what ruthenium. Its combining weight is 50.46, and hence if bivalent it would have an atomic weight of 100.92. In this case it would be the missing eka-manganese, but the authors put this forward merely as a suggestion, pending a more thorough investigation. That which would tell most strongly against this supposition is the fact that the new substance forms a white sulfate which is insoluble in water and in dilute sulfuric acid, and stable up to a temperature of 400° to 500°. The second new substance described by Hofmann and Strauss is found in the lead chlorid, both from pitchblende and from bröggerite. This substance is radio-active, though the authors express doubt as to whether the activity of the lead from these minerals is due solely to the presence of this new substance. It appears to have a combining weight of 86, from which an atomic weight of 172 would follow, provided the metal is, as would seem probable from its resemblance to lead, bivalent. It might then be a metal of the fourth group, between tin and lead, and the representative of the period, none of whose members are definitely known. Of the compounds of this element, if such it be, the sulfate alone shows radio-activity. After the action of the kathode rays the substance shows a fluorescence, which lasts for upwards of two minutes.

The same number of the *Berichte* contains the description by Professor Hoffman and W. Prantl of a new element in the euxenite from Brevig. This euxenite, which is a complex silicate, titanate and columbate of the rare earths, iron, and aluminum, contains about two per cent. of what is supposedly zirconia. Hofmann finds that half of this is a new oxid, differing from zirconia, by its insolubility in ammonium carbonate, its giving no color reaction with curcuma, and having a combining weight of 44.4, which is nearly double that of zirconium. The atomic weight of the new element, if quadrivalent like zirconium, would be about 178. The same mineral seems also to contain another hitherto unknown element, which bears some resemblance to tantalum, but which has not yet been carefully examined.

In spite of the incredulity with which his claims to convert phosphorus into arsenic and antimony have been received by chemists, Fittica still continues his work upon the subject. In his latest experiments he heats amorphous phosphorus with lead oxid and boron. At 140° water is formed and after heating to 205° the residual mass is found to contain lead sulfate and the borid of nitrogen. If boric acid anhydrid is used in the place of the litharge, water, sulfuric acid and the borid of nitrogen are likewise formed, but also arsenic and sometimes antimony. From these experiments Fittica concludes that amorphous phosphorus is a compound of nitrogen, sulfur and hydrogen, and he assigns to it the formula N_2SH_2. He does not, however, furnish satisfactory proof that this represents the actual quantitative composition of phosphorus. He also admits that when amorphous phosphorus is oxidized with nitric acid no trace of sulfuric acid is formed.

J. L. H.

BOTANICAL NOTES.

INTERNATIONAL BOTANICAL ASSOCIATION.

A call, signed by sixteen botanists of Europe and America, has been issued for a meeting of the botanists of the world at Geneva, Switzerland, on the 7th of August next, for the purpose of organizing an International Botanical Association. In the call it is stated that the chief object of the Association will be the foundation of a bibliographic periodical, criticizing in a perfectly impartial manner all botanical publications in such a way that the more important shall be separated from those which are of less value. Other advantages to be derived from the proposed organization are presented, and correspondence with the secretary, Dr. I. P. Lotsy, of Wageningen, Holland, is solicited.

STOCK-POISONING PLANTS.

The Division of Botany of the United States Department of Agriculture has recently issued a valuable bulletin (No. 26) dealing with the plants which are known to be poisonous, or which are thought to be poisonous to stock in the State of Montana. About twenty-five pages are given to a general discussion of the conditions under which poisoning occurs, and of remedies and their application. Then follow about sixty pages devoted to a few plants of the

greatest importance, viz.: death canas (*Zygadenus venenosus*), larkspurs (*Delphinium* of two species), water hemlock (*Cicuta occidentalis*), loco weeds (*Aragallus* sp.) and lupines (*Lupinus* sp.). The first is said to be the most important of all the plants reputed to be poisonous to stock in Montana. It grows everywhere in Montana in moderately moist places on open ranges, and outside of the State is found from British Columbia to South Dakota, Nebraska, Utah and California. Feeding experiments show that both leaves and bulbs are poisonous. Two species of larkspurs (*D. glaucum* and *D. bicolor*) have attracted the most attention, although other species are more or less under suspicion. The foliage is the poisonous part in these plants. Water hemlock is usually known as 'wild parsnip' and is commonly supposed to be the garden parsnip run wild, an error, of course. The roots and foliage are poisonous, and cases of poisoning of cattle, sheep and even human beings are reported. This species is very much like the eastern (*C. maculata*) in appearance and action. The loco weeds affect animals quite similarly to the related plants called loco weeds on the Great Plains. The species of most importance is *Aragallus spicatus* which is closely related to *A. lamberti* of the Missouri Valley. Several pretty species of lupines (*Lupinus*) are shown to be poisonous. These are locally known as blue peas, blue beans, wild peas, wild beans, etc., and in spite of their pretty flowers are to be placed among the noxious plants. The report devotes about a dozen pages to poisonous plants of less importance, about as many to suspected plants, and closes with a discussion of some species which have been wrongly accused of possessing poisonous properties. Thirty-six plates help to make this a very valuable and useful report.

NORTH AMERICAN FERNWORTS.

ABOUT twenty years ago Professor Underwood issued a little book on the ferns of the country, which has proved to be so useful that it has been revised again and again, its latest title (sixth edition) being 'Our Native Ferns and their Allies.' From time to time it has undergone considerable changes at the hands of its author, and in its latest form this is most marked. Here the results of the latest studies both in morphology and nomenclature have been used to such an extent that the old-time fern collector will often find himself somewhat dazed and confused, unless he has kept himself well informed as to the tendencies of these later years. Thus to find the common brake under the name of *Pteridium aquilinum* instead of *Pteris aquilina*; to find *Phyllitis* substituted for *Scolopendrium*; *Dryopteris* and *Polystum* for *Aspidium*; *Filix* for *Cystopteris*; *Matteuccia* for *Struthiopteris*; and *Dennstaedtia* for *Dicksonia*, is disquieting for the botanist who learned about ferns twenty or more years ago. It shakes one's faith in the immutability of things to find old friends under unfamiliar names. For the peace of mind of such persons it would be well not to buy the later editions of systematic books, for in all of them—even the most conservative—we find many of these tiresome changes.

In a recent paper ('A List of the Ferns and Fern-Allies of North America north of Mexico, with principal Synonyms and Distribution') published by William R. Maxon in the *Proceedings* of the United States National Museum (Vol. XXIII.) our information as to the Fernworts of North America is considerably augmented. While in Professor Underwood's book the total number of entries is 279, Mr. Maxon brings them up in his list to 307. This increase is mostly due to the separate recognition and enumeration of varieties, and in part to the addition of new species and varieties. Among the new species are *Polypodium hesperum*, from western United States; *Adiantum modestum* from New Mexico; *Dryopteris aquilonaris* from Alaska; *Isoetes heterospora* and *I. hieroglyphica* from Maine; *I. harveyi* from Maine and Massachusetts; *I. gravesii* from Connecticut, besides about as many more new varieties. *Athyrium* is given generic rank and separated from *Asplenium*, carrying with it the species *thelypteroides*, *filix-foemina* and *cyclosorum*. The synonymy is considerably fuller than in Professor Underwood's book, and the ranges are often modified and extended. We note still the omission of Unalaska as one of the stations for *Adiantum capillus-veneris*, although specimens are in herbaria which were collected on that island many years ago. The ranges of *Lycopodium*

clavatum and *L. complanatum* should be so extended as to include Iowa, as shown by Professor Shimek's recent list of Iowa Pteridophyta.

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MUSEUM NOTES.

PUBLICATIONS OF THE CARNEGIE MUSEUM.

WITH the issue of No. 1 of the *Annals of the Carnegie Museum*, this rapidly growing institution enters upon its career as a museum of publication; the publications are to appear as *Annals* and *Memoirs*, the first in octavo form, the second in quarto, and they are to be published from time to time as material is provided. In the 'Museum Notes,' with which this number of the *Annals* begins, it is stated that the Museum is to re-open the quarry at Como, Wyoming, where Professor Marsh obtained a number of his best specimens, including a number of skulls of Dinosaurs. The first systematic paper is by E. B. Williamson, on 'The Crayfish of Allegheny County, Pa.,' and describes six species. John A. Shafer gives a 'Preliminary List of the Vascular Flora of Allegheny County, Pennsylvania,' stating that it is issued largely as an incentive to others to participate in the preparation of a fuller, more complete catalogue. While the order of arrangement is that of Gray's Manual, the author states that this is selected merely as a matter of convenience and that he is fully in accord with the nomenclature of the most recent authors. The data on which the species are admitted to the list are indicated by means of signs. J. B. Hatcher notes 'Some New and little known Fossil Vertebrates,' showing that *Platacodon nanus* is unmistakably a fish and describing the character of the dermal covering of *Claosaurus*. Of special interest is a description of the principal characters of a primitive rhinoceros, *Trigonias osborni*, of which Mr. Hatcher was so fortunate as to secure an almost complete example, the species having been founded on the anterior part of the upper jaw and a ramus of the lower jaw. The dentition was noted as of a primitive type since three incisors and a canine were present on either side of the upper jaw. The rest of the skeleton agrees with this, the superior molars being simple in their structure, while there are four digits in the forefoot. D. A. Atkinson gives a list of 'The Reptiles of Allegheny County, Pennsylvania,' prefacing the paper with the remark that civilization means the destruction of a certain portion of the natural fauna of a region and that many species now rare in Allegheny County must have formerly been abundant, while two species have been exterminated within the last forty years, these being the prairie and the mountain rattlesnakes. In all, thirty-four species of reptiles are recorded. The concluding paper of the part is by R. W. Shufeldt on the 'Osteology of the Herodiones,' and contains a detailed description of the native genera of the group and with some foreign forms.

THE FIELD COLUMBIAN MUSEUM.

THE *Annual Report of the Director* of the Field Columbian Museum for 1899 1900 shows a marked increase of the collections in the line of anthropology, mainly in the way of material collected from the Hopi Indians and from the western States, through expeditions sent out. In botany is noted the accession of the Patterson herbarium of 30,000 North American plants, and a series of a thousand specimens from California and Colorado. A special form of herbarium case is described and figured which is said to combine freedom of access with security from insects and the exclusion of dust. Good progress has been made in cataloguing and labeling and a large number of books and pamphlets have been added to the library, making the present total somewhat over 24,000 titles. Two courses of eight lectures each were given during the year. The total number of visitors is not stated, but we are told that there was an increase of 42,595 over the previous year. The frontispiece of the report is an excellent portrait of the late George M. Pullman, and there are a number of full-page plates showing some of the ethnological and anthropological exhibits, among them two of Mr. Akeley's fine groups of African antelopes.

THE SOUTH AFRICAN MUSEUM.

PARTS IV. and V. of the *Annals of the South African Museum* are to hand, the former con-