thing to give some old-school aristocrat a job of foisting some mighty poor science and poorer agriculture upon farmers, then they will deserve to go down with those they fail to minister unto.

If our American land-grant colleges and experiment stations shall faithfully and fearlessly disregard old, artificial precedents, and organize themselves around agricultural units, it will be they who preserve the intellectuality of our great body of farmer citizenship. Will they do it? is the question to-day in the mind of the "uncritical farmer." This same farmer has time and again since the battle of Lexington shown his willingness to bear the burden of any real and sincere educational need.

And now, if any pure scientist delights not in agriculture, and in the problems of the farm, he should draw his salary from some more congenial source. It is the function of pure science to increase the sum of human knowledge. Let her worshipers be about their high calling.

It is the function of the experiment stations to apply themselves to the solution of the problems of agriculture. Such work this hour demands not only the finest skill and cleverness, but the most searching integrity. Such is real worship of the "great Goddess Truth."

The very insincere practise of trying to deceive their constituency, which Dr. Pearl seems to cite, as the only recourse for doing scientific work in experiment stations, is that which could result in the prostitution of all science, and which might result in the degeneration of American agriculture.

A. N. HUME
SOUTH DAKOTA EXPERIMENT STATION

THE TARIFF ON BOOKS

TO THE EDITOR OF SCIENCE: As most of us probably think of the new tariff law as one that reduces duties, it may be well to call the attention of readers of SCIENCE to one or two items of increase that are of interest.

Books in foreign languages *are no longer* to be on the free list, and books over twenty years old must *also have been bound over twenty years* to be entitled to free entry.

As most German books are bound after publication, and there is no telling when, this might be a serious impediment to easy ordering of books from second-hand catalogues.

As a revenue measure will it yield enough to pay for the delay and obstruction to the *free* circulation of knowledge involved? This is not a bit of the "New Freedom," I trust.

ALFRED C. LANE

SCIENTIFIC BOOKS

Catalogue of the Mammals of Western Europe (Europe exclusive of Russia) in the collection of the British Museum. By GERRIT S. MILLER. London. Printed by order of the Trustees of the British Museum. Sold by Longmans, Green & Co., 39 Paternoster Row, S. C.; B. Quaritsch, 11 Grafton Street, New Bond Street, W.; Dulau & Co., Ltd., 37 Soho Square, W., and at the British Museum (Natural History), Cromwell Road, S. W. 1912. All rights reserved. 8vo. Pp. 15 + 1019; 213 text figures.

Mr. Miller's "Catalogue of the Mammals of Western Europe" supplies a long-needed authoritative manual of the mammal fauna of Europe. It includes, however, only the land mammals, it excluding the seals and cetaceans. The Gibraltar macaque and the Indian buffalo are omitted as being artificially introduced species. Geographically it is restricted to continental Europe outside the Russian frontier and the immediately adjoining islands, but includes also Spitzbergen, Iceland and the Azores.

The preface, by Dr. Sidney F. Harmer, keeper of zoology at the British Museum, states that a work of this nature "was many years ago suggested by the late Lord Lilford, who kindly contributed an annual sum towards the collecting necessary for its realization," but "the possibility of issuing the present catalogue has mainly grown from the work which its author, Mr. Gerrit S. Miller, of the United States National Museum at Washington, has for some years been doing independently on the subject." Through the

Lilford Fund and contributions by Major G. E. H. Barrett-Hamilton, who has published many papers on European mammals, and by Mr. Oldfield Thomas, curator of mammals at the British Museum, material for the work slowly accumulated, but its preparation was not begun till 1905, when, as Dr. Harmer states, "Mr. Miller arranged to devote his entire time for a considerable period to the study of European mammals. The opportunity was taken of having the results of this work published here instead of in America, by inducing him to write a British Museum Catalogue; thus utilizing his knowledge, and combining for the purposes of his studies the material of both the American and the British National Museums. Collections were then made in various selected areas, partly by Mr. Miller himself and partly by trained collectors . . . the cost of whose services were contributed by friends of the museum." Mr. Harmer adds: "The catalogue could hardly have been contemplated if it had not been for Mr. Thomas's unremitting efforts in developing the collection. He has not merely regarded these efforts as an official duty, but he has in addition been a generous donor who has frequently supplied funds for the purpose of obtaining specimens. Mr. Miller has thus had at his disposal a collection fairly representative of all parts of western Europe, and immensely superior to anything that had been thought of before he began work."

The author, in his introduction, goes into details in respect to the gathering of this material, with reference to its geographical sources, donors and collectors, and the museums, public and private, from which types and other important specimens were borrowed for examination. Altogether the number of specimens on which the work was based, it is stated, "approximates 11,500," of which about 5,000, including 124 types, are in the British Museum, about 4,000 in the United States National Museum, and the rest in various European collections. Nearly every section of the area embraced is represented by collections, more or less extensive and recently gathered, but not always sufficient for the task in hand, for the author states: "This material has been found sufficient, in most of the groups, to give what appears to be a fairly satisfactory idea of the essential features of the fauna. In the ungulates and the larger carnivores, however, it is so totally inadequate that no attempt could be made to revise the genera by which they are represented. This is especially to be regretted on account of the fact that some of these larger mammals are nearly extinct, while others are being modified by the introduction of foreign stock to replenish exhausted game preserves. Immediate action is necessary if the final opportunity to gain a clear understanding of this part of the European fauna is not to be lost."

The number of forms recognized is 314 (195 species[1] and 119 subspecies), referred to 69 genera. All are represented in the British Museum except 22, and all but 6 of those included were examined by the author. All questions of nomenclature have been decided by the rules of the International Code. The citations of the literature are "restricted to those which seem of importance in giving a clear idea of the systematic history of each animal"—to synonymy and original descriptions of the genera, species and subspecies, to the first use of the names adopted, to the "monographic works" of Blasius and Trouessart, and to such other publications as are pertinent to particular cases. Of the 213 text figures, representing skulls and teeth, nearly one half are original, drawn by Mr. A. J. Engel Terzi, of London; the others were loaned by the Smithsonian Institution and were drawn by Mr. H. B. Bradford.

As usual in similar monographs, keys are given for the families, genera and "forms" (species and subspecies). The descriptions of the species are detailed and comprehensive, and include external and cranial measurements. The cranial measurements are tabulated and often occupy a number of pages for a single species. The illustrations are restricted to the skull and teeth of each species, there being three outline views of the skull, all

[1] Only 30 per cent. of the species are represented by subspecies, 70 per cent. being monotypic.

natural size except when the skull is too large for full representation on the page, when it is shown reduced to a stated scale; the teeth of small species are represented in well-executed drawings, enlarged 5 to 10 diameters; those of large species are drawn natural size. Lists of "specimens examined" are given for each form, with their localities, and in addition a catalogue of those belonging to the British Museum.

It is to be regretted that the author found the literature of European mammals "so voluminous, particularly as regards local lists and special notes on distribution," and so difficult to correlate with our present "conceptions of species and local races," that he considered the labor of citing it in "extended bibliographical tables for each form recognized" would be "incommensurate with the importance of the results." The labor would have been undoubtedly very great, and the citations would have considerably increased the size of an already rather bulky volume, but it is work greatly to be desired, and also work that can be properly done only by an author having Mr. Miller's expert knowledge of the subject. The citation of the more important general works and papers relating to European mammals, however, would have been an aid to students desiring information additional to the technical descriptions of the present work.

As an illustration of the author's resources and method of treatment, the genus *Sciurus*, or the arboreal squirrels, may be cited. It may also serve as an illustration of the early slow and recent rapid development of European faunistic mammalogy.

The describing and cataloguing of the mammals of western Europe began long before the labors of Linné, but he was the first to give them modern systematic names. During the last half of the eighteenth century about a dozen different authors had described and named European mammals, so that by the end of that century nearly one half (90 out of 195) of the forms given in the present work as *full species* had been described and named. These comprise all the leading types, those added later being for the most part small or obscure forms, many of which would not have been given recognition in that early day even if they had been known. Of these eighteenth century species, Linné alone named two thirds, and three other authors (Schreber. Pallas, Erxleben) named two thirds of the remainder.

During the first 95 years of the nineteenth century (1800–1894) 56 species and subspecies were added by 34 authors. Up to 1895 the authorities for the names of species and subspecies, on the basis of Miller's nomenclature, number 50; but most of the post-Linnean genera and subgenera were founded by systematists whose names do not often occur as describers of the species and subspecies here referred to them.

In striking contrast with the record from 1758 to 1894 is the record for the next sixteen years (1895–1910), during which period 170 forms were first described, the work of 20 authors, of whom 8 described 133, 66 of which were described by the author of the present "Catalogue," 25 by Barrett-Hamilton, and 10 each by Cabrera and Thomas.[2] A comparison of the two periods—one covering a century and a quarter, the other sixteen years—on the basis of Miller's "Catalogue," shows that 55 per cent. of the now recognized species and subspecies have been described since 1894.

We now return to the illustration afforded by the genus *Sciurus*, represented in the "Catalogue" by a single species, divided into 12 "forms" or subspecies.

(*a*) *Method of Treatment.*—Following a page and a quarter devoted to the "characters" and geographical distribution of the family Sciuridæ, including a key to the European genera, the treatment of *Sciurus* occupies 26 pages (pp. 898–923). A half page, devoted to the synonymy, geographical distribution and characters of the genus, is followed by six pages on the species *Sciurus vulgaris* Linné, including (1) distribution, (2) diagnosis, (3) external characters, (4) color,

[2] Two additional species were described after 1910—one in 1911 and one in 1912. Also many others were described, by various authors, during the 1895–1910 period, which in the present work are relegated to synonymy.

(5) teeth, (6) illustrations (skull and teeth), and (7) key to the European forms. The synonymy is given only under the several subspecies, which are each diagnostically described, with measurements, a statement of its range, the sources and amount of material examined, and a list of the specimens contained in the British Museum. The descriptions of the subspecies occupy 14 pages, an average of a little more than a page to each, while the tables of cranial measurements fill four additional pages and include a total of 103 skulls, with 11 measurements of each skull.

(*b*) *Resources and Results.*—Although three of the here accepted subspecies of *Sciurus vulgaris* date from the eighteenth century, and two others from the early part of the nineteenth, none had become authoritatively recognized as tenable forms prior to 1896,[8] so that of the twelve forms now admitted six have been described and five others established since 1904. All but three of the 12 recognized forms are represented by fair series of specimens (5 to 174), the material examined aggregating 512 specimens. A list of the accepted forms, with their ranges and the number of specimens of each examined, here follows:

1. *Sciurus vulgaris vulgaris* Linné, 1758. Scandinavian Peninsula, except extreme north. Specimens examined, 53.
2. *Sciurus vulgaris varius* Gmelin, 1789. Extreme north of Scandinavian Peninsula, east into Russia. Spec. ex., 8.
3. *Sciurus vulgaris leucurous* Kerr, 1792. British Islands. Spec. ex., 174.
4. *Sciurus vulgaris russus* Miller, 1907. West-central Europe. Spec. ex., 26.
5. *Sciurus vulgaris fuscoater* Altum, 1876. East-central Europe. Spec. ex., 170.
6. *Sciurus vulgaris italicus* Bonaparte, 1838. Italy. Spec. ex., 38.
7. *Sciurus vulgaris lilæus* Miller, 1907. Greece. Spec. ex., 3.
8. *Sciurus vulgaris alpinus* Desmarest, 1822. Pyrenees. Spec. ex., 2.
9. *Sciurus vulgaris numantius* Miller, 1907. North-central Spain. Spec. ex., 22.
10. *Sciurus vulgaris infuscatus* Cabrera. Central Spain. Spec. ex., 5.
11. *Sciurus vulgaris segurœ* Miller, 1907. Southwest Spain. Spec. ex., 11. (Probably same as the next.)
12. *Sciurus vulgaris bœticus* Cabrera. Southern Spain. Spec. ex., 0.

[8] Nearly a dozen others of early date, proposed as "varieties," have never had currency, and are treated by Miller as untenable.

In general method and in details of treatment the "Catalogue" may well serve as a guide and an inspiration in similar undertakings. It furnishes for the first time a solid and orderly foundation for further systematic work on the mammal fauna of the area treated. Although the author's conclusions can not safely be challenged except on the basis of equal or better opportunities for investigation, doubtless some forms have been accepted that further study will show are not well founded, while others probably remain to be discovered. Finally, it is pleasant to contemplate the combination of circumstances that led to the preparation and publication of the work through a combination of the resources of two great national museums, and by an author so eminently fitted for the task.

J. A. Allen

Malaria, Cause and Control. By William B. Herms. New York, The Macmillan Company. 1913. Pp. xi + 163.

The purpose of this little work is to awaken the public interest in the control of malaria through the control of mosquitoes. Its appearance at this time is opportune, as, no doubt due to the example and influence of Celli in Italy, there has been a growing sentiment in many quarters in favor of the control of malaria by the extensive administration of quinine. Quinine control has not only proved impracticable under many circumstances, but under rigorous tests—particularly in the tropics—has even failed altogether. Professor Herms's book is based upon California experience and addresses itself directly to Californians; but in so far as similar conditions obtain elsewhere, it should have a much wider field of usefulness. The treatment is elementary throughout. A large part is devoted to the practical side of mosquito control.