U. S. National Museum, Vol. VII., p. 99; Am. Journal of Science, Sept., 1886. These refer to the region in question. Closely similar deposits have been found as far east as Omaha, and as far north as the Missouri River in Knox Co., Neb.

An interesting and important question which should be kept in mind by those observing these deposits is whether there is more than one horizon shown at any one locality. Thus far I think no one has reported more than one, and it may be that all are to be referred to one eruption. If so the deposit becomes a most important reference horizon.

As a related item of intelligence I may add that this last summer I discovered a deposit of somewhat similar character extending a dozen miles or so along the South Fork of White River, in Lugenbeel Co., S. D., showing a thickness in places of more than 10 feet. This deposit is, however, of a light green color, coarser than that of Nebraska and more consolidated than I have seen there. Moreover it seems to mark the transition from the White River epoch to the Loup Fork.

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SCIENTIFIC LITERATURE.

GRASSES OF NORTH AMERICA.*

The botanists of this country have been looking forward with interest for several years to the publication of the second volume of Dr. Beal's 'Grasses of North America.' Single-handed and alone, away from the larger libraries and collections, Dr. Beal has patiently and persistently carried forward the work which he has finally brought to completion and presented to the public in the volume before us. Much interest attaches to the work, for we have here presented, for the first time, in a single volume, descriptions of all the grasses of the United States and northward, which the writer was able to obtain, together with those which have in recent years been collected in Mexico by Mr. C. G. Pringle and Dr. E. Palmer. No work of similar character has before been published, and those wishing to find descriptions of our grasses, excepting for limited areas, have been obliged to consult numerous publications through which the descriptions were scattered. The total number of species described in the work, including introduced species and those cultivated for use or ornament, is 912, covering 659 pages. With few exceptions, these descriptions, which are very full, have been originally drawn up by the author. The nomenclature adopted is that of the so-called 'Rochester code,' and in every case full citations of authorities are given, considerable space being devoted to synonymy.

The author states in his preface that "it has required some courage and persistence to adhere to the work so long, realizing fully that it must contain many defects, and that perhaps its chief use would be to serve as a basis for others to enlarge in the future, correct and otherwise improve." This is very often the fate of scientific publications, and no one can hope to produce a work of any considerable extent which shall be beyond criticism or entirely free from errors. The work before us is no exception to this statement, and the criticisms or corrections here given are made in the kindliest spirit, with the intent of calling attention to some of the more important mistakes, hoping thereby to enhance the usefulness of the work, rather than discredit its value.

Collectors in preparing their labels occasionally overlook the importance of carefully noting the locality and station of the specimens gathered, and more often still they fail to note the date of collection or altitude. It is almost discouraging, and even annoying sometimes, to look over a dozen or more sheets of specimens and find nothing more definite in regard to these particulars than the name of the State—it may be 'Texas,' or again, the 'Rocky Mountains.' The author meets here a condition of things which places him at a disadvantage—by rendering his work incomplete—with the reader or student of biology, a position which might have been avoided by a trifling effort on the

**Grasses of North America*, by W. J. Beal, M. A., M. S., Ph.D., Professor of Botany in the Michigan Agricultural College, Vol. II. The grasses classified, described, and each genus illustrated, with chapters on their geographical distribution and their bibliography. Henry Holt & Company, New York.

part of the collector. The effect of this want of care in preparing labels is manifest in the work under consideration, in which the geographical distribution of the species is given, but the range is often limited to the material examined by the author. Errors in the recorded distribution of plants may, and often do, arise from incorrect determinations of species. There is an example of this given under *Danthonia sericea* Nutt., the range of which is recorded as 'New England to Florida, Colorado and California.' This species does not occur west of the Mississippi, the Western grasses referred to it belonging to other species. The occurrence of *Alopecurus alpinus* within the limits of the United States is doubtful. The specimens from the Rocky Mountains in the National Herbarium referred to that species are all *A. occidentalis* Scribn. *Sporobolus beevifolius* (Nutt.) Scribn. (*Vilfa cuspidata* Torr.) does not occur east of Ohio; there are no specimens in the National Herbarium from east of Missouri and Minnesota. The grass from Northern Maine referred to this species is a slender form of *Sporobolus depauperatus* named by Trinius *Vilfa richardsonis*. This form extends westward to the Rocky Mountains.

The scientific author employs figures to illustrate facts or to more clearly demonstrate his written statements. The author and not the artist is held responsible for their correctness. The reader has little interest in the artist unless his work possesses some special merit for which he has received general recognition, such as accuracy gained through a knowledge of the subject illustrated. This matter is here referred to because of the constant citation by the author of 'Grasses of North America,' of the draughtsmen who executed the figures used by him, and because of a few mistakes which these citations apparently render the present writer in some degree responsible.

Fig. 11, on page 35, is *Blepharidachne kingii* (S. Wats.) Hackel (*Eremochloe kingii* S. Wats.) and not *Eremochloa leersioides* (Munro) Hack. *Blepharidachne* is a genus of two species closely related to *Triodia*, and is omitted from the work.

Fig. 20 on page 77 is not *Arundinella palmeri* as stated. A, in the figure, is a spikelet of *A. brasiliensis*; a, is the floret of the same. B, is a spikelet of *A. deppeana*, and b, a floret of the same.

Fig. 22, on page 96, does not illustrate *Paspalum floridanum*, but is the reproduction of a drawing copied in part from Trinius and designed to illustrate *P. setaceum* Michx.

Fig. 37, on page 178, is incorrectly explained. A, is a spikelet of *Homalocenchrus oryzoides*, and a, is a spikelet of *H. monandrus*, and not a floret of *H. oryzoides*, as stated.

Fig. 41, page 229, illustrates a spikelet of *Stipa richardsonii* Link, and not *Oryzopsis macounii* (Scribn.) Beal. *Stipa richardsonii* Link appears to have been omitted from the work.

Fig. 53, on page 316, is said to be '*Epicampes macroura.*' The drawing was made to illustrate a spikelet of a grass (No. 3335 Pringle) which was doubtfully referred to *Epicampes bourgaei* Fourn., described on page 310.

Fig. 109, on page 525, was drawn by Scribner, but figure 81, on page 440, designed to illustrate *Opizia stolonifera*, was not.

Fig. 76, on page 527, is not '*Bouteloua texana,*' but *Bouteloua trianæna* Scribn. in Proc. Acad. Nat. Sci. Phila. (1891), p. 307.

Fig. 117, on page 627, illustrates parts of a spikelet of *Brachypodium pinnatum* var. *cæspitosum* (No. 3443 Pringle), described in Proc. Acad. Nat. Sci. Phila. (1891) p. 305, and not *B. mexicanum*, as stated.

Fig. 118, page 632, illustrates some parts of *Jouvea pilosa* (Presl) Scribn., and not *Jouvea straminea* Fourn., which is figured in Bull. Torr. Bot. Club, 23 : pl., 266.

There are in the work about 160 new names, specific and varietal, arising partly from the system of nomenclature adopted, partly from the shifting of species from one genus to another and the reduction of species to varieties, or the elevation of varieties to species, and partly from the publication of new species. There are about forty species named and described, which have heretofore been unpublished, or at least unidentified, and are presumably new species. These are chiefly Mexican grasses, and, for the most part, occur in the collections of Mr. C. G. Pringle, the names in nearly all cases being those under which the species were distributed. Among the species described as new are the following :

Andropogon geminata Hackel ined.
Arundinella palmeri Vasey ined.
Paspalum pittieri Hackel MS. = Pringle 2359.
Panicum sonorum Beal.
Panicum vaseyanum Scribn. ined. = 1435 Pringle.
Pennisetum durum Beal. = 498 and 817 Pringle.
Stipa multinode Scribn. ined. = 385 Pringle.
Oryzopsis pringlei Scribn. ined. = 4759 Pringle.
Muhlenbergia pulcherrima Scribn. ined. = 1416 Pringle.
Muhlenbergia firma Beal. = 4914 Pringle.
Muhlenbergia nebulosa Scribn. ined. = 2366 Pringle.
Muhlenbergia elongata Scribn. ined. = 398 and 3477 Pringle.
Muhlenbergia brevifolia Scribn. ined. = 4736 Pringle.
Muhlenbergia laxiflora Scribn. ined. = 1412 Pringle.
Muhlenbergia strictior (Scribn.) = 1418 Pringle.
Sporobolus macrospermus Scribn. ined. = 2447 Pringle.
Epicampes anomala Scribn. ined. = 1423 Pringle.
Calamagrostis erecta Beal (*Calamagrostis plumosa* Scribn. ined.) = 4726 Pringle.
Calamagrostis pringlei (Scribn.).
Calamagrostis lactea Beal. = 1022 Suksdorf.
Trisetum filifolium Scribn. ined. = 1431 Pringle.
Trisetum sandbergii Beal. sp. nov.
Eragrostis pusillus Scribn. ined. = 2327 Pringle.
Eragrostis erosa Scribn. ined. = 415 Pringle.
Eragrostis plumbea Scribn. ined. = 2311 Pringle.
Melica parishii Vasey ined.
Poa vaseyana Scribn. ined. Too near *P. wheeleri* Vasey.
Poa subaristata Scribn. ined. (Macoun's Catalogue, without description) = 633 Tweedy.
Poa acuminata Scribn. ined.
Colpodium mucronatum (Hackel).
Graphephorum pringlei Scribn. ined. = 4765 Pringle.
Festuca howellii Hackel in herb.
Festuca vaseyana Hack. ined.
Festuca dasyclada Hack. ined.
Bromus laciniatus Beal. = 4897 Pringle.
Brachypodium pringlei Scribn. ined.
Hordeum montanense Scribn. ined.
Elymus innovatus Beal.

Several species described are presented in a manner that might lead one to infer they were published here for the first time. Among these are: *Paspalum inops* Vasey, published in 1893 (Contr. U. S. Nat'l. Herb. 1. 65); *Atropis uniaterale*, published and figured in 1893 under *Poa* (Vasey in Grasses of the Pacific Slope, t. 85); *Agrostis inflata* Scribn., published in 1894 in the Canadian Record of Science, where also was published *Poa trivialis* var. *filiculmis* Scribn. *Andropogon floridanus* was published in a Bulletin of the Torrey Botanical Club, 23: 145 (1896). It is unfortunate that unpublished names should in any case have been cited as synonyms, as the citation has no significance, and the publication here prevents their possible future use. The grasses cited under *Panicum indicum* are *P. phleiforme* Presl, a species very closely allied, to and perhaps not distinct from, *P. indicum*. *Chamæraphis* is taken up for *Setaria*, and made to include *Panicum sulcatum* Aubl., which belongs to the section *Ptychophyllum* of *Panicum*, while *Panicum palmeri* and *P. reverchoni*, the first a species of *Ixophorus*, the latter a *Setaria*, are described under *Panicum*, and classed in the section *Ptychophyllum*. *Panicum schiedeanum*, described on page 119, is also an *Ixophorus*, closely related to the species described as *Panicum palmeri*. *Chamæraphis latiglumis*, described on page 152, is not a *Setaria*, but belongs to a distinct genus, named *Setariopsis* (see Scribn. Pub. Field Col. Mus., Bot. Ser., I.: 288 (1896)). '*Chamæraphis caudata* var. *pauciflora* Vasey ined.,' for which 191 E. Palmer is cited, is a small form of *S. Liebmanni* Fourn. The synonyms cited under *Chamæraphis uniseta* are incorrect for No. 381 E. Palmer, the grass referred to. *Setaria uniseta* Fourn. and *Urochloa uniseta* Presl are *Ixophorus unisetus* Schlecht., the species described under *Panicum palmeri* on page 120. '*Muhlenbergia lycuroides* Vasey ined.,' described on page 239, for which 489 E. Palmer is cited, is again described on page 271, under the name *Lycurus phleoides* var. *brevifolius* (Scribn.). *Pereilema* Presl, described on page 271, is cited as a synonym under *Agrostis* on page 320. *Sporobolus depauperatus* var. *filiformis* Beal, on page 296, characterized as having 'the culm 10 to 12 cm. long, exserted for more than half its length; panicle much reduced, 2 cm. long,' is *Sporobolus gracillimus* (Thurb.). *Sporobolus ovatus* Beal, for which *Sporobolus minor* Vasey is sited as a synonym, simply adds another synonym to *Sporobolus vaginæflorus* (Torr.). *Calamagrostis vaseyi* Beal, page 344, is certainly *Calamagrostis purpurascens* R. Br., a species quite distinct from *C. sylvatica* of Europe. *Calamagrostis sylvatica* var. *americana* Vasey, described on p. 347, is the same. *Spartina*

densiflora, described on p. 397, is the same as *S. junciformis* Engelm. & Gray, described on page 400. *Bouteloua ramosa* Scribn. is described on page 416, and again on page 418 it appears as a variety of *Bouteloua oligostachya*. *Leptochola polygama* (Fourn.), described on page 437, is the same as *Gouinia polygama* Fourn., a species identical with *Bromus virgatus* Presl. *Gouinia* appears to be a well established genus, and the grass in question should be named *Gouinia virgata* (Presl). *Eragrostis pallida* Vasey, described on page 479, is not distinct from *E. glomerata* (Walt.), *E. conferta* Trin., described on page 481, but it is very unlike *Ergroastis alba* Presl, the type of which has been seen by the writer. Under *Atropis fendleriana* (Steud.) is included under *Poa arida* Vasey, which is a distinct and well marked species, as are *Poa eatoni* S. Wats. and *Poa lucida* Vasey, also cited as synonyms, although the latter is very close to *Poa buckleyana* Nash. *Atropis lævis* (Vasey) is, as stated, *Poa lævis* Vasey, but that name should be changed to *Poa lævigata*. '*Festuca rubra* var. *pubescens* Vasey ined.' is the same as *Bromus secundus* Presl, and *Festuca richardsonii* Hook., *Bromus barbatoides* Beal, page 614, is *Bromus trinii* Desv. Ramaley, and not R. Pound, ought to be cited after *Agropyron violacescens* on page 635, and after *Agropyron caninoides* on page 640. *Agropyron violacescens* is *Agropyron richardsoni* Schrad. '*Agropyron glaucum* (Desf.),' page 637, is *Agropyron spicatum* (Pursh). *Poa brandegei* Scribn. in herb.,' page 544, is the same as *Poa lettermani* Vasey, described under *Atropis* on page 579. Under *Atropis pringlei* (Scribn.), page 578, *Poa pattersoni* Vasey is erroneously cited as a synonym.

There are keys to the genera under all the tribes with the exception of Hordeæ, and there are also keys to the species under the genera. The difficulty of making keys is appreciated by all who have undertaken them, and the value of good keys is at once appreciated by those having occasion to use them. A clear conception of all the species of a genus, and a sufficient knowledge of their characters to be able to express briefly their most obvious points of difference or resemblance, is essential to the compilation of a good key. The test of a key of analysis is in its use. The writer has not attempted to use the keys in the work under notice, but it is evident that they have been prepared with much labor and painstaking care. In glancing them over one is struck by the very frequent use of measurements of glumes, awns or ligules, the dimensions of which are often too slight or too inconstant to be of much value in a diagnosis.

On page 237, under *Muhlenbergia*, in a considerable series of 'g,' there are:

g. Floral glume 2.5 mm. long, ligule 2–2.5 mm. long, awn 1 mm. long.....23
g. Floral glume 2–2.7 mm. long, ligule 2–3 mm. long, [awn] 1–3 mm. long.....24

Lower down on the same page, in a series 'h,' appears:

h. Floral glume 3.5 mm. long, ligule 1 mm. long, awn 10–15 mm. long.....33
h. Floral glume 3.5–2.5 mm. long, ligule 1 mm. long, awn 10–15 mm. long.....28

These distinctions are too slight to be of much assistance to the student in running down a species.

Considering the extent of the work and the conditions under which the author labored, it is remarkable that more errors have not occurred. In spite of the faults to which attention has been called, and others not noted, due, chiefly, to imperfect proof-reading—the difficulties of which in such publications few appreciate—the work is one of much value to systematic botanists, and indispensable to those engaged in the study of the large and very interesting family of plants treated.

F. LAMSON-SCRIBNER.

Race Traits and Tendencies of the American Negro. By FREDERICK L. HOFFMAN (Publications of the American Economic Association, Vol. XI., Nos. 1, 2 and 3. August, 1896. Pp. 1–329). The Macmillan Company. Paper, $1.25; cloth, $2.00.

This work is a mine of statistical information relating to the population, viability, anthropometry, and the racial, social and economic conditions of the negro in the United States and incidentally in the West Indies; and the figures, culled with evident care from the most trustworthy sources and collected through personal

effort, are intelligently and impartially combined and discussed in a clear and attractive manner, so that, despite the scores of statistical tables, the book is easy reading from preface to conclusion.

In the first chapter, which relates to the growth and movements of the black and mulatto population, it is shown that the negro has failed to gain a foothold in any of the Northern States as an agricultural laborer; that in general he has remained in the South, contrary to the many predictions of wholesale migration; and that he does not readily lend himself to schemes of colonization, and has failed miserably in the most recent experiment of the kind (in Durango, Mexico). At the same time it is shown that the negro displays a tendency to segregate in certain sections in the South, while in the North, and to a less extent in the South, there is a tendency toward congregation in the cities.

To students of the negro problem the second chapter, 'Vital Statistics,' is of paramount interest. Here the author tabulates and discusses the rates of birth and death under various conditions among the blacks and compares them with the corresponding rates among the whites, calculates the expectation of life for blacks and whites, and examines fully the causes of mortality in both races. Summarizing the facts, it is pointed out (1) that the excess of births over deaths is greater for the whites than for the blacks in the Southern States; (2) that in the Northern States the blacks do not hold their own, since the deaths outnumber the births, the apparent increase in population being due to migration; (3) that for ten representative Southern cities the death rate for five years (1890–'94) was 20.12 per thousand for the whites, and 32.61 for the blacks, indicating a steady and apparently irresistible vital decline, both relative and absolute, on the part of the latter; (4) that the excess of negro mortality is greatest in the age period under 15 years, culminating among infants, and (5) that hence the number surviving to productive and reproductive ages is considerably less for the blacks than for the whites; (6) that the expectation of life among the blacks is from 12.5 to 17.11 years less than among the whites in the cities giving most reliable statistics; (7) that the rates of mortality among blacks and whites are not materially affected by other conditions than those of race and heredity; and (8) that since emancipation, mortality among the blacks has steadily increased, while the white death rate has diminished. It is shown that the chief causes of excessive mortality among the blacks are (1) diseases of infants, including premature and still births; (2) consumption, which is increasing among the blacks and decreasing among the whites; (3) pneumonia; (4) scrofula and venereal diseases, which are much more prevalent among the blacks and which are increasing; (5) malarial fevers (contrary to general opinion); and (6) typhoid fever at the earlier ages. The observations collated indicate that smallpox is more prevalent among the blacks, chiefly through greater neglects of vaccination; that scarlet fever, yellow fever, appendicitis and carcinoma uteri, from all of which the negro is generally supposed exempt, occur, but less frequently than among the whites, as is the case also with insanity, suicide, measles, diphtheria, tumor-cancer and alcholism; while the mortality from childbirth and puerperal fever is greater among the blacks by reason of ignorance and maltreatment. "The general conclusion is that the negro is subject to a higher mortality at all ages, but especially so at the early age periods. This is largely the result of an inordinate mortality from constitutional and respiratory diseases. Moreover, the mortality from these diseases is on the increase among the colored, and on the decrease among the whites. In consequence, the natural increase in the colored population will be less from decade to decade, and in the end a decrease must take place. It is sufficient to know that in the struggle for race supremacy the black race is not holding its own; and this fact once recognized, all danger from a possible numerical supremacy of the race vanishes" (page 148).

The third chapter is devoted to anthropometric facts, figures and opinions derived from various sources. The figures indicate that the weight of the black is somewhat greater and his stature somewhat less than the weight and stature of the white of the same class; that the lung capacity in the black is considerably less and

the frequency of respiration somewhat greater than in the white; that the lifting strength of the white is the greater, and that the vision of the black is inferior, though he is less liable to disease of the eye. The impressions and opinions of various students appear to indicate that during slavery the black was 'physically the equal if not the superior of the white, and this view has been fully sustained by the statistics of mortality, which also ranked him the equal if not the superior of the white thirty years ago' (pages 175–6); but that since emancipation the black has deteriorated materially, both in physical development and in viability. "And the opinion is warranted that * * * the tendency of the race has been downward. This tendency, if unchecked, must in the end lead to a still greater mortality, a lesser degree of economic and social efficiency, a lower standard of nurture and a diminishing excess of births over deaths. A combination of these traits and tendencies must in the end cause the extinction of the race" (page 176).

The fourth chapter deals with 'Race Amalgamation' in a statistical way, so far as the available data permit, but with abundant references to the opinions of students. It is recognized that the American negro 'is largely a cross between the African and the white male' (page 177), and that very little pure African blood remains; it is also recognized that, since the emancipation, the admixture of the races has been materially checked and is constantly diminishing, with a concomitant tendency toward the development of a distinctive race of mixed blood, to which the foregoing facts and figures apply, and of which the before-mentioned features and tendencies are characteristic. It is shown that the roseate dreams of radical Abolitionists thirty years ago concerning the absorption of the blacks, with attendant improvement in the whites, have faded as time has widened the chasm between the races; the shocking immorality of the blacks, as indicated by illegitimate births in Washington and elsewhere, is set forth in the records; and the physical deterioration of the black race is, at least implicitly, ascribed to the moral inferiority.

Under 'Social Conditions and Tendencies' it is shown that the blacks take kindly to religious institutions, though education pervades their ranks more slowly, and that neither counteracts criminal tendencies so completely as has been hoped; it is also shown from ample statistics that crime is nearly thrice as prevalent among the blacks as among the whites, this relation holding even when the negro is compared with the most criminal nationalities. The statistics for different cities and sections appear to indicate also that crime is increasing among the blacks, though decreasing among the whites. A considerable body of data relating to lynching has been brought together, which seems to indicate that neither this summary mode of punishment nor the crimes for which it is the penalty are decreasing. Efforts are made also to tabulate the statistics of pauperism, and the tables indicate the great preponderance of pauperism among the blacks, though it is evident that the figures do charitable justice to this phase of the character of the alien race. Under 'Economic Conditions and Tendencies' the negro is considered as an agricultural laborer and as an industrial factor, and it is shown that he profits little, and, according to many opinions, suffers from education, and displays a lamentable lack of thrift and public spirit as a citizen, though filling fairly well a subordinate position in industrial society.

In the final chapter (a 'Conclusion' in name and in the fact that it ends the book, though not at all as a summary of the investigation) comparisons are instituted between the American negro and various other races, including the American Indians, the Maoris, etc.; the author not only concurring in, but adding weight to, the general opinion concerning the decadence of the lower races when brought in contact with the higher.

From a sociologic point of view, if not from that of the statician or economist concerned with great masses rather than inconspicuous (albeit important) principles, a criticism may be lodged against the book; and it may be stated the more starkly, *first*, because all or nearly all current statistical discussions of the subject are open to the same criticism, and *second*, because another Federal census is in contemplation, and it would seem especially timely to direct atten-

tion toward a little-considered factor in the negro problem. The author justly points out that during the days of slavery the amalgamation between the whites and blacks was illicit, and that the mulattoes and other mixed bloods were almost exclusively the progeny of white fathers and black or mixed-blood mothers, and his discussion of the vital and other characteristics of the American negro is based on these conspicuous facts; and he justly observes that, with the abolition of slavery, illicit amalgamation decreased enormously, and, so far as fruitful unions are concerned, has practically disappeared. He also gives slight recognition to the fact that amalgamation is proceeding slowly through intermarriage; yet he does not notice (although his statistics clearly indicate as much) that by far the greater part of the legitimate and productive unions are between black men and white women, rather than between white men and black women, as during slavery. Thus in Michigan, during the 20 years 1874–1893, 111 out of the 14,151 marriages were interracial, and of these 93 were between black or mulatto males and white females, leaving only 18 unions of the slavery type (page 198); and in Rhode Island, during the 13 years 1881–1893, there were 51 white females and only 7 white males in the 58 interracial marriages (page 199). So too, in the 23 cases of interracial marriage (excluding the sporadic unions) studied by the author, there were 19 white women to 4 white men (page 204). These ratios are in accordance with the casual observations of the reviewer, who has noted in addition (again leaving out of account sporadic and irregular unions) that many of the blacks who marry white women are among the leading representatives of their race, one being the most illustrious in American history, while in some cases at least the white wives are fairly representative of their race and sex. Now a question at once arises concerning the characteristics of the progeny of such unions, who may not be numerous but who represent a distinct class of our population; a question arises also as to whether these legitimate interracial unions are increasing, as the meager figures appear to indicate; and there are half a dozen collateral inquiries which will occur to sociologists, and perhaps to those statisticians who, like the author of the memoir under notice, are given to considering the meanings expressed by figures as well as the figures themselves. This criticism, it will be observed, is of the constructive rather than the destructive sort; it does not tend to invalidate any of the results of Mr. Hoffman's excellent work, but, if well founded, indicates a direction in which the work might have been carried further advantageously.

W J McGee.

Les Aryens au Nord et au Sud de l'Hindou-Kouch. Par Charles de Ujfalvy. pp. 488. G. Masson, Paris. 1896.

M. Ujfalvy is known as a diligent student of anthropology and an earnest disciple of Broca. He has the same implicit faith in the permanence of the physical type and its superiority over all other human traits for the purposes of classification and tracing descent. The feature beyond others, which he considers ranks in significance, is the cranial index. A nation, he observes, may lose its language, alter its social condition and deeply modify its blood by crossings; but it will always preserve the traces of its primitive physical type. Only through a long process of transformation, by which the encephalon is materially altered in its lines of growth, and thus changes the shape of its bony envelope, can a brachycephalic people, for instance, become dolichocephalic.

These are the leading principles of investigation which the author proceeds to apply to the Aryan tribes of Central Asia. The main topic is preceded by two introductions, the first geographic and historic, the second 'ethnologic, ethnogenic and biologic.' The former not only describes the geographic features of the region and its trade routes, but lays especial stress on the great *loess* formations and their bearings on human character and distribution. The primitive Aryan Iranians, he argues, were immediate neighbors to the ancestors of the Chinese.

The second introduction is largely historical. The author points out the wide variance in the skull-types of the modern Asian Aryans and seeks to explain it by various invasions and interminglings in ancient times, and biologic laws—ever faithful to his motto: "Il existe

dans chaque race un type crânien qu 'il s'agit de retrouver."

The remainder of the work is divided into three parts. The first is devoted to the Aryans north of the Hindu Kusch range. These include the Galtchas, the Tadjiks of the mountains and the plains, the Iranians of the Pamir, and various lesser conglomerations, as the Kashgars, the Darvasis and the Karatheghins. Each of these is conscientiously studied, not merely from the physical side, but including their dialects, religions, governments, history and civilization. Free use is made of other writers, and it must not be forgotten that the author has extensive sources of personal observation, his wide travels in Central Asia having provided him with abundant material.

The second part takes up the tribes of Dardistan, Baltistan and Kafiristan, with similar thoroughness. Especial attention is paid to their religions and castes, the influence of Mazdeism and Buddhism, their sociologic customs and the differences between the Aryan dialects north and south of the Hindu Kusch. Incidentally, many other questions of anthropology are mentioned. For instance, he assigns to the Dravidas of India a 'half-mongolic' origin (page 240), which thus explains their agglutinative languages. (This overlooks the quite different system of their agglutination.) In this part much use is made of the observations of Leitner and Risley, and the researches of Ratzel and Biddulph.

The third part is an epitome of his conclusions. A careful statement is presented of the physical traits, especially those of the crania. His inference is positive that the *Homo Europæus* never had his birthplace in Central Asia, as his corporeal type is nowhere found there. The Hindoo, of Hindustan, may be a homologue of the Mediterranean type.

A first appendix follows on the early Bactrian and Scythic coinage, of great interest to the historian and numismatist, and a second on the anthropologic terminology adopted by the author. A moderately well drawn and not very clear ethnographic map is appended.

The work deserves high recommendation. It is learned and fair, rich in information not easily accessible. Some will find it in a too exclusive adherence to physical standards of ethnic comparison; but that is the author's avowed position.

D. G. BRINTON.

SCIENTIFIC JOURNALS.

THE MONIST.

THE bulk of the contents of the January *Monist* is occupied by three long and exhaustive articles: (1) 'The Logic of Relatives,' by C. S. Peirce; (2) 'Animal Societies,' by Paul Topinard; (3) 'The Philosophy of Buddhism,' by Paul Carus.

Mr. Peirce's article is his first publication on the subject of the logic of relatives since 1884, and while devoting much space to a critical analysis of parts of Schröder's new volume is still comprehensive enough to embrace an independent exposition of the theory of graphs, of dyadic relatives, and offers for the first time Mr. Peirce's rules for working with the 'General Algebra of Logic.' New diagrams and improvements of characters are introduced, and finally certain important mathematical developments in the combinatorial analysis are given.

Dr. Topinard examines at considerable length the causes and forms of the various social assemblages met with in the animal world, and his conclusions touch the important questions of the function of the various instincts, the rôle of the family, etc., in the formation of animal society, as well as directly develop a distinction between 'colonies' and societies, profoundly affecting that doctrine which bases sociology on biology.

Finally, in *The Philosophy of Buddhism*, Dr. P. Carus seeks to reveal the scientific kernel of ancient Buddhistic thought, compares its results to the doctrines of modern psychology, animadverts upon Oldenberg's philosophical interpretation of Buddha's doctrines, and closes with a psychological elucidation of the doctrine of Nirvâna.

Prof. J. M. Tyler discusses Cope's *Primary Factors of Organic Evolution;* the usual French correspondence, and reviews of Ostwald's scientific classics and of works by Cantor, Griesbach, Freycinet, etc., appear; while in Discussions we have remarks upon *Panlogism*, by E. Douglas Fawcett, and a mention of the proposed new scientific catalogue.