tions of the late Orestes H. St. John. The collection contains a large and valuable series of Selachian fishes including many type specimens, the most notable of these being a specimen from the coal measures of Kansas, containing the complete dentition of a large shark of paleozoic time.

DR. BRUNO GALLI VALERIO, professor at the Lausanne University, proposes to erect a meteorological observatory and a scientific research station on the top of the Rochers de Naye (6,473 ft.) above Montreux.

PRESIDENT MARION L. BURTON, of the University of Michigan, has received a letter from Carl Guthe, who is conducting an archeological expedition of Michigan men in the Philippines, in which the writer tells of the success of the expedition. More than 100 caves have been uncovered by the excavators in which were discovered many ancient implements and other remnants of an extinct civilization. The party is carrying on the expedition through the generosity of a Detroit alumnus, who provided anonymously $30,000 for the expenses of the expedition.

THE London *Times* reports that a number of German professors and officials have issued Easter appeals for monetary assistance on behalf of their various institutes. Professor Einstein, who appeals on behalf of the Kaiser Wilhelm Institute for Physics, states that the income of the institute before the war was 75,000 marks (then worth £3,750). It is now about 22,000,000 marks, which is worth about £225. Appeals are made also for the Cancer Research Institute, the Botanical Gardens and other institutions.

HIRAM PERCY MAXIM, president of the American Radio Relay League, will confer with Donald B. MacMillan, polar explorer, to make arrangements to send an amateur radio operator of the league to the polar regions on MacMillan's expedition next June. It will be the first time that a polar expedition will be in regular communication with the amateur radio operators of the country. The operator will be selected from 12,000 league members by questionnaires, which are being sent to amateur operators in all parts of the United States. Mr. MacMillan will make the selection.

UNIVERSITY AND EDUCATIONAL NOTES

THE $2,000,000 endowment fund for the Henry Phipps Psychiatric Clinic at the Johns Hopkins University has been completed.

PLANS have been completed for the establishing of a $500,000 maternity hospital with the Washington University School of Medicine group. This hospital will be an eight story building and will eventually have a two hundred and fifty bed capacity instead of the thirty-three bed capacity of the present St. Louis Maternity Hospital, which it will succeed. It will have a similar affiliation with the medical school as the St. Louis Children's, the Shriners' Hospital for Crippled Children and the Barnes Hospital now hold. Ground will be broken within the next six months.

GOVERNOR SMITH has vetoed the appropriation of $830,000 for a new plant industry building for the New York College of Agriculture at Cornell University with the explanation that a special bill would later carry a larger sum, in accordance with new estimates made by the state architect.

WITHROW MORSE, Ph.D. (Columbia) has been elected to the chair of physiological chemistry and toxicology in the Jefferson Medical College, Philadelphia. Dr. Morse is at present professor of physiological chemistry in the school of medicine of the West Virginia University.

PRESIDENT WALLACE W. ATWOOD announces a number of additions to the faculty of Clark University, including, for one year, Dr. J. F. Neirmeyer, rector of the University of Utrecht, Holland, economic geography; Dr. Oliver Edwin Baker of the United States Department of Agriculture, professor of agricultural geography; Dr. Alfred L. P. Dennis, professor of modern history; Clarence Fielden Jones, M.S., assistant professor of economic geography; Ellen Church Temple, acting professor of anthropo-geography; William L. Langer, assistant professor of European history; Douglas C. Ridgeley, professor lecturer in geography.

THE resignations from Clark University are announced of Dr. Harry E. Barnes, professor of the history of thought and culture, and Rob-

ert C. Dexter, professor of social science. Dr. Barnes has accepted a position in the sociological department at Smith College. Mr. Dexter will become head of the department of sociology at Skidmore College.

DR. FREDERICK G. BANTING, Toronto, will be appointed to a chair in medicine at the University of Toronto if plans of the university and the provincial government materialize. An annual allowance of $10,000 accompanies the appointment, $6,000 being for salary and the remainder for supplies, assistants and other expenses.

DISCUSSION AND CORRESPONDENCE

CONCENTRATIONS OF IONS OF INSOLUBLE OR UNDISSOCIATED SALTS IN SOLUTION

PROFESSOR RODEBUSH in his recent comment[1] on a note by the writer on the mode of reaction of slightly soluble salts[2] has pointed out the improbability of the existence of a statistical equilibrium in a solution with only one ion or even less per liter. Since, as a result of the work of Gibbs and Boltzmann, entropy and thermodynamic equilibrium are considered to be statistical phenomena, it follows that when a statistical equilibrium is improbable, a thermodynamic equilibrium is likewise so. As a matter of fact, the concentrations of cathions of insoluble sulphides or complex ions obtained by calculation from E. M. F. measurements are of such a magnitude as to exclude thermodynamic equilibrium which is the fundamental assumption underlying such a calculation.

It is very questionable whether Knox's[3] calculations of the solubilities of the sulphides based on E. M. F. measurements should be taken literally. That these calculations are not always valid may be seen from the fact that while Knox gives a value of 2.6×10^{-15} for the solubility product of PbS, Noyes and Bray[4] find by precipitation methods a value of at least 1.8×10^{-22} and Stieglitz[5] believes that 2×10^{-27} is not low enough.

1 SCIENCE, N. S., lvii, 358, 1923.
2 *Ibid*, lvii, 26, 1923.
3 *Trans. Faraday Soc.*, iv, 44, 1900.
4 *J. Amer. Chem. Soc.*, xxix, 137, 1907.
5 Qual. Chem. Analysis, Vol. I, p. 212, 1916 edition.

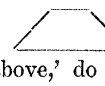
One of two possibilities suggests itself: either there is a sufficient concentration of ions in the solutions of the insoluble substances to make possible a thermodynamic equilibrium and that the resulting E. M. F. is not indicative of the actual ionic concentration, but rather of the effectiveness of the concentration present as compared to that of a solution containing one mole of ions per liter; or there is no thermodynamic equilibrium and the E. M. F. is not the result of an equilibrium between the electrode and the particular ions in solution. From the agreement in the degree of insolubility of the series of sulphides as found by E. M. F. measurements and by precipitation methods, it would seem that we may assume the first alternative to be the correct one and as another instance of the unreliability of calculations from such measurements at low concentrations.

BENJAMIN S. NEUHAUSEN
JOHNS HOPKINS MEDICAL SCHOOL

AN EGYPTIAN MATHEMATICAL PAPYRUS IN MOSCOW

IN an article[1] which appeared in 1917, Mr. B. Touraeff gives an account of a mathematical papyrus of the late middle empire, now in the Museum of Fine Arts in Moscow.

The translation of probably the most important new problem, giving the volume of a truncated pyramid, is as follows:

"The problem is to make a  . If it be said: ' . . . 4 below, 2 above,' do as follows: square this 4, which gives 16; duplicate 4, which gives 8. Do as follows: square the 2, which gives 4. Add the 16 to the 8 and the 4, which gives 28. Do as follows: take one third of 6, which gives 2. Do as follows: take 28 twice, which gives 56. This is the 56. You will find it correct."

This is precisely following the formula which we would use to calculate the volume of a truncated square pyramid with upper base 4 on a side, with lower base 2 on a side, and with altitude 6.

The remarkable appearance of this formula

1 "The volume of the truncated pyramid in Egyptian mathematics," Ancient Egypt, 1917, pp. 100-102.