS:

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

THE HISTORY OF THE NEOTROPICAL REGION.

IN No. 276 of SCIENCE, April, 1900, Dr. Henry F. Osborn published an article on the 'Geological and Faunal Relations of Europe and America during the Tertiary Period,' to which I may here refer, as it may be useful for science to discuss the different opinions to which our study has led us.

It is singular that Mr. Osborn has no knowledge at all of the numerous papers published by the writer on the history of the neotropical fauna, and consequently it is necessary to say at first some words on these papers, and the new discoveries and ideas published in them. Referring here only to those of my publications in which the geological and zoogeographical relations of South America were fully discussed, I name the following:

1. 'Die Geographische Verbreitung der Flussmuscheln.' *Das Ausland*, Stuttgart, 1890, Nos. 48–49; and translated 'The Geographical Distribution of the Freshwater Mussels.' The New Zealand *Journal of Science*, Vol. I., Dunedin, 1891, pp. 151-154.

2. 'Ueber die Beziehungen der chilenischen und suedbrasilianischen Suesswasserfauna.' *Verhandlungen des deutschen wissenschaftlichen Vereines zu Santiago*, Vol. II., 1891, p. 142–19.

3. 'Ueber die alten Beziehungen zwischen Neuseeland und Suedamerika.' *Ausland*, Stuttgart, 1891, No. 18. Translated, 'On

in the hands of a beginner. To any one who has mastered the elements of physical chemistry this book is indispensable, and it should be read by all who desire to keep abreast with the newest and best which has appeared in the field of general chemistry.

H. C. J.

Determination of Radicles in Carbon Compounds. By Dr. H. Meyer, Docent and Adjunct of the Imperial and Royal German University, Prague. Authorized translation by J. Bishop Tingle, Ph.D., F.C.S., Instructor of Chemistry at the Lewis Institute, Chicago, Ill. New York, John Wiley & Sons; London, Chapman and Hall. 1899.

This English edition of Dr. H. Meyer's 'Anleitung zur quantitativen Bestimmung der organischen Atomgruppen' will be heartily welcomed by all teachers and advanced students in organic chemistry. As the translator well says in his preface: 'The quantitative side of organic chemistry, apart from elementary analysis, is almost always neglected in the ordinary courses of instruction, and when the need for it arises, in the prosecution of research work, for instance, it is difficult to obtain a comprehensive view of the methods which are available without undue expenditure of time.' The present work supplies a systematic treatment of the various methods in use for determining quantitatively most of the groups ordinarily found in carbon compounds in a very convenient and compact form. It is to be hoped that it will bring about the introduction of some quantitative work into the regular college course of organic preparations. Some idea of the character of the book may be given by the following brief synopsis of its contents. The book is divided into five chapters. Chapter I., which is introductory, treats of the determination of hydroxyl (—OH); Chapter II. of methoxyl (CH_3O—), ethoxyl (C_2H_5O—), and carboxyl (—COOH); Chapter III. of carbonyl; Chapter IV. of the amino and related groups and Chapter V. of the diazo-, hydrazide-, nitro-, iodoso- and iodoxy-, and the peroxide-groups. The author has made various corrections and additions to the English edition, so that it is an improvement on the German one. The book is well printed and bound in convenient form for laboratory use. It has a good index of both subjects and authors' names, and an appendix containing some useful tables. The book can be most heartily recommended to all organic chemists.

W. R. Orndorff.

SCIENTIFIC JOURNALS AND ARTICLES.

In *The American Journal of Physiology* for November, J. C. Herrick reports an investigation of the influence of temperature on nervous conductivity. He found that a strong or moderate action current produced by an induction current or condenser discharge was not changed in intensity when the nerve impulse passed through areas varying in temperature from 8° C. to 40° C. Usually a decrease in current followed the application of temperature beyond these limits. An increase in the strength of action current in passing the impulse through a warmer area occurs, however, under two conditions—when the action current is only a small fraction of the maximum, and when the entire nerve except the warmed part is below 10° C. From his observations he concludes that the action current ordinarily observed and studied probably lies far beyond those accompanying maximal functional impulses.

Porter and Muhlberg present an experimental criticism of the theory that injury produces prolonged inhibition of the activities of the spinal cord. Believers in automatism of the cord have explained the failure of the cord to continue orderly functioning after separation from the brain, by assuming that the conditions of experimentation inhibit the spinal centers for a long period. To settle the question, the cell bodies of the respiratory nerve of the diaphragm were separated on one side of the spinal cord from the respiratory center in the brain. After this was done, these cells were still able to discharge motor impulses, but their apparently automatic rhythmic respiratory power was gone. Animals kept for a long period after this operation proved that the loss was permanent, and that it could not, therefore, be ascribed to inhibition.

Artificial division of egg cells, now attracting so much attention, has been further investi-

gated by A. P. Mathews, who presents the results of observations on Arbacia eggs. Mathews found that karyokinetic nuclear division followed by cell division may be produced by lack of oxygen, by heat and by exposure to ether, alcohol and chloroform. Since all the methods which induced karyokinesis in these eggs are well-known methods of causing liquefaction in protoplasm, Mathews suggests that the essential basis of karyokinetic cell division is the production of localized areas of liquefaction in the protoplasm.

S. I. Franz's paper, 'On the methods of estimating the force of voluntary muscular contractions and on fatigue,' is largely a destructive critique of the methods hitherto employed for determining muscular ability. With a weight ergograph or with an ordinary spring ergometer two variables are always present—the force and the extent of a contraction. These two factors are so variable in different individuals that accurate comparison of relative muscular ability is impossible. A third variable in the use of these instruments is noted in the nutrition changes of the working muscle. The isometric use of a spring is recommended because the main factor in an investigation of fatigue—muscular force—is practically isolated. The results of fatigue experiments show that after 150 maximum contractions the muscle can accomplish about 40 per cent. as much as it could at the beginning of the series. A large daily variation in results is noted. This factor, which has been almost wholly neglected in previous researches, indicates that the conclusions of early investigators should be held only until they can be investigated further.

THE *American Journal of Insanity* for June, in addition to the articles noted in our last issue, contains a paper by Dr. F. Savary Pearce, of Philadelphia, who presents 'Further Laboratory Studies on Uric Acid in Neuræsthenia and on Auto-intoxication in Nervous Disease,' in which he says: "We have sufficient data to say positively that neuræsthenic conditions are associated with the circulation of such an irritant in the blood. From the observations of Haig, it seems clearly proved also that when the uric-acid elimination is decreased, the urea elimination is normally increased. The amount of elimination of urea is in proportion to the albuminous food products properly absorbed into the blood, thus giving rise to strength and a feeling of latent vigor in the system so nourished. On the other hand, there assuredly follow a sense of feebleness and lack of resistance when the uric-acid elimination goes above the normal and, in consequence, the urea elimination falls. In 'Degeneracy' Dr. O. Everts, of Cincinnati, calls attention to the fact that the term degeneracy is without uniformity of meaning or restricted definition. He regards degenerates as "all persons who by reason of mental deficiency are incapable of self-support, as well as those who by reason of mental deficiency are incapable of perceiving the sinfulness of sin or the beneficence of restraint therefrom." He believes degeneracy to be an inevitable sequence of civilization without any hope of remedy. Dr. W. L. Worcester, of Danvers, Massachusetts, presents 'Three Cases of General Paralysis in Young Women' together with the pathological findings at the autopsies. One of these cases was a young mulatto. Dr. Charles E. Woodruff, of the U. S. Army Medical Corps, has a paper entitled 'Degenerates in the Army.' He finds that few of these degenerates in the army present the characteristic stigmata of degeneration, a fact which he believes to be due to the rigid examination to which all recruits are subjected upon enlistment. Degenerates in the army come from the borderland of partial degeneracy, the criminaloids of Lombroso. Some are cases of slow development—partial infantilism—who have run away from home in search of adventure, but more are mild types of the neuræsthenic tramp, restless, unstable and flitting from one employment to another. They are unable to endure monotony of army life with its rigid discipline and are generally deserters.

The Journal of Comparative Neurology for October contains the following articles: 'A Contribution upon the Cranial Nerves of the Cod Fish,' by C. Judson Herrick, with 2 plates; 'Notes on Professor Judson Herrick's Paper on the Cranial Nerves of the Cod Fish,' by F. J. Cole; 'Further Observations on the Conditions determining the Number and Arrangement of the Fibers forming the Spinal Nerves of the

Frog (*Rana virescens*),' by Irving Hardesty. 'Anastomosis of Nerve Cells in the Central Nervous System of Vertebrates,' by N. Worth Brown, with plate; 'A brief Summary of the Researches of Theodere Kaes on the Medullation of the Intra-cortical Fibers of Man at different Ages,' by Helen Bradford Thompson; 'Book Notices.'

THE *Botanical Gazette* for November contains an important paper, by Burton E. Livingston, of the University of Chicago, on the nature of the stimulus which causes the change of form in polymorphic green algæ. The form used was a species of *Stigeoclonium*, and it was made to assume the spherical or filamentous form and to organize zoospores or not at will. The evidence seems perfectly clear that the responses, both in form and reproductive activity, are due to changes in the osmotic pressure of the medium and are in no way functions of its chemical composition. A high osmotic pressure decreases vegetative activity, inhibits the production of zoospores, causes cylindrical cells to become spherical, and frees the alga from certain limitations as to the orientation of planes of cell division, while a low pressure has the diametrically opposite effect in each case. Professor Conway MacMillan publishes some careful observations upon the structure of *Lessonia*, one of the huge Laminaria forms. The material studied was cast up upon the beach of Vancouver Island. Mr. C. D. Beadle, of the Biltmore Herbarium, describes ten new species of *Cratægus*. Mr. John F. Cowell, Director of the Buffalo Botanic Garden, gives an appreciative biographical sketch, with portrait, of the late David F. Day. Mr. Carleton E. Preston, of Harvard University, records some field observations as to the root system and vegetative propagation of Cactaceæ.

Popular Astronomy for December has for a frontispiece the New Allegheny Observatory, whose corner stone was recently laid. The address delivered upon this occasion by J. A. Brashear is given in full, as well as notes descriptive of the corner stone exercises and the building itself. Another topic of interest to general readers is that of the *Leonid Meteors* watched for last year and this. Professor W. W. Payne discusses their orbit, and the results of the observations made at various points this year are noted and charted. Kurt Laves' practical help on the 'Adjustment of the Equatorial Telescope' is continued in this number, and Charles P. Howard's paper on the 'Total Eclipse, of May 28, 1900,' is begun. E. S. Holden writes, 'Among the Stars,' and S. W. Burnham contributes two short articles on double stars. Many brief reports of the Eros observation work are included in the general notes, which, with the usual Spectroscopic, Planet, Comet, Asteroid notes, completes the last number of the volume for 1900.

SOCIETIES AND ACADEMIES.

GEOLOGICAL SOCIETY OF WASHINGTON.

THE 104th regular meeting was held at the Cosmos Club, November 14, 1900.

The following papers were presented:

'Notes on Lake Chelan and Vicinity,' by Mr. Bailey Willis.

The Cascade Mountains of Washington State constitute a plateau, so thoroughly dissected, however, that none of the original surface remains. The greater number of the resulting sharp peaks and ridges have summits close to an imaginary sloping plane ranging in altitude from 3,000 to 8,000 feet. The initial uplift was succeeded by development of moderate relief, followed by the last and principal elevation. It is not yet known whether this final uplift is late Pliocene or early Pleistocene. Lake Chelan lies in an area of metamorphic and igneous rocks, the oldest of which are schists of sedimentary origin. They are cut by younger granitic rocks. These in turn are traversed by dikes of andesite, diorite porphyry, and acid quartzose porphyries.

'Remarks on Troost's Geological Map of the Environs of Philadelphia, 1826,' by Mr. G. P. Merrill.

A copy of this rare map, which the Marcous, in their catalogue of geological maps of North America, state is unknown, was exhibited to the Society.

'Ore Deposits at Monte Cristo, Washington,' by Mr. J. E. Spurr. Among the rocks of the Monte Cristo district are arkoses and