purpose of studying similar undertakings in those countries.

PROMOTIONS to associate professorships in the faculties of the University of Chicago are announced as follows: Georges Van Biesbroeck and Storrs B. Barrett, in astronomy; Edward S. Robinson and Forrest A. Kingsbury, in psychology; Arthur J. Dempster, in physics; Warder C. Allee, in zoology; Esmond R. Long, in pathology; Emery T. Filbey and Guy T. Buswell, in the College of Education.

MR. G. C. STEWARD, fellow of Gonville and Caius College, has been appointed fellow and lecturer in mathematics at Emmanuel College, Cambridge.

DISCUSSION AND CORRESPONDENCE

PROPOSALS FOR THE PRESERVATION OF THE WISENT

IT seems to be unfortunately only too true, occasional contrary reports notwithstanding, that the European bison or wisent (Bos bonasus L., Bison europaeus Ow.) of which prior to the great war about 700 lived in the Lithuanian forest of Bjeloviesh, near Grodno, has been exterminated there. The fate of the wisents that lived in northwestern Caucasia is unknown, but in all probability this herd no longer exists and of the herd formerly living in the estates of Prince Pless, Upper Silesia, only three remain. Thus, when summed up, no herd exists any longer, only some fifty head, which are scattered widely in zoological gardens or preserves.

Dr. Kurt Priemel, director of the Municipal Zoological Garden in Frankfurt and an expert on the matter, suggests that by a systematic cooperation of all persons interested the wisent may be permanently saved or at least preserved for many a year to come. Dr. Priemel proposes that the methods so successfully pursued by the American Bison Society be applied to preserve the wisent. To do this, however, the cooperation of all interests, German and foreign, is indispensable; only thus can systematic breeding be carried out, the necessary funds raised and general interest for the plan gained. It is proposed, therefore, to found a Society for the Preservation of the Wisent. Statistical data have been made up and a card catalogue arranged in which information regarding all the known living wisents has been compiled. The most important problem for the new society, when formed, will be to endeavor to increase the number of animals by systematic breeding, an interchange of individuals from various sources being also considered. As it is, with one exception, all the available stock derive from the Bjeloviesh herd. This exception is a bull of the Caucasus breed, which has always played an important part in reproducing the race and will continue to do so, as long as possible. The animal was presented to Karl Hagenbeck in 1907 by the Czar.

Should systematic breeding produce satisfactory results, and successful experience of many zoological gardens tend to encourage this hope, in twelve to fifteen years small herds of wisents may be turned loose in extensive preserves. These preserves should offer, as far as possible, variegated topography, climate and forest formations. A beginning has been made by Count Arnim-Boitzenburg, of Boitzenburg-Uckermark, province of Brandenburg, who has introduced the wisent herd formerly owned by Hagenbeck upon his estates. It is to be hoped that the dangers of inbreeding may be obviated and a healthy development assured.

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THE AMERICAN EDUCATOR AND SCIENTIST

THE title-page of the recently issued "The American Educator and Scientist, a Vocational Blue Book," bears the slogan: "Representation a Criterion of Distinction." After glancing through the text one is tempted to wonder what is the criterion of representation. Among the many who are not "represented" are the president of Harvard University and the president of the National Academy of Sciences.

Nothing is specified regarding the life work of James Furman Kemp except that he is manager of the New York Botanical Garden. Charles Whitman Cross is given all the credit for authorship of Quantatative Classification of *Ingenious* Rocks, although in the next entry but one Whitman Cross is described as author of Quantitative Classification of *Ingenious* Rocks.

This work is one of twelve blue books issued annually by the same publishers. The series includes The American Elite and Sociologist. The price of each volume is $10.

OMISSUS
WASHINGTON, D. C.

SCIENTIFIC BOOKS

Grundzüge der Paläontologie, II Abt., Vertebrata. By K. A. VON ZITTEL. Neuarbeitet von F. Broili und Max Schlosser. R. Oldenbourg, München u. Berlin. 4e Auflage, 1923.

THE new edition of this classic text-book will be a great boon to all workers and teachers in vertebrate paleontology. There are unfortunately no compre-

hensive and up-to-date text-books in English on this subject, or at least none of this type. Lull's "Organic Evolution" is admirable of its kind; it is didactic, aiming to set forth and expound principles and to illustrate them by selected examples from the fossil record. Osborn's and Scott's well-known books cover their selected fields excellently and authoritatively, and various other recent English and American books are indispensable. Zittel's text-book, however, is of a different kind. It is rather a dictionary than a text-book in the usual sense. It is a systematic account of the fossil vertebrata known to science, with a concise summary of how much is known of each genus, its diagnosis, relationships and occurrence of the known species. Brief outlines of the essential distinctions of the larger groups, with very complete and well-selected lists of references for each group, a few final pages reviewing the record as a whole and an index of names bring the volume up to a little over 700 pages of large octavo. Save in the matter of taxonomy and with exception of casual comments here and there on phylogenetic relationships, the book avoids any statement of theories and principles and confines itself entirely to facts of record. It does not explain evolution or defend it; it does not discuss the causes of extinction or the reasons for the dominance of reptiles in the Mesozoic, or any of the thousand and one problems that the study of the record suggests to an inquiring mind. But it does give the facts, completely and accurately and conveniently, and whether you desire to identify a specimen or to look up an unfamiliar genus, to find out what is known of the geologic history of some group or to get an exact knowledge of the fossil evidence illustrating some principle or bearing on some problem to be set forth, you refer with confidence to your Zittel. The essentials of the known record will be there and the bibliography will enable you to run down details so far as available.

There are several other excellent German text-books in this subject, notably those of Abel and Strömer, but none of them quite on the Zittel plan. The school of paleontology which Zittel built up at Munich was preeminently a school of facts, of exact practical knowledge of the science, based on the study and comparison of the great collection of fossils brought together under his direction, and since his death in 1904 the same policy has been consistently and ably pursued under direction of Doctor Broili and his colleagues. The results are reflected in the magnificent collections of fossil vertebrates and invertebrates in the Munich Museum of Paleontology, selected and arranged for purposes of study and research, and in the revised editions of the Grundzüge issued in 1911, 1918 and 1923. The original edition was translated into English by the late Dr. C. R. Eastman in 1902; no translation of the revised editions has been published, chiefly because it has been difficult for American specialists to accept the taxonomic arrangements unchanged or to agree upon modifications to be adopted.

The present edition has been brought up to date by the inclusion of nearly all the new discoveries down to 1922; a few omissions here and there are mostly unimportant. Various changes have been made in the arrangement and in the descriptive text of the 1911 and 1918 editions; the chapter on dinosaurs has been extended and partly rewritten to conform to recent researches and discoveries; and many additions and minor changes appear throughout the volume. American researches and discoveries are well presented—as indeed they are in most of the German text-books on fossil vertebrates. Many new illustrations have been added; as in preceding editions, the illustrations are always of specimens, few diagrams and no restorations. The only exception is a restoration of the head of *Camarasaurus* (after Osborn) placed beside the skull and jaws on which it was based. A certain system is noticeable, especially with the fossil mammals, in the attempt to represent the skull, the dentition and the feet of the better known types, more rarely the complete or reconstructed skeleton, thus bringing out the salient distinctive characters of each group.

While the treatment is, on the whole, both complete and up to date, there are naturally various minor errors and omissions and a few points open to more serious criticism. The retention of *Lysorophus* among the lizards, although admittedly in a provisional way, appears hardly defensible in view of the researches of Williston, Case, Sollas and others, and its attribution to a family "Paterosauridæ," which is not a proper family name, as it is not based upon any described genus, is contrary to the rules of nomenclature. The association of *Diatryma* and *Phororhachos* is hardly tenable in spite of their remarkable convergence, but perhaps it was not intended to be other than provisional. The primary division of the Mammalia into Eplacentalia (Monotremes + Marsupials) and Placentalia, would hardly be approved by any anatomist. *Blastomeryx* is not a *Hypertragulid,* in spite of the fact that its lateral metacarpals are complete, but a true Pecoran, with the characteristic cannon-bone and other distinctive features of the higher ruminants. The omission of the Paleanodonta, primitive Edentates of the North American Eocene (*Paleanodon* and *Metacheiromys*) is probably owing to Doctor Schlosser's doubts as to

their real affinities (which the reviewer does not share). But they should have been placed somewhere, for they are important types, both known from skulls and skeletons, and upon no theory of their affinities is their evidence negligible. No reference is made to the gigantic and peculiar rhinoceroses first discovered by Cooper in Baluchistan, reported by Borissiak from Turkestan, and quite recently found in Mongolia by Andrews and Granger. There are unfortunately a good many misprints, and the quality of the paper is not up to the old pre-war standards.

But with allowance for all defects, which, after all, are very few or of quite minor importance in comparison to the enormous mass of facts stored within its covers, the authors deserve the cordial thanks and appreciation of all who are interested in fossil vertebrates, in their completion of a revision that involves an immense amount of labor and erudition and a comprehension of the essential facts of the discoveries they have summarized that is far from common, to judge from the misstatements and misunderstandings of the average critical review.

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QUOTATIONS

THE ANNUAL EXPOSITION OF CHEMICAL INDUSTRIES

THE Ninth Annual Exposition of Chemical Industries is to be held in New York City, Grand Central Palace, September 17 to 22, 1923. The exposition has always been a place where those with inquiring minds could learn much in a short time regarding chemical equipment and the chemical industry. In late years the junior chemical engineers at Yale have assembled under Professor Read to devote the mornings to serious study and the afternoons and evenings to gaining a more intimate acquaintance with chemical equipment on display. The Advisory Committee of the Exposition recommended that a special feature be made of these facilities this year, and an announcement has been issued offering students of chemistry and chemical engineering a course on the fundamentals of chemical engineering and industrial chemical practice. Lectures will be given by men prominent in the various specialties, and a committee of educators has undertaken to make the course as attractive and profitable as possible. Three principal topics are to be the centers about which the work will be done. These are:

1—Plant Equipment in the Chemical Engineering Industries.
- (a) Disintegration—Crushing and Grinding.
- (b) Mechanical Separation—Grading.
- (c) Separation of Solids from Liquids—Thickening, Filtration, Centrifugal Separation.
- (d) Separation with Phase Change—Evaporation, Distillation, Drying.
- (e) Handling of Materials.

2—Materials of Construction—What materials to use, when, where and why.

3—Chemicals in Commerce—The distribution of chemicals.

It is expected that no charge will be made to students. The Exposition management asks instructors to advise how many of their students will care to avail themselves of this opportunity, and further undertakes to assist students in securing living accommodations while in New York. The seriousness of the work is indicated by the announcement that a report or examination on some phases of the course may be required by the committee.

We urge chemists and chemical engineers, whether students in institutions of learning or otherwise, to take advantage of this unusual opportunity. The men most familiar with the equipment and unit processes will be present. Exceptional facilities for examining devices of different designs and makes will be offered. It will be possible to meet those interested in the same field of work and discuss problems with them. Here is an opportunity to gain in one short week information of value, comparable perhaps to the concentration of data commonly found only in hand-books. Do not miss it!—*The Journal of Industrial and Engineering Chemistry.*

SPECIAL ARTICLES

THE PRODUCTION OF "BROWN-SÉQUARD'S EPILEPSY" IN NORMAL NON-OPERATED GUINEA PIGS

BROWN-SÉQUARD was the first to report that operative insults to the nervous system, such as lateral hemisection of the cord, section of the dorsal columns, section of one or both sciatic nerves, produced after a certain lapse of time a variety of interesting motor disturbances in the guinea pig. These disturbances were characterized by attacks of complex, coordinated, tonic and clonic contractions of the muscles of the head, neck, trunk and legs. The motor discharges occurred spontaneously or as the result of pressure stimulation of a certain receptive field of the skin which Brown-Séquard called "epileptogenic zone." This area comprehended roughly the side of the face below the eye and extended backwards, including the scapular region. The zone was unilateral after unilateral lesions and was always located on the operated side when the cord was involved; after damage to the brain, however, the "epileptogenic zone" shifted to the opposite side. In addition to the manifestations mentioned Brown-Séquard also described a transient