that, 'since the specimens are all crushed absolutely flat, it is by no means certain that in the original uncompressed condition the openings did not look out to the side.'

BASHFORD DEAN.

First Report on Economic Zoology. By FRED. V. THEOBALD, M.A. London. 1903. Pp. xxxiv + 192.

Under the above heading F. V. Theobald, a high authority on economic entomology in Great Britain, has published, under the auspices of the British Museum (Natural History), in three parts, his initial report of economic zoology. The volume in question is preceded by an introductory chapter of some extent by E. Ray Lankester, consisting of a classification of animals from the point of view of economic zoology. The same writer has added considerable correspondence on the dreaded tsetse fly disease of Africa, termites or white ants and the locust plague of the same country, as well as other matters not pertaining to entomology. Mr. Theobald is well known from his valuable treatise on the Culicidæ of the world, which has already reached the fourth volume. Although the main portion of the report is devoted to injurious insects and to other economical entomological questions, there is also frequent mention of the injury accomplished by mammals and birds and other pests as well as of fungous and other diseases. Much valuable information is furnished in regard to the means of preventing insect losses, a considerable proportion of which has been derived from actual experience or from reports of trustworthy persons. The work is not only of special interest and value to persons engaged in agriculture in Great Britain, but also to those of nearby countries in Europe, where many of the same species occur, although not always in the same degree of abundance. Many of the species considered are cosmopolitan, while others are common to North America and Europe, which makes the work also of interest to farmers of the United States. Among the most interesting species treated are the following:

The bud moth (*Hedya* (*Tmetocera*) *ocellana* Fab.), a well-known pest in the northern United States; the mussel scale, or, as it is more familiarly known in America, oyster-shell bark-louse (*Mytilaspis pomorum* Bouché), the pear leaf and 'big bud' mites. Among potato pests is a species of caterpillar, *Hydræcia micacea,* which works in the same manner as our stalk borer, *Hydræcia nitela* Say, well and unfavorably known to potato growers in the United States. Frequent mention is made of injury by millipedes attacking potatoes and other useful crops.

Considerable attention is given to the occurrence of the Colorado potato beetle in England, more especially in Tilbury, where it has been established for some little time. Judging by this report of local occurrence, it would not seem difficult to stamp out the pest in that region so as to prevent its spread to other portions of the country and eventually to the continent of Europe.

The so-called leather jackets or maggots of the crane flies or daddy longlegs (Tipulidæ) are considered somewhat at length. Records are cited of injury to hundreds of acres of grass land by these insects, and it seems probable that much injury is done by related species (of which there are many) in the United States, which is undetected or attributed to other forms of insects.

There is always danger of introducing European species into America, and it is singular that some of the commonest pests of England have never found a complete establishment with us, for example, the thousand-legged worm or millipede, *Polydesmus complanatus,* which has undoubtedly often been brought to this country in soil and has been mentioned as occurring here, but which our authorities state has not gained a permanent foothold. The same is true of the ear wig, *Labia minor,* which is said to be a pest in Europe, well established in America, but never injurious, so far as we know, in our own country. Another species frequently found in old buildings, in furniture and in old wood generally and commonly called death watch, *Anobium domesticum,* is in the same category, having undoubtedly been brought here in wooden material but, for some unknown reason, failing to survive. Mr. Theo-

bald's work concludes with an appendix which includes a list of North American locusts and a list of African termites.

F. H. Chittenden.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE. GEOLOGY.

In looking over the reviews that have appeared of the various parts of the International Catalogue of Scientific Literature thus far issued for the year 1901, it is evident that those which are extremely critical have been written by men who are largely investigators. The men who have spent days in the laborious work of going over publications, writing out the titles of papers and arranging them according to a predetermined subject classification are certainly more generous in their commendation.

The publication on geology is probably as satisfactory as any of the others. Its greatest weakness for the purposes of the whole body of geologists is that of omissions and the limited scope of the subject classification. Many papers that have been omitted appeared in publications that have not been examined. But the character of the publication to be examined was limited by instruction concerning which the workers had no voice.

The scope of the subject classification is one of very great importance to the working geologist. The mass of geological literature is so large that he no longer burdens his memory with the fact that certain persons wrote upon certain topics about such a time and in such a place. Modern methods demand that these papers be brought together under suitable headings and that these shall be sufficiently detailed in scope to meet the needs of the investigator. The geological classification as it exists falls far short of filling this demand. This is not the fault of those who have prepared this bibliography, but the value of the publication under consideration would have been greatly enhanced if many papers had been brought out under more of the headings which were given them. This is due to the fact that probably much of this work of examining the literature was performed by persons who had no special knowledge of the subject, the literature of which they were classifying. This work to be well done—and no other sort of bibliographic work is acceptable—must be performed by those who have a considerable intimate knowledge of that portion of science which they are indexing. It is well known that some of those who participated in the formation of this organization were of the opinion that this work of classification could be executed by persons having a good general scientific education. The first annual issue of the bibliographies illustrates how erroneous is such a conclusion. If the preparation of the material by each of the regional bureaus were complete and satisfactory, the work of collecting and unifying them into a whole must be one replete with difficulties.

It is not the purpose of this notice to point out particular errors of omission or commission or to note defects in a spirit of hostile criticism, but to indicate what is fundamentally inadequate with the hope that in due time it will be rectified. It may prove to have been a wise determination to carry on this work for a period of five years before holding a congress at which these questions of revision will be discussed and determined. But it is believed that a higher grade of bibliographic work would result if a larger measure of discretion had been given to the central bureau. The difficulties which attend the inauguration of such a peculiar work are, indeed, great, but they must be overcome, if the organization is to be permanent and the outcome of its labor to meet the approbation and support of those for whose benefit it is conducted. For the present the following suggestions are offered to those who have in charge the preparation of these bibliographies.

1. Secure the assistance of specialists as far as possible. Would it not be practicable to send to such persons a list of current periodicals, publications of societies, etc., to be examined for each regional bureau, and assemble and unify their work for transmission to the central bureau?

2. Enlarge the list of publications examined to include those which only occasionally publish articles which should be entered.