was decided that use of these workers in the Museum of Paleontology, especially in the preparation of fossil bone, would be a worthwhile experiment. That the experiment was successful is borne out by the fact that the Federal Aid staff has advanced the routine Museum program by ten years.

Since the careful preparation of paleontologic material requires experience and some native dexterity, and since trained men in this field of endeavor are few indeed, our first problem was to give inexperienced people from all walks of life a short period of instruction. The results were most gratifying, and while a few of the earlier workers were unable to grasp the technique, others who could were secured and now a staff of ten experienced preparators are working daily and most of them can be trusted on such delicate jobs as the preparation of skulls in hard matrix. Incidentally, former dental technicians lend themselves admirably to this type of work.

In other phases of museum work, Federal Relief workers have proved equally advantageous, especially those with college training. These phases include the preparation of specialized bibliographies, the translation of paleontologic writings and the typing therefrom of manuscripts to be bound into the library, the uniform relabelling of the storage trays (here a former draftsman is used), the numbering and cataloguing of specimens, the casting in plaster of replicas of types and other specimens for exchange purposes, and the preparation of thin-sections of bone, shell and rock.

The making of thin-sections is a time-consuming task; but one which is indispensable to many kinds of paleontologic research. The man employed at this task has become expert and the fruits of his labor, as well as of all those employed on the museum project, become a permanent acquisition to the scientists of the world and provide a wealth of research material for a generation of graduate students.

It should be emphasized that in no case have Federal Relief workers replaced museum employees, and the nature of the work done by them makes it wholly non-competitive with private enterprise. The results of their labor are simply additive to the normal museum program.

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SCIENTIFIC BOOKS

GENETICS

Genetics. By H. S. JENNINGS. W. W. Norton and Company, New York. $4.00. 8½ × 5¾; xii + 373; 1935.

PROFESSOR JENNINGS'S book is, in his own words, "an attempt to present the fundamental features of Genetics: those features of which every educated person should have knowledge." This presentation is made with the scrupulous accuracy we have come to associate with Professor Jennings's writings. A striving for clearness and simplicity of statement is evident throughout, and "every educated person," whether biologically trained or not, can understand it, although, as a non-biological friend put it after reading a chapter in the book, the layman "will have to move his lips as he reads," in some spots. The very laboring for simplicity makes the book a bit repetitious and tedious to the experienced biologist, but since his kind is not the audience aimed at, this can not be regarded as a fault. All biologists, however, will be thankful for Professor Jennings's lucid digest of the scattered and rapidly accumulating literature on Drosophila, and the presentation of its salient facts in a simple straightforward manner which even the beginning student can easily read and understand. In this connection one misses only the supplementary evidence concerning the nature and the location of genes that might have been adduced from the remarkable behavior of the salivary chromosomes in such forms as *Drosophila* and *Sciara*.

The general plan of the book departs from the conventional in that the underlying mechanism of heredity —the nature of the germinal constituents—is discussed before the usual generalities of genetics are reviewed. While this is unquestionably the logical approach, how such a method will work out in actual class usage, particularly with large classes, is a matter that will doubtless be watched with much interest by teachers of genetics.

Since the author is so obviously striving for ease of comprehension, it might be pointed out that this would be much facilitated if the secondary headings within chapters—particularly such as chapter 9—were set up in bold-faced type instead of the same type as the text.

In the survey of the more general relations of genetics the author makes frequent allusion to practical, and above all to human problems, although in the case of man he is very cautious in his affirmations and carefully steers clear of anything savoring of propaganda. He is apparently more impressed with what we don't know about human inheritance than with what we do know.

The final chapter dutifully reminds us of our real ignorance of the nature of progressive evolution, pointing out that our main accomplishment in the study of the mechanism of variation has been recognition and in some cases the production of recessive and

mostly harmful mutations. These are of a kind that would seem unlikely to have served as steps in that progressive evolution which has yielded the multiplicity of complex, efficient living forms which surround us to-day.

The book is one which every biologist interested in the least in genetics should possess, and one which any intelligent layman can read with interest and profit. It may also well take a prominent place among textbooks of genetics for class use.

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BIOLOGY OF NORTH EUROPEAN SEA FISHES

Naturgeschichte und wirtschaftliche Bedeutung der Seefische Nordeuropas. Ernst Ehrenbaum, 337 pp., 276 illus.; E. Schweizerbartsche Verlagsbuchhandlung, Stuttgart, 1936. Price, unbound, 33, R.M., outside of Germany.

THE literature of the rapidly developing science of fisheries-biology has now grown to dimensions so formidable that no one, other than a specialist, can hope to keep abreast of it. Especially needed have been convenient handbooks, in which fishermen of different nations, and others concerned with the fishing industry, could find concise accounts of what is known of the life-histories and commercial exploitation of the various fishes to be caught on the fishing grounds; not only off their own coasts, but on others farther distant, to which their fleets also repair. The volume by Dr. Ehrenbaum, here reviewed, was prepared expressly to fill this want for the coasts and fishing banks of Northern Europe as a whole, and may be said to do so, admirably. The book appears as Vol. II (one other volume has already been published) of the compendious "Handbuch der Seefischerei Nordeuropas," projected under the combined editorship of Drs. H. Lübbert and E. Ehrenbaum. And Dr. Ehrenbaum's eminence as an ichthyologist, with the active part he has long taken in the international investigations of the sea fisheries, gives it authority.

In it we find accounts of nearly all the fish-species to be found in North European seas, including many known there from occasional captures, only. Being frankly dedicated to the service of those employed in the fishery trades, the fullest accounts are (naturally and rightly) those of the species that support the most important fisheries; of which that of the herring may serve as example.

Here the reader finds the common names by which the fish is known in various languages, followed by a brief systematic description, including color and size. Geographic distribution on the two sides of the Atlantic next receives a paragraph, including mention of the closely related herring of the North Pacific. The life-history is treated in greater detail, covering such topics as food, adult migrations, breeding, type of eggs, length of incubation at different temperatures and successive larval stages; the latter illustrated from the author's own earlier investigations. Later growth-rate is next traced, with discussion of the relative abundance of different year classes, a matter of prime import to fishermen in the northern countries of Europe. After mention of parasites and enemies—the herring must be seriously decimated by the latter—Dr. Ehrenbaum discusses the question of local races, including the movements of schools of different racial origins. The account ends with a statement of the amounts of herring caught in different years, at different localities and seasons, of the methods of the fishery in different countries, and of the states in which herring from different sources are marketed.

The accounts of the other species of commercial importance follow these same general lines, chief emphasis being laid in different cases on the phases in the life history that are either the best-known or that seem the most interesting from one standpoint or another. Thus the account of the eel is largely devoted to its growth in fresh water, structural changes that precede sexual maturity, breeding migrations of the adults downstream and out to mid-ocean, situation of spawning grounds, and return journeys of the young eels to the coast and upstream—matters that have so greatly aroused scientific interest of late years. Similarly, in the case of the cod, special attention is paid to migrations as proved by tagging experiments, also to the regional distribution of the fishery; while, for the plaice, the question of overfishing in the North Sea is kept to the fore.

Species not regularly fished receive briefer mention. If common enough to be familiar to fishermen, or to other frequenters of the coast—the labrids, for example—the accounts include (as before) the common names, brief systematic characterization, summary of distribution and reference to what little may be known as to life history. Finally, species so rare that only an occasional specimen is taken are passed over with bare mention or with brief comparison with their better-known relatives.

Outstanding features of the book are the beautiful illustrations of all the familiar species and of most of the less familiar ones also, chosen with discrimination from various sources. With these, it should be easy for any one at all familiar with the sea fishes of northern seas to name the species he has caught or has found in the fish market; or to name the genus at least in the case of rarities. Specific determination of these last would in any case be a task for the systematic ichthyologist. Since the book is not dedicated to the