

precedent long established in France. Whenever a professorship falls vacant there in one of the national universities, or the directorship of an observatory, or a similar post, the Academy of Sciences is asked to recommend a first and second choice to the proper officer—as the minister of public instruction. Our executives will never surrender a wide latitude of choice, but President Wilson has set a good example. So, too, his action in asking the academy to study the slides at Panama, and to form a body which should bring all the research agencies of the country into a position to cooperate with each other and the government in time of need, indicates a praiseworthy intention to heighten the prestige of the academy.—New York *Evening Post*.

SCIENTIFIC BOOKS

Meteorites, Their Structure, Composition and Terrestrial Relations. By OLIVER CUMMINGS FARRINGTON, Ph.D., Curator of Geology, Field Museum, Chicago. Published by the author.

The mystery attendant upon the fall of a stone-like or metallic body upon our earth from the "realms of space" early attracted the attention of students of natural phenomena and aroused the curiosity and perhaps superstition of the uneducated. Singularly enough, however, the literature upon so fascinating a subject has, so far as the English-reading layman is concerned, for a long time been very unsatisfactory, consisting mainly of brief papers descriptive of individual occurrences, or catalogues of collections. The well-known books of Kirkwood and Lockyer treat the subject mainly from an astronomical standpoint. Fletcher's "Introduction to the Study of Meteorites," a British Museum publication, has been by far the most satisfactory treatise, but is scarcely known outside of the libraries of the specialist. In other languages we have Meunier's handbooks and treatises based on the collections of the Paris Museum, Brezina's on those of Vienna, and lastly Cohen's comprehensive "Meteoritenkunde," a work altogether too detailed and technical for the general reader. The book of Dr. Farrington, here

under review, comes, therefore, opportunely into a field where there is plenty of room. In an octavo volume of 225 pages is given as fully as space will permit, a summation of present knowledge regarding *Meteorites, their structure, composition and terrestrial relations*. The leading chapters deal with the phenomena and time of falls, the size and form of individual meteorites, their structural features, chemical and mineralogical composition, origin and classification, with a final chapter on the principal public collections. From this last it appears that the collections of the British Museum, those of Vienna and Paris abroad, and of the Field Museum in Chicago, comprise each representatives of some 600 out of the known 634 falls and finds, the rapid growth of the last named collection being due to the acquisition of the Ward-Coonley collection in 1912. The national collections at Washington, numbered, as shown by a recent "Handbook and Descriptive Catalogue," 412 falls and finds (since increased to some 432), including the recently acquired "Shepard Collection." This wide distribution of the material from individual falls is worthy of more than passing notice. Prior to the eighteenth century, it seems such objects were rarely preserved in museums, or if so preserved, were hidden away, the custodians fearing to make themselves ridiculous by even acquiescing in their supposed ultra-terrestrial origin, and it was not until the publication of the works of Chladni in 1794 and 1819 that their accumulation for study began upon a truly scientific basis.

The earliest known undoubted meteorites still preserved are those of Elbogen, Bohemia, and Ensisheim, Upper Alsace, Germany, dating back to 1400 and 1492. These have been broken up and scattered throughout public and private museums the world over, Wulff's catalogue showing that fragments of the Ensisheim stone are to be found in 66 different collections. It is sometimes questionable if the almost fanatic desire on the part of private collectors to secure fragments, however small, has not retarded rather than helped the cause, since it has not merely re-

sulted in hopelessly scattering the material, but has enabled dealers to enforce prices in many cases absurdly high and actually prohibitive so far as acquisition of material for analysis and study is concerned. The writer can speak feelingly on this point. To illustrate: A recent catalogue of a Philadelphia dealer advertises a perfectly commonplace type of meteoric stone at \$5.00 a gram, the only possible excuse being that there was not much of it, and in falling it passed through the roof of a barn! Even higher prices have been recorded as paid by those whose chief aim appears to have been numbers and a new fall to add to their lists. The largest single individual meteorites in any collection in the world are those of Cape York, Greenland, and Willamette, Oregon, in the American Museum of New York.

From a consideration of the dates of all known falls it appears that such are most frequent in the months of May and June, the periodic star showers of August and November notwithstanding. Further it appears that of the 273 falls concerning which satisfactory datum is found, 184 occurred between the hours of noon and midnight, and 89 from midnight to noon.

Some interesting facts are brought out in the chapter on distribution, it being shown, apparently, that falls are most numerous in mountainous regions, as those of the southern Appalachians in our own country, or the Alps and Himalayas in Europe and Asia. The suggestion that this may be due to superior gravitational attraction can not, however, for a moment be accepted; moreover, the reviewer can but feel that something is wrong in the premises, since but two falls can be credited to Switzerland, with its Alps, while the flat plains of Kansas have thus far yielded seventeen. It is of further interest to note that of the total of 634 known meteorites, 256 have been found in Europe and 117 in the United States, or more than two thirds the whole number from less than one eighth of the land surface; and still further, that of the 328 from the eastern hemisphere, 299 are stone and but 79 iron, while of the 256 from the western hemisphere,

but 74 are stone and 182 iron. Whether these seeming anomalies have any meaning or are due merely to accident of find, the future must decide.

In the discussion of the origin of meteorites the author gives adherence to the theory that they are portions of a shattered planet or planetoid, and is apparently favorably inclined to the views of Chamberlin—to a probable source of disruption by differential attraction produced by the passage of a small body within Roche's limit of a larger one. In the chapter on terrestrial relations, comparison in chemical composition is made between the average composition of four meteorites, the acidity of which is above normal, and the average composition of terrestrial rocks. The reasons for the selection of but these four meteorites are not quite acceptable to the reviewer, but, incidentally it may be remarked that, in consideration of the question of the origin of the earth through an accumulation of meteoric matter, one is not necessarily led to the consideration of one so fluid as to become homogeneous throughout; indeed, Chamberlin recognizes the possibility of a relatively cold earth. In this case certainly the portions now available for study should conform within reasonable limits to that of the ingathered matter. That they do not conform to that now being ingathered, the reviewer has shown elsewhere. Is it not better to account for this on the very reasonable supposition that the materials now being ingathered do not represent in composition those which fell during the later periods of earth history, rather than ignore the extremely basic character of most meteorites and use for comparison only the four acidic types selected?

The book, to cut the review short, shows a thorough knowledge of the results achieved by other workers, and forms a very welcome addition to existing literature. It is well illustrated by half-tone figures of form and structure, those of microstructure being reproductions from Tschermak's well-known "*Mikroskopische Beschaffenheit der Meteoriten*."

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