

physical basis and the mechanical theory of aviation, and contains many useful and concisely solved problems that will appeal to amateurs and professionals devoted to the practical study of the aeroplane. A special commendation of the work is that it was awarded the Monthyon prize in 1911 by the French Academy of Sciences.

A. F. ZAHM

Smoke—A Study of Town Air. By J. B. COHEN and A. G. RUSTON. New York, Longmans, Green & Co. 1912.

Among the principal disadvantages attendant upon our modern civilization is the smoke produced wherever soft coal is burned. As in so many other cases, the possibility of doing away with the evil rests, to a great extent, upon the sufficient arousal of public opinion; in this instance, that there may be enacted the legislative measures necessary for the enforcing of the smokeless combustion of soft coal.

The means and methods of burning soft coal without smoke, having been the subject of numerous publications, are well known. But attention to other phases of the subject, which are so necessary for the enlisting of public sympathy, are remarkably lacking.

In point of fact, this little book by Cohen and Ruston is the first attempt to gather what little information we already possess along these lines into such form as to be accessible to and easily comprehended by the general public.

This book, therefore, takes one into a field, new to the average reader, and gives him a point of view different from that to which he is accustomed. It is, thus, eminently worth while.

The first chapter has to do with the chemical composition of soot and shows why it is obnoxious and injurious. Reliable figures are given for the amount of soot formed from a definite amount of coal burned, for the solid impurities in the air—and for the daily soot fall in various towns in England.

The effect of smoke on vegetation is treated with considerable detail and is shown in many cases to be decidedly injurious.

The effect of sulphuric acid in the air upon metal work and vegetation, here gone into at length, while interesting to know, is somewhat out of place, as the smokeless combustion of soft coal will not do away with the acid emitted from our chimneys.

The study of the diminution in the transparency of the air and the increase in fogs due to smoke forms an instructive discussion.

The chapter on the influence of coal-smoke upon health, by Dr. Ascher, is a valuable addition to the book, showing that, "there can be little doubt that coal dust smoke and soot increase the death rate from acute lung diseases."

Altogether it is a clear, concise and, above all, trustworthy collection of data concerning smoke and soot and the damage done by them.

R. C. BENNER

DEPARTMENT OF INDUSTRIAL RESEARCH,
UNIVERSITY OF PITTSBURGH

General Index to a Hand-list of the Genera and Species of Birds. [Nomenclator avium tum fossilium tum viventium.] Volumes I.-V. Edited by W. R. OGILVIE-GRANT. London: Printed by order of the Trustees. Sold by Longmans & Co., 39 Paternoster Row, E. C.; B. Quaritch, 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. vi + 199.

Dr. Richard Bowdler Sharpe's "Hand-list of the Genera and Species of Birds" (5 vols., 8vo) was completed in 1909.¹ Although each of the five volumes (except the first, indexed with volume II.) was supplied with an index, a general index has been prepared, under the editorship of Mr. W. R. Ogilvie-Grant, Dr. Sharpe's successor in charge of the ornithological collections in the British Museum, "to supply a much-felt want." The task of amalgamating the indexes to the five volumes was done mainly by Mr. Grant's chief assistant, Mr. Thomas Wells. We are told in the

¹ Reviewed in SCIENCE, N. S., Vol. XXXI., No. 790, pp. 265-267, February 18, 1910.

editor's preface that a good many errors and omissions were found in the original indexes, and to correct these and to provide a general index it was decided to issue the present work as a "Supplement" to the "Hand-list." It contains about 22,000 entries, and its usefulness will be greatly appreciated by those using the "Hand-list," or, in other words, by all systematic ornithologists.

The preface to the volume is by Dr. Sidney F. Harmer, keeper of zoology in the British Museum, and contains a tribute to Dr. Sharpe's long period of distinguished service as curator of birds at the museum.

J. A. A.

Heredity and Society. By W. C. A. WHETHAM and C. D. WHETHAM. Longmans, Green and Company. 1912. Pp. 190.

Of late years the attention of all who have at heart the welfare of mankind in this country has been attracted by two main facts: first, the reduction of the birth rate in the more progressive and effective part of our population to half or less than half of what it was formerly, and the great increase in the number of inmates of institutions. Indeed, the proportion of our population that receives state care has nearly doubled in the ten years from 1890 to 1900, and shows an increase much larger than that of the population from 1900 to 1910. This increasing care of the defectives is a heavy burden. One seventh of the income of the state of New York goes to maintain and enlarge the state institutions for insane and other defectives—in some recent years the proportion has risen to one fifth, and it tends to increase. In view of these facts the inquiry has naturally been raised: What is the cause of this increase and what is the way to stop it? And the answer has come back from the students of heredity, carrying with it overwhelming conviction: the defectives are *bred*, and the way to stop the rising cost of their care is to stop breeding them. We are brought to our present pass by the care we have taken to protect, rear and let breed, the worse elements, while discouraging the reproduction of the better.

In England the same general phenomena that strike us here are evident, and a eugenics movement has gained great headway there. Among the leaders in this "movement" have been Mr. and Mrs. Whetham whose "Family and the Nation" has had a great influence. The present work is destined to play an equally important part. It consists of a series of thoughtful and interesting essays touching the biological aspect of the family. One can not summarize the essays, and most of them are beyond criticism. They must be read.

In the chapter on variation and heredity some of the well-known cases of family genius are cited and some new ones, based on studies of a Biographical Dictionary, are given. The authors point out that the explanation of why some men of distinction have sons of distinction and some do not depends on the kind of marriages the men make. It might have added that the reason why geniuses are rare is because, depending on recessive conditions, they will reappear in the next generation only when two strains with the tendency to like genius are brought together.

In the essay on natural selection the disastrous consequences to the race of extensive sanatoria for consumptives and of eliminating the death penalty are suggested; but there is far more to be said on this subject than the authors say in this chapter. In the essay on the biological influence of religion, the authors point out that the hardship that the Jews have undergone in the past has given them racial strength and that in face of a more humane treatment they may be killed off by kindness. In how far may the keenness and shrewdness of the Jew be due to the elimination of those who were not shrewd enough to escape their persecutors?

The two essays on the position of women contain much food for thought. The incursion of women into the industrial field as wage earners coincides in time with the fall in birth rate. And in so far as the best women are lured into professional and political life, or fail to become mothers, the best bearing branches of the racial tree are being cut off—