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NOTE.—For a greater differentiation of contents section 8 of previous reports is replaced by section 0 and section 9, and the former section 9 is replaced by section 10 and section 11. An additional section on drill-hole methods, section 8, is introduced.

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hypothesis of continuous cooling can be accepted, even if certain statistical discrepancies in the thermal balance cannot be refuted.—*Author's abstract, condensed and translated by S. T. V.*

7. GEOCHEMICAL METHODS

10615. Brannock, W. W., Fix, P. F., Gianella, V. P., and White, D. E. Preliminary geochemical results at Steamboat Springs, Nevada: *Am. Geophys. Union Trans.*, vol. 29, no. 2, pp. 211–226, Washington, D. C., 1948.

Since 1945 the area of Steamboat Springs, Nevada, has been investigated geologically and geochemically with special emphasis on the origin of the local hot springs and the conditions of formation of deposits of stibnite, cinnabar, native mercury, pyrite, and other epithermal-ore minerals. Preliminary geochemical results, obtained to February 1, 1946, show the springs to be structurally related to recent faults and genetically connected with the magmatic source of the recent volcanic domes of pumiceous rhyolite.

Many of the springs are at or near the boiling point, and their temperatures appear to depend on their acidity or alkalinity, with the most alkaline waters occurring in the hottest springs. Cinnabar, stibnite, pyrite, and other sulfides have crystallized at depths of 5 to 50 feet below the surface in sinter and gravels attacked by hot waters after burial under new sinter. Some siliceous muds deposited from the springs contain gold and antimony in amounts equivalent to commercial ores and also considerable silver, mercury, copper, and arsenic.—*V. S.*

10616. Fletcher, M. H., and White, C. E. A simple test for the detection of beryllium minerals: *Am. Mineralogist*, vol. 31, pp. 82–83, Lancaster, Pa., 1946.

The mineral is fused with Na_2CO_3 on platinum wire, dissolved in HCl , and either quinizarin or 1-amino-4-hydroxyanthraquinone with NaOH is added. The purple solution gives a strong orange-red fluorescence in ultraviolet rays.—*L. J. S., Mineralog. Mag.*, vol. 28, no. 200, p. 246, London, 1948.

10617. Maliuga, D. P. Toward determining copper in rocks, soils, and organisms by the polarographic method [in Russian]: *Lab. Biogéochim. Acad. Sci. U.R.S.S. Trav.*, vol. 7, pp. 86–97, Moscow, 1944.

Since 1930, K. Suchy, K. Heller, and other investigators have developed various polarographic techniques for the determination of the presence of small quantities of copper in natural waters and soils. Among these methods the author considers Heller's dithizone test superior to others, but not fully reliable and very time consuming. He advances a simpler polarographic method for identifying any quantity of copper in rocks, soils, and organisms.

This method consists in the use of rubeanic acid as a general reagent for the separation of copper from Fe, Mn, Ti, Al, and other elements in diluted, weak ammonia solutions containing 0.5 percent of citric acid, 0.02 N NaCl , and in the subsequent polarographic estimation of copper under the same conditions, the potential of copper separation being equal to 0.35 volt. The procedures of preparation of samples, isolation

of copper, polarographic recording, and verification of the method, used by the author in his tests, are described, and some results are given on copper content in human organs.—V. S.

10618. Motyka, Jozef. O celach i metodach badań geobotanicznych (On the aims and methods of geobotanical research): Curie-Skłodowska Univ. Ann., Sec. C, Suppl. 1, 168 pp., Lublin, Poland, 1947.

The geobotanical survey made by the author in the borderlands of Podolia and Volynia in Poland is reported with a description of the method and results, a comparison of findings with those obtained by other methods, and an examination of various viewpoints in geobotany. The differential analysis of Czekanowski, upon which the survey is based, is an outgrowth of Pearson's statistical method applied to geobotany. It is useful for classifying individual items on the basis of their likenesses in a number of distinct botanical characteristics. The procedure consists in adding up the likenesses by a technique of tabulation and graphical plotting and calculating coefficients of correlation among botanical specimens for grouping them into classes. The method is described. Generally the results show low coefficients of correlation among botanical varieties.—V. S.

10619. Rankama, Kalervo. Some recent trends in the geochemical investigation of the lithosphere: Comm. Géol. Finlande Bull. 140, pp. 129-133, Helsinki, 1947.

Geochemistry is defined as the study of the chemical composition and evolution of the earth. The stages of its development are outlined. In the years 1908-20 much basic knowledge was gained on the geochemistry of the lithosphere, mainly through the work of W. C. Brögger, J. H. L. Vogt, and V. M. Goldschmidt. Beginning with 1920, the fundamental laws of the distribution of elements were discovered as the result of advances in nuclear and atomic physics and in scientific methods, successfully applied by V. M. Goldschmidt, G. Hevesy, and the Noddacks.

At present, classical "mineralogical" geochemistry appears to be superseded, particularly in the study of the lithosphere, by a new development viewed by the author as "geological geochemistry." The trends characterizing this new phase, observed mainly in the Scandinavian countries, are in evidence in the work on the regional distribution of trace elements, conducted by T. Sahama, K. Rankama, V. Vahätalo, and others; in research on the order of the pre-Cambrian granites in Finland by Sahama and Rankama; and in investigations on the geochemistry of the formation of ore deposits by S. Landergrén, T. Oftedal, S. Gavelin, O. Gabrielson, and others. The last-named problem was studied by Landergrén in Sweden in application to the Grängesberg iron deposits, which were found to be of secondary magmatic origin. The classical mineralogical tradition is likewise continued in the studies of F. Wickman on igneous and sedimentary rocks. The review is supplemented with a bibliography.—V. S.