

## NOTES AND NEWS

### INSTITUTO DE GEOLOGIA, CARACAS, VENEZUELA

N. B. KNOX, *Director of the Institute.*

The Instituto de Geología was formally opened on September 15, 1938, in the presence of President López, Contreras of Venezuela. Classes began that day with a registration of twenty-four selected students.

The Institute is fully equipped for the training of students in the fields of general geology, petroleum geology, and mining geology. It is housed in its own building which contains a large lecture hall, several recitation rooms, separate laboratories for chemistry, mineralogy, petrography, paleontology and economic geology, a drafting room, a research laboratory for the staff, a preparation room for the cutting, grinding, and polishing of specimens and thin sections, and a workshop. Also included in the Institute are a paleontologic museum and a large library. All the laboratories are equipped with the latest apparatus for the investigation of geologic problems.

In addition to courses in mineralogy, economic geology, petroleum geology, paleontology, stratigraphy, sedimentation, field geology, etc., basic courses in chemistry, physics, botany and zoology, mathematics, drafting, hygiene, mining and petroleum laws and language are given. The Institute also has its own physician who, in addition to his medical duties, will teach hygiene.

The Institute as at present constituted will give a bachelor's degree in geology at the end of four years of study, half of the fourth year being spent in the field. It is planned, later on, to extend the scope of the Institute so as to be able to grant higher degrees.

While the Instituto de Geología is a part of the Ministry of National Education, it has been organized by a committee of professional geologists from the Ministry of Industries Geological and Mining Service.

These men, trained in Europe or the United States, now form the Institute's Board of Regents. They are Drs. V. M. López (Chairman of the Board), M. Tello, P. I. Aguerrevere, Santiago E. Aguerrevere and G. Zuloaga. The faculty includes N. B. Knox, Technical Director and Professor of Geology; Ely Mencher, Professor of Paleontology; Bela Muracosy, Professor of Topography; and Hermann Kaiser, Professor of Chemistry.

There are no tuition fees for Venezuelans at the Institute but candidates must pass examinations in mathematics, chemistry, physics, biology, English and French before being admitted. The course is four years and leads to a degree. Six scholarships have been granted to students from other North and South American countries.

Many of the students are on scholarships provided by the oil companies operating in Venezuela, which give the student not only cash to live on, but opportunity for field and laboratory work during vacations.

## BOOK REVIEW

CONTRIBUTIONS TO THE KNOWLEDGE OF THE CHEMICAL COMPOSITION OF THE EARTH'S CRUST IN THE EAST INDIAN ARCHIPELAGO, I, II.

I. The spectrographic Determination of the Elements according to Arc Methods in the Range 3600–5000 Å.

II. On the Occurrence of Rarer Elements in the Netherlands East Indies.

W. VAN TONGEREN, Assistant in Mineralogy, University of Utrecht. Pp. 181, Figs. 14,  $19\frac{1}{2} \times 26\frac{1}{2}$  cm. D. B. Centen's Uitgevers—Maatschappij N. V. *Amsterdam*, 1938. Price dutch fl. 4.50: Part I alone, dutch fl. 3.

This book describes a composition analysis by spectrographic methods of about 300 samples of rocks and minerals from the Dutch East Indies. The study concerns only the estimation of the rarer elements, which, determined as oxides, were present in amounts of 1% or less. For such analyses the spectrograph has a great advantage, since, by examination of a single spectrogram—in an hour or so—a large number of elements may be determined, with a precision at least as good as that of chemical methods in the low percentages, and often better in the minute percentages. Any spectrographic analysis is a comparative method and involves, first, a choice of a suitable light source and, second, a calibration of the apparatus by the use of natural or artificial samples of known composition. Dr. Van Tongeren has used in his work the light from the "cathode layer" of a carbon arc, according to the technique developed by Mannkoff and Peters in Professor Goldschmidt's Mineralogical Laboratory at Göttingen University. In this method, which is especially suitable for mineral and other non-conducting samples, the pulverized sample is placed in a cavity of the lower, negative electrode of a carbon arc and the light studied is that emitted in the "cathode layer," just above the cathode. Comparison, in number and intensity, of the spectral lines of the various elements with those emitted by known percentages of the same elements in the standard samples permits an estimate of the percentage of each element.

Part I describes the apparatus, and the preparation and use of the standard samples, which were made by grinding up known amounts of the oxides of the various elements with quartz powder. The method could be applied to all of the metals and metalloids, with, of course, varying sensitivities. Actually, for various reasons, fifty elements were tried and about thirty-five, including most of the rare earths, were found to give satisfactory results for the problem in hand.

Part II gives the detailed result of the spectrographic examination of 300 mineral samples. Twenty-eight of the elements sought were found in determinable quantities, ranging from .0001% up to 1% or more. Average values are given for the amount of these rare elements in the earth's crust in the Dutch Indies and there is some discussion of their presence on the basis of atomic theory. The accuracy appears to be a factor of about two in either direction. It could, of course, be greatly improved by the substitution of a photom-