make descriptive entries or whether to compile simply a skeleton type index. The subject of the text itself should not be used as an index entry heading. Capitals should be used sparingly. The page number should be preceded by a comma and should follow the last word of each entry without intervening spaces.

After entry words have been checked by the author on the page proof of the text, an assistant may complete the task of indexing.

Subheadings in a group of entries having the same entry word must be arranged alphabetically. It is difficult to alphabetize subheadings which inadequately describe the entry word. When impossible to alphabetize such subheadings, they may be arranged in progressive order of page numbers.

The complete entries drafted from the entry words checked on the printer's page proof of the text are typed in consecutive order on the quarter-ruled letter size sheets. Each sheet of four entry slips should be numbered consecutively in the upper right-hand corner. A carbon copy of each sheet is preserved intact in original consecutive order. These carbon copies obviate the necessity for rearrangement of the original entry slips from alphabetic back into consecutive order in making a revised edition of the text and index.

On a photographer's cutting board several quarter-ruled sheets at a time are cut into their four separate slips each bearing a single entry.

The cut slips are then sorted into alphabetic order, first according to the leading letter and later according to the second and third letters of the first word of each entry. Alphabetic arrangement is based only on the leading word of each entry. The word which follows the leading word does not form an entity with the latter for purposes of alphabetizing. A compound word is, however, treated as an entity.

The individual slips are then edited and revised. Whenever several entry slips bear identical entries, the page numbers of these are entered in consecutive order upon a single entry slip and the superfluous original slips discarded. Groups of entries having the same entry word are then arranged alphabetically in indented setting, eliminating repetition of their entry word. Cross references are made on blank entry slips and inserted wherever necessary. Errors in alphabetizing are then corrected.

Individual entry slips, arranged in the order in which they are to appear in the index, may be numbered consecutively in the upper left-hand corner of each and sent in slip form to the printer. It is not necessary that they first be pasted upon sheets of paper in their consecutive order, or that they be typed again into a regular manuscript of the index.

Each entry in the printer's galley proof of the index must be checked against the page proof of the text. There is no short cut or substitute for this final recheck.

Index page proof should first be read through for verification of alphabetical order of entries. On the original entry slips ditto marks were used for groups of entries having the same entry word. A second reading is necessary to make sure that none of these ditto marks have been retained as column headings in the page proof of the index. When division of such groups is carried over from one column to the next, the entry word (without page number) should be repeated at the head of the new column.

Insertions in the text of revised editions will render incorrect the page numbers of many of the subsequent index entries. The carbon copies of each sheet of four entries preserved intact in original consecutive order of page numbers are compared with the page proof of the revised text. Where necessary, new page numbers are then assigned to the previously drafted entries. From this point on, the indexing of the revised edition is similar to that of the original.

The method described in this article makes re-drafting the bulk of the index entries in a revision of the index unnecessary. It also avoids the necessity of taking all the previously alphabetized entry slips out of alphabetic order and rearranging into their original consecutive order to permit these drafted entries to be used again in the index of the revised edition of the text.

LEON HUGH WARREN[1]
NATIONAL INSTITUTE OF HEALTH,
BETHESDA, MD.

THE INCIDENCE OF HYDROGEN SULFIDE AT KILAUEA SOLFATARA PRECEDING THE 1940 MAUNA LOA VOLCANIC ACTIVITY

PERIODIC analyses of the solfataric gases at Kilauea have been carried out by the writers over a period of two years, with the purpose of determining whether there is a correlation between the constitution of these gases and volcanic activity in Kilauea. Since the lavas of this volcano and of near-by Mauna Loa volcano are known to have the same origin, it was felt that there might also be found a relationship to periods of Mauna Loa activity.

Aside from steam, which is the predominant gas, Kilauea solfataric gases were found to be composed of 85 to 98 per cent. carbon dioxide, 1 to 15 per cent. sulfur dioxide and approximately 1 per cent. air. There have been irregular variations in the sulfur dioxide-carbon dioxide ratio during the two-year period, and no eruption of either volcano has occurred.

[1] Acting assistant surgeon (dermatology), Office of Dermatoses Investigations, U. S. Public Health Service, Bethesda, Maryland. Medical Director Louis Schwartz in charge.

No other gases were present in detectable quantities until just prior to the present Mauna Loa activity.

In the collection of March 14, 1940, however, hydrogen sulfide appeared for the first time. It was easily detected qualitatively by odor, by the darkening of lead acetate paper and by the formation of yellow cadmium sulfide when the gas was passed into cadmium sulfate solution. There was not sufficient hydrogen sulfide to make its quantitative determination possible.

On April 7, 1940, volcanic activity broke out at the summit of Mauna Loa. Samples of solfataric gas collected at Kilauea on April 11 again showed the presence of hydrogen sulfide, and samples collected on April 21 likewise contained hydrogen sulfide. The collections of May 10 and June 18 showed no hydrogen sulfide, even though Mauna Loa was still erupting, although with greatly lessened activity.

The appearance of hydrogen sulfide in the Kilauea solfataric gases just prior to Mauna Loa activity may have been a premonitory sign. If so, this appears to afford an exceedingly valuable method of forecasting volcanic outbreaks. Furthermore, this incidence of hydrogen sulfide suggests a close relationship between solfataric activity and primary volcanism.

JOHN H. PAYNE
STANLEY S. BALLARD
UNIVERSITY OF HAWAII, AND
HAWAIIAN VOLCANO OBSERVATORY

SCIENTIFIC BOOKS

A GEOLOGICAL EXPEDITION TO THE SUNDA ISLANDS

Geological Expedition of the University of Amsterdam to the Lesser Sunda Islands in the Southeastern Part of the Netherlands East Indies, under the Leadership of H. A. Brouwer. Vol. 1, 348 pages, with numerous plates, maps and sections, 1940. Amsterdam (American sales agent, Nordeman Publishing Company, New York). Price, $8.40. Work to be completed in four volumes, by 1941; price for the set, $33.50.

THE able geologists and geophysicists of Holland have already shown that the vast East Indian Archipelago is supremely important for the genetic problems of continental stability, the origin of sea basins and the origin of mountain chains. Because it is a key region for investigations of terrestrial dynamics, the new data recorded in this four-volume symposium, due to the energy of Professor Brouwer, are particularly welcome. The present volume, on the geology and paleontology of the Netherlands half of the island of Timor, is written by D. Tappenbeck, A. L. Simons (both dealing with the general geology); by F. A. H. W. de Marez Oyens, another member of the 1937 expedition; and by Professor J. Wanner, of Bonn University. Oyens describes the Permian crinoids of Timor, and Wanner the Permian blastoids. Throughout, the emphasis is on the details of observation, in field and laboratory. The projected fourth volume "will coordinate the different contributions [including also those by seven other members of the expedition] and give the general conclusions which might arise."

The oldest system of Timor rocks, crystalline schists, were carefully studied; their age is pre-Triassic, but could not be more closely determined. Sedimentary series belonging to the Permian, Triassic, Jurassic, Cretaceous and Tertiary were found; unfortunately, their respective thicknesses are not given. An outstanding conclusion of Tappenbeck is that the Tertiary epoch of intense folding and thrusting should be placed in Oligocene time, rather than in the mid-Miocene, as so long believed by other investigators. Since Timor lies in the great "negative strip" of gravity anomalies, discovered by Vening Meinesz, this change of date for the major, orogenic disturbance of Tertiary time has significance for the general theory of mountain-making. The Simons chapter describes large masses of serpentine, especially voluminous along the north shore of the island; here is another proof that eruption of ultra-basic, igneous rock is an accompaniment of the intense deformation along the principal mountain arcs.

REGINALD A. DALY
HARVARD UNIVERSITY

THE INVERTEBRATES

The Invertebrates: Protozoa through Ctenophora. By LIBBIE H. HYMAN. First edition. 726 pp. McGraw-Hill Publications in the Zoological Sciences. A. Franklin Shull, consulting editor. 1940.

DR. HYMAN is to be congratulated on the appearance of the first volume of her courageous project to furnish a reasonably complete and modern account of the morphology, physiology, embryology and biology of the invertebrates. The real need of an accurate and critical survey of this sort in English has long been recognized alike by teachers, professional zoologists specializing in other fields and by advanced students. The author has achieved a satisfying measure of success in this important, confused and difficult field. "It is obviously impossible," Dr. Hyman says in her preface, "for any one person to have a comprehensive first-hand knowledge of the entire range of invertebrates, and consequently a work of this kind is essentially a compilation from the literature." It is obvious to the reader that the present work is not a mere rehashing of the literature but a fresh study of a