of the state of New York are entitled to the utmost credit for having provided the means for publication of a fine contribution to science in so admirable a manner.

As explained in the director's preface:

> The present book is Winifred Goldring's work. She has revised and rewritten all previous manuscripts; has compiled and checked up outstanding references; has corrected the old drawings and supervised the making of many others; has had the advantage of certain new materials which others who have touched the work did not have; and her work has been done not only conscientiously and with assiduity, but with reasonable completeness, and with credit to the paleontology of New York.

To this estimate of the value of the author's work, as evidenced by this great monograph, the present writer is glad to add his own testimonial, after a careful perusal of the volume. The many perplexing problems which arose have been handled with a maturity of judgment and depth of research that would do credit to an author of longer experience, and while producing a work that will be an honor to the state, Miss Goldring has erected an enduring monument to her own industry and zeal in the field of pure science.

The technical portion of the monograph is preceded by a popular account of the crinoids as a class, their structure, ontogeny and mode of occurrence, with special reference to those of New York, which should be most useful for the students of paleontology in the schools and institutions of the state. There are also convenient references to the literature pertinent to the subject, together with lists of the genera and species occurring in the Devonian formations, and of the localities in which they are found. The species listed, described and figured number 157, belonging to 60 genera. Of these 18 genera and 57 species are new to science, and therefore are now described and illustrated for the first time. The fine illustrations which adorn the 60 quarto plates are from the skilful brush of Mr. George Barkentin, of the State Museum staff, whose work is well known from previous publications. The figures on the plates are most usefully supplemented by the numerous text-figures interspersed throughout the descriptive matter, prepared by the author, especially the generic diagrams, which aid materially in the understanding of the new forms.

Space does not admit of extended discussion of details, in which many interesting points are brought out bearing upon structure and classification, such, for example, as the presence upon the arms of some crinoids of two or more pinnules to a single brachial, which is observed in three genera in addition to three previously known. The arrangement of the matter in the book, together with the tables and lists replete with serviceable information, and the full general index, furnish the means of convenient reference to any desired fact, which will be most welcome to paleontologists and students who have occasion to consult the work, as well as to geologists engaged in the intensive study of the stratigraphy of New York.

FRANK SPRINGER
SMITHSONIAN INSTITUTION

The Ants of Timothy Thümmel. By ARPAD FERENCZY. Jonathan Cape, Ltd., London, 1924. Price 7/6 net.

To the biologist in search of literary recreation the perusal of Professor Ferenczy's Gulliverean tale is recommended. His fantasy possesses the unusual distinction of being based on fact, to prove which an extensive bibliography, compiled with the assistance of our distinguished myrmecologist, Mr. Horace Donisthorpe, and Miss L. E. Cheesman, is appended. The story is based on the discovery of Dr. Timothy Thümmel that certain curious yellow spots on dry laurel leaves from a huge ant's nest in Central Africa represented a myrmecine attempt to bequeath to posterity the history of their race. Dr. Thümmel's "discovery" brought to its originator the inevitable result of all such discoveries: he was confined in a lunatic asylum, where he died by his own hand in 1916. And so it has been left to Professor Ferenczy to administer his literary estate—the deciphered Elm-Ant-Foot-Hieroglyphics or the Aruwimi Ant Chronicles, a brilliant travesty of human life and shortcomings. The laurel leaves were collected by Professor Ixli of Elm in the late nineties and were obtained by Thümmel through the professor's grandson. The series was unfortunately not quite complete as some of the leaves had been used by the ladies of the Elm household to add a taste to their master's favorite dish of lentil porridge!

The book opens with an account of the ant-creation. As in the Biblical story, the ant Adam and Eve (known as Mye-Mye and Nye-Nye, respectively) were created in her own image by a legendary Giant-Ant, who granted to her first subjects, among other things, the right to enter her kingdom after death, to live in her glorious presence a life of Olympic happiness "from everlasting to everlasting." Many millions of ant-generations later this tradition of the myrmecine origin was rejected as mere superstition, as the fable of our own first parents has now been assigned to the limbo of cherished beliefs. According to Mye-Mye, the road to everlasting happiness after death lay in ceaseless labor, but eons later, in the reign of the then king Tye-Kye of the Tye nation, a revolution, headed by his indolent but clever subject Kye-Kye, broke out against the ancient teaching. Kye-Kye claimed that the omnipotent Giant-Ant, whose name he said was Pye-Vye-Nye, had revealed to him that all ants must henceforth cease work and adore her

holy name under penalty of being plunged into utter darkness and in an abode of filth being turned into sheer dung beetles! Knowing, however, that a complete cessation of work must mean utter destruction, the crafty Kye-Kye, after another interview with the Ant-Mother, said that she had given him permission to represent the people, and so with a few others he formed the band of Holy Ants or Fat Bellies, which were fed and cared for by their less sacred brethren. This example was followed by the other ant-nations of the Aruwimi glade, each giving their giant-ant a particular name and laboring under the delusion that theirs was the only true Ant-Mother. As with man, so with these ants was God created in their own image. The adoption of religion, the supposed panacea of all ills, led to various holy wars which resulted in the increased power of the monarchy and their warriors. These warrior-ants desired the same life of ease as their holy brethren and formed a sect known as the Robber or Lord Ants, or more vulgarly as Big Heads. They were responsible for the despicable institution of slavery to ensure their life of luxury and ease.

Professor Ferenczy goes on to relate how the daughter of King Tye-Kye, the beautiful Tye-Nye, eloped with an ant of another nation (Hye-Hye of Hye) and of the war which resulted between the two nations. Other interesting chapters in his book (which space does not permit us to review in detail) are those dealing with the Holy Fat-Belly, Kye-Lye, who learned to write with his feet and was regarded as insane by his brothers, of the Aruwimi ants' love for the intoxicating juice of the Sacred Berry, of their marvelous systems of agriculture and weaving, of their living honey-pots, and of the betrayal of the lies of their ancestors by the Holy Kye-Pszye and the Big Head Pye-Kszye. His story reaches its climax with an account of the great Ant-World War and the eventual restoration of the laws of Mye-Mye, the great and universal truth of which reads, "The only clear title to life is Labor;" and so the ants returned to their primitive habits. Will man follow them?

Dr. Thümmel believes that the ants are at least three times as wise as us "stupid, God-forsaken, two-legged protégés of Prometheus," but his work itself belies this statement. In closing the covers of a delightful book we are compelled to agree, in two-legged arrogance, with Mr. Julian Huxley:

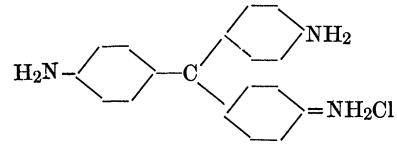
> The Ant herself can not philosophize—
> While Man does that, ...
> And flies, and talks and is extremely wise.

CEDRIC DOVER

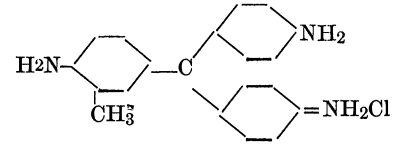
LONDON

A REPORT ON BASIC FUCHSIN

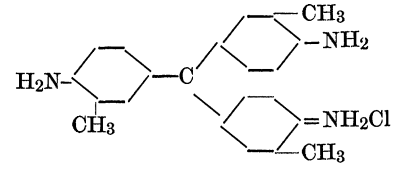
WHEN the Commission on Standardization of Biological Stains undertook the investigation of basic fuchsin, looking toward its certification, certain problems were discovered that had to be solved before definite specifications for this stain could be drawn up. There are three different compounds present to a different extent in grades of basic fuchsin. These three compounds differ from each other in the number of methyl groups they contain. The simplest of these is pararosanilin, which has the formula:



This same compound with one methyl group introduced becomes rosanilin:



With three methyl groups it becomes new fuchsin:



There are three recognized textile dyes composed of these three compounds. The first of these (which is given the number 676 in the Colour Index) is essentially pararosanilin. It is sometimes called basic fuchsin, but should probably be called basic rubin. The second (Colour Index No. 677) is a mixture of rosanilin and pararosanilin in about equal parts; it is the basic fuchsin of commerce. The third is trimethyl fuchsin, and has the Colour Index No. 678; it is known in the trade as new fuchsin. It was discovered that different stain manufacturers are supplying biologists with different compounds in this group under the name of basic fuchsin.

There are two chief purposes for which basic fuchsin is used, first for bacteriological staining (especially for the tubercle organism) and secondly for use in the Endo medium for the detection of the typhoid organism. Some manufacturers put out a special product for each of these two purposes. Others claim that theirs will do for both purposes. In the absence of authoritative information on this subject an investigation seemed to be called for.

In the course of this investigation eleven different