ment of France. Accordingly, the president of the cabinet, in agreement with the minister of public instruction, has allotted 12,000,000 francs, payable in three annual sums. There remains only 3,000,000 francs to be guaranteed. Furthermore, 100,000,000 francs is required to complete the Grange-Blanche Hospital. That is the part that is to be undertaken by the city of Lyons. The new buildings of the faculté de médecine are to be erected in the vicinity of the Grange-Blanche Hospital, so that there may be an intimate association with the hospital clinics.

THE first allotment under the Rollin D. Salisbury memorial research fund of the University of Chicago has been made to Professor J Harlen Bretz, of the department of geology, for the continuance of his studies of the "scablands" of Washington formed by the scouring action of floods flowing from the glaciers at the close of the last glacial period.

ACCORDING to the *Journal* of the American Medical Association a conference on pellagra called by the governor of Arkansas on December 6 was attended by about 400 persons; in opening the meeting, the governor reviewed the work that had been done since the Mississippi flood last spring by Arkansas physicians and those from other states who came to help, and urged full cooperation between all forces of the state for the control and prevention of pellagra. Dr. Joseph Goldberger, U. S. Public Health Service, Washington, D. C., who addressed the conference, stated that the records for 1927 indicate a considerable increase in the deaths of persons from pellagra in Arkansas. The number for the last year, it is said, will total between 600 and 700.

THE Federal Radio Commission has authorized the General Electric Company, Schenectady, N. Y., to erect an experimental station in Oakland, Calif., with 10,000 watts power and wave-length of 10 to 40 meters, for "the development of improved methods of facsimile transmission and television." Construction will start immediately. It is expected the station will be completed by March 1. The visual images will be transmitted by wireless, using at first both continuous and interrupted waves.

THE Geological Survey of Denmark will celebrate its fortieth anniversary in June next year by a series of excursions and meetings to which foreign geologists are to be invited. Before the meeting to be held in Copenhagen, two simultaneous four-day excursions will be arranged (June 21–24): to Bornholm, which forms part of the Baltic Shield and is of great petrological, stratigraphical and tectonic interest; or, alternatively, to Moën and South Sjælland, where remarkable dislocations in the Senonian white chalk can be compared with the undisturbed formations. The meeting itself (June 25–28) will be devoted to lectures and discussions on the general geology of Denmark and to visits to the celebrated museums of Copenhagen. After the meeting an eleven-day excursion (June 29–July 9) will enable visiting geologists to study a wide range of glacial phenomena in north-west Sjælland, Fyn, Langeland and Jylland. Further particulars relating to the detailed program, accommodations and charges will be provided in a later circular.

THE Paris correspondent of the London *Times* writes that the French government has decided to undertake an official investigation of the agriculture of the country. During the latter half of the last century reports were compiled by the Ministry of Agriculture every ten years, in which information in regard to the nature and size of agricultural properties, the distribution of crops in different parts of France, the methods of cultivation, the use of fertilizers, etc., were set out in statistical form. The last of these reports was issued in 1892. Since then no detailed and comprehensive survey of French agriculture has been taken. The only official statistics issued relate to the yield of crops and numbers of sheep, cattle and horses and these are admittedly based on insufficient data. A minor consideration in deciding the government to make the survey without delay is that the International Agricultural Institute, which has its seat in Rome, and of which France is a member, has asked for information with a view to compiling a report on agriculture throughout the whole world. This information the French government would be unable to supply unless the survey were made.

UNIVERSITY AND EDUCATIONAL NOTES

BY the will of the late Dr. Morris Herzstein, one of the prominent physicians of San Francisco, Stanford University is to receive $100,000 for a chair of biology.

ON February 23 the new building of the Philadelphia College of Pharmacy and Science will be dedicated. The formal dedicatory exercises will be presided over by Dr. Wilmer Krusen, who was recently installed as president of the college.

IT is reported that Dr. Gregorio Amo, of California, will give shares of his oil holding to the amount of about $1,700,000 for the establishment of a fund to permit foreign students to study at the Central University of Spain. Dr. Amo also presented King Alfonso with $400,000 to be used in the creation of a university city.

TRUSTEES of Western Reserve University have voted

to offer the chair of medicine, left vacant by the death of Dr. Charles F. Hoover, to Dr. Cyrus Cressy Sturgis, now professor of medicine in the University of Michigan and director of its research hospital.

JOHN WILSON, assistant chief geologist for the Pan-American Oil Company, has been appointed assistant professor of geophysics at the Colorado School of Mines.

AT the Harvard Medical School, Dr. William E. Ladd has been appointed assistant professor of surgery, Dr. Robert M. Green, assistant professor of applied anatomy, and Dr. Edward P. Richardson, John Homans professor of surgery.

DR. MILO HELLMAN, research associate in physical anthropology at the American Museum of Natural History, has been appointed professor of comparative dental morphology at the New York University College of Dentistry.

DISCUSSION AND CORRESPONDENCE

OVARIAN SECRETION AND TUMOR INCIDENCE

IN an article under this title which appeared in SCIENCE for December 16, 1927, Dr. William S. Murray reports on experiments in which he analyzed the effect of ovarian hormones on the incidence of mammary cancer in mice. In this connection he refers to the historical development of this problem as follows: "It has been known for some time that the internal secretions of the ovaries play an important part in the physiological condition of females during and after the gestation period. That the influence of these hormones has also a direct effect upon the ability of mice to combat the growth of neoplasms has been demonstrated by Dr. L. O. Strong (1922) in his work upon transplanted tumors. Dr. Leo Loeb has "also" (quotation marks added by the writer) published a brief note on the effects of castration and enforced non-breeding on tumor incidence. More recently (1927) Dr. Carl F. Cori has published a very interesting paper on the results of castration and ovarian transplantation in mice."

This statement tends to create an erroneous impression as to the development of our knowledge of this problem. Instead of having "also published a brief note," I have published in addition to this brief note two extensive papers containing detailed data on this question. The first of these appeared as the first article in Volume I of the *American Journal of Cancer Research*, January, 1916, p. 1. The second appeared in the *Journal of Medical Research*, September, 1919, p. 477. In these papers I gave the first experimental proof that internal secretions may play an important rôle in the origin of tumors. I showed that there is a definite quantitative relationship between the time during which the ovarian hormones have had a chance to act on the mammary gland and the incidence of mammary cancer. This I proved through castration carried on in mice at different ages. I also showed that prevention of breeding lowers the incidence of cancer but not to the same degree as castration at an early period of sexual maturity. I furthermore attempted to produce mammary cancer in male mice through transplantation of ovaries without succeeding in this attempt. Dr. Cori also was unsuccessful in similar experiments, while Dr. Murray succeeded in obtaining a positive result in 4 out of 210 operated male mice, therefore in less than 2 per cent. of his animals.

Since my first complete article on this problem appeared, I have repeatedly in various papers discussed the theoretical importance of this question in the etiology of cancer. I may also add that it was only possible for the writer to undertake the study of this problem, because I had for many years previously studied the rôle of heredity in the etiology of cancer in investigations based on the conviction that heredity in cancer can only be satisfactorily analyzed, if different families of mice are bred separately under identical environmental conditions. Accordingly in cooperation with Miss A. E. C. Lathrop, I was able to obtain strains of mice with definitely known inherited cancer incidence which differed in the case of different strains. Thus we could prove the quantitative interaction between hereditary factors and factors founded on the inner environment of organisms. Furthermore I had occasion to point out that there are indications that a similar quantitative interaction exists also between hereditary factors and outer environmental factors. The question as to the effect of various glands with inner secretion on the growth of transplanted tumors is a problem of an entirely different character and experiments of this kind can throw no light on the rôle of hormones in the origin of cancer.

LEO LOEB

DEPARTMENT OF PATHOLOGY,
WASHINGTON UNIVERSITY
SCHOOL OF MEDICINE

LAWS RELATING TO MATHEMATICAL OPERATIONS

ONE of the most fundamental differences between the mathematics which preceded the nineteenth century and the mathematics of to-day is the fact that we now lay much more stress on certain laws which govern many of our mathematical operations. Among these are those now known even by the student of