The facts are as follows. Even newborn snakes can open their mouths wide enough to bite a man's finger and the theory that a grown coral snake can not bite a man is *a priori* ridiculous, even setting aside recorded instances of their so doing. Willson (Archives Int. Med., 1908, 1, p. 516) has collected records of 740 cases of snake bite in the United States. The harmless coral snake, unable to bite a human being, actually bit eight human beings, of whom six died, making a mortality of 75 per cent., as against 408 cases of rattlesnake bite, of whom forty-eight died, a mortality of under 12 per cent. The coral snake is therefore over six times as deadly as a rattlesnake, and, while they seldom bite people on account of small size and secretive nature, yet they are potentially the most deadly animals in the Americas.

E. R. DUNN

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SCIENTIFIC BOOKS

Anatomy and Physiology of the Honeybee. By R. E. SNODGRASS, Bureau of Entomology, first edition, xvi + 326 pp., 109 figs. New York: McGraw-Hill Book Company, 1925.

IN 1910 Snodgrass prepared for the Bureau of Entomology a bulletin (Tech. ser. 18, 162 pp., 57 figs.) entitled "The anatomy of the honeybee." The edition of this bulletin was limited by the restrictions unfortunately placed on certain departmental publications solely because of their size, and the supply was soon exhausted. Since that time there has been a limited but constant demand for copies of this bulletin, which could not be supplied, and finally the author was induced to rewrite and enlarge the portion on anatomy, to include the results of the more recent investigations on the functions of the various organs and to issue the result in book form. The present work is the result. While it is designated a first edition, it is actually an outgrowth and enlargement of the earlier bulletin.

In this book the number of figures is doubled and the text is approximately twice the size of that of the bulletin. Most of the figures formerly used, many of which contain several drawings, have been retained and many new and original drawings now appear. An extensive bibliography is appended, listing especially the more important papers in this field published within the past decade, but noticeably omitting some older works which have served to confuse rather than to advance our knowledge of the anatomy and physiology of the honeybee. Developmental stages are included, based chiefly on the work of Nelson, who worked in the same laboratory. Other investigations of the bee culture laboratory of the bureau form an important part of the new material.

Morphology is no longer a phase of biological investigation to which most workers are attracted, yet it will be admitted that a sound knowledge of structure is essential as a foundation to satisfactory and reliable work in physiology and behavior. The author of this book has rendered a real service in presenting a comprehensive and thoroughly dependable manual of honeybee anatomy. The anatomy of almost no other animal aside from man himself has been the subject of more books and papers than has that of the honeybee, yet unfortunately many and perhaps most of the previous authors in this field have lacked a knowledge of comparative anatomy of insects and as a result have in too many cases given fanciful interpretations and incongruous names to the things recorded as observed. It is therefore a pleasure to welcome a book which does scientific justice to its subject and which is based on a well-grounded knowledge of comparative anatomy. This method of approach, as the author points out, "makes acquaintance with the bee in the end not only easier but more interesting, since to a knowledge of facts it adds understanding."

In this book, however, the bee is a living thing. The short life of the honeybee and its specialized colonial life make physiological experimentation difficult, so that a considerable amount of our knowledge of its physiological processes have been derived by deduction from studies of morphology and by analogy from studies of allied species. The physiological processes of insects have in too many cases not been thoroughly investigated, but in so far as this has been done for the honeybee and allied species, the author has included a comprehensive account of the investigations of others and has included certain new investigations of his own. His work on the so-called fat body is especially interesting. Most of the physiological work mentioned has been done within the past decade. In so far as investigations would warrant, there is a discussion of the cytology of parthenogenesis and inheritance in the honeybee. The work on the structure and functions of the sense organs is especially well done, and the author has corrected certain errors in morphology which have appeared in earlier work on these organs. Various phases of the behavior of the bee are discussed, where the behavior centers about certain organs, although a discussion of bee behavior is not part of the plan of the book. It is needless to itemize the various subjects discussed aside from stating that they are just what one expects in a book with this title.

The important facts to record concerning this book pertain primarily to the qualifications of the author

for an undertaking of this character, since he combines several abilities which especially fit him for such a task. He is undoubtedly the most skilled artist who devotes his artistic abilities to insect morphology. He has had wide experience in morphological investigations and possesses a broad knowledge of the comparative anatomy of insects, and as an insect morphologist has no superior. He also possesses a rare ability to write in an attractive style, one which holds his readers to an unusual degree. To possess artistic skill, knowledge of comparative anatomy and a facility in the use of one's own language is indeed a rare combination, and because of these qualifications the author has presented a book which no student of insects can neglect and one which raises the standards of work in insect morphology and physiology.

To those especially interested in the honeybee, this book is a treasure, for it will serve as a starting point for much future work in bee behavior and physiology, as well as in practical beekeeping. It gives under one cover a fund of scientific knowledge of this most interesting but too often misrepresented insect and will help to dim the luster of the pseudo-scientists who have so long encumbered bee literature with their speculations. From all these different points of view, this is a notable book which deserves hearty commendation.

E. F. PHILLIPS

CORNELL UNIVERSITY

SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN INEXPENSIVE AIR PRESSURE INJECTION APPARATUS

AIR pressure apparatus for embalming and injecting has many advantages over that depending on gravity, but most biological laboratories are not equipped with compressed air and electrically operated systems are expensive to install. The equipment described here is only a simple adaptation of a contrivance common in chemical laboratories, but several months' use in preparing a wide variety of dissection material has convinced the writer of its utility. Furthermore, it is very inexpensive.

The air pump is a common filter pump, *g*, fig. 1, whose outlet is passed through the stopper of an aspirator bottle, *A*, of four liters capacity or greater. Air and water are discharged together into the bottle. The water escapes through the lower outlet, while the air is led through bottle *B* to *C*, which contains the liquid to be injected.

To operate: Open pinchcocks *a*, *c* and *d* and close

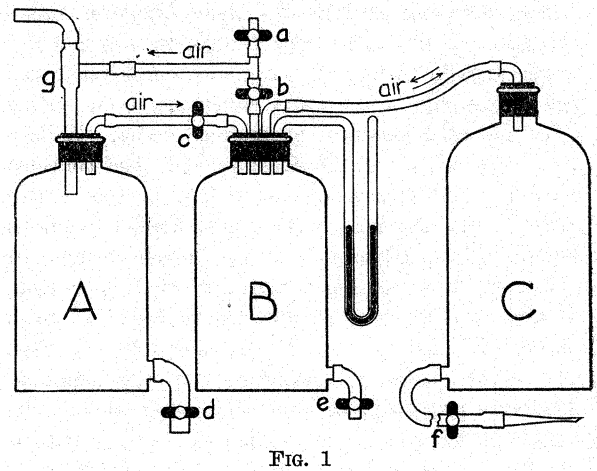

FIG. 1

b, *e* and *f*. Turn on the water. Partially close *d* and so adjust it that the desired pressure is maintained, with air and water escaping through *d*. The flow of liquid through the canula is then controlled at *f*. Always open *d* to release the pressure before turning off the water.

To fill *C* with injection fluid: Close *a* and *c*, open *b* and turn on the water. This will reduce the pressure in *C* and it can then be filled through the tube which holds the canula without the necessity of moving the bottle or of pouring the liquid through a funnel.

The bottle, *B*, is necessary unless *A* is quite large, because *A* will sometimes fill up with water and *B* then helps to keep it out of the air tubes and out of *C*. If *A* is large, *B* can be replaced by a T-tube and the manometer inserted at any convenient point. The manometer is necessary in order that the operator may always know and control the pressure with which he is working. The type shown, with the outer end sealed, will give the least trouble. Stoppers must be wired in and the ends of glass tubing should be beaded to hold the rubber tubing securely.

The apparatus as shown should not cost over fifteen dollars. If aspirator bottles are not available, a tube inserted through the stopper nearly to the bottom will serve for the lower outlet. Some manufacturers supply as a unit, made of metal, the equivalent of the filter pump and bottle *A* with the inlets and outlets fitted with stopcocks. This is listed as *blast apparatus* or *filter pump apparatus, Muesche.*

The outfit used by the writer consists of one of these units, a one liter wide-mouth bottle (*B*), and (*C*) two carboys and two four-liter bottles. The carboys were set outside the window in the light well and are never touched since they can be filled from the work table. The two bottles have long air tubes and can be moved about. They are used for small quan-