currency to pay for imports. While there I heard complaints from engineers and scientists that they find it difficult to get scientific books and apparatus from abroad. If the government is eager to develop science and to educate engineers, why do they make it difficult to import scientific material? For the same reason that they are placing the people on starvation diet by exporting everything they can put their hands on, while bending all their energies toward the ultimate improvement of the economic condition of the people—namely, in order to make the revolution safe. They are afraid of foreign aggression and are hectically working to industrialize the country before the countries of western Europe are in a position to attack them. In order to secure themselves, through industrialization, against aggression, they sacrifice the present welfare of the people and the progress of science by exporting everything for any price obtainable and importing only the machinery and raw materials which are necessary for their industrial and agricultural program.

The Russian leaders consider the completion of this program to be an absolute necessity. Everything else, however desirable, they place in the category of luxury which they must do without for the present. That is why they are anxious to divert man power and material from pure science, which would be of value to them in the future, to applied science which they need badly now.

It seems to me that in view of the great value of pure science and the slowness with which it can be developed, the policy of expediency adopted by the Bolsheviks is a mistake. But I feel confident that as soon as the present critical situation in Russia becomes easier, science, pure as well as applied, will find in the Soviet government one of its most generous supporters.

H. M. DADOURIAN

TRINITY COLLEGE,
HARTFORD, CONNECTICUT

HORMONES IN CANCER

THE conception that the extension of neoplasms is due to the lack or imbalance in growth-regulating hormones is old. In the past two years we have been engaged in testing the effects of practically all the established hormones and many glandular products, such as the Sokoloff, Watermann and de Kromme, and Coffey-Humber extracts, upon transplantable rat sarcomas and carcinomas. None of these extracts appreciably affected the rate of tumor growth or final mortality as judged by statistical analyses. A possible exception to these findings was a crude extract of the anterior lobe of the hypophysis, which contained a standardized amount of growth hormone, a slight increase in the rate of tumor growth of dosed rats being noted.

We have resorted to irradiating the head of the animal with roentgen rays and implanting radon seeds into the pituitary region in an attempt to stop the activity or destroy this body. Since such a treatment might affect the parathyroids and thyroids by back-scattering, experiments with parathyroid-thyroidectomized animals were also made.

In attempting to destroy the hypophyses the maximum dose of roentgen rays was applied to the rat's head, the body being protected by lead to minimize back-scattering effects. Six series of experiments using twenty to thirty rats per series were performed. With sub-lethal doses of the rays and in a radon series the rate of tumor growth was significantly retarded during the period when the body weight curve remained stationary. Doses insufficient to stop or retard body growth had little effect upon the rate of tumor growth. It has been said that any state which decreases the nutrition of the body as a whole or the tissue in which a tumor is located decreases the rate of growth of the tumor. This objection has been controlled in our experiments by starvation and poisoning by synthalin and heavy metals, both of which retarded body growth without affecting the rate of tumor growth. The experiments with the roentgen ray indicate that the growth factor associated with the pituitary contributes to the regulation of both the rate of body growth and the rate of tumor growth. The experiments with parathyroid-thyroidectomized animals showed that these glands have no demonstrable effect upon tumor growth.

In the experiments with the roentgen ray, radon and the pituitary growth hormone, no effect upon the incidence of tumor takes was noted.

FRITZ BISCHOFF
L. C. MAXWELL
H. J. ULLMANN

DEPARTMENT OF CANCER RESEARCH,
SANTA BARBARA COTTAGE HOSPITAL

HEMOPHILIA[1]

HEMOPHILIA or bleeders disease is a rare disease of the blood, which has a strong hereditary tendency. Only males have the disease, while it is transmitted through the unaffected female. The outstanding symptom of hemophilia is a tendency to excessive hemorrhage. The bleeding may be spontaneous from any part of the body or it may follow a slight injury which would pass unnoticed by a normal individual. It is well known that a strong hemophiliac tendency exists in several of the royal families of Europe. The ill-fated Czarovitch of Russia was a high-grade hemophiliac. The present Crown Prince of Spain also suffers from this disease. In this disease the clotting time of the blood is greatly prolonged.

[1] Presented before the Chicago Society of Internal Medicine, February 23, 1931.

The results of our recent studies in this disease divide themselves into three parts:

(1) We have located a family of hemophiliacs in southern Illinois. Their family records have been traced back 125 years, through six generations. There have been sixteen bleeders in this family, seven of whom are living.

(2) Taking into consideration that only males have the disease, while it is transmitted through the unaffected female, one is forced to the conclusion that if the female can transmit the disease she must potentially have the disease. Then there must be something in the female mechanism which holds the disease in abeyance. The greatest difference between males and females is the sex organs. Working from this hypothesis we treated two high-grade hemophiliacs with ovarian extract, and performed an ovarian transplant on one of them. (The idea of the ovarian transplant was suggested by Dr. H. B. Thomas and he performed the operation.) The boy who received ovarian extract alone has been symptom free for eleven months. The boy who had the ovarian transplant was completely well for five and one half months or until the transplant was absorbed. We concluded from this experiment that in these two patients with hemophilia the introduction of the female sex hormone rendered them symptom free for eleven and five and one half months, respectively. These boys had scarcely ever been free from hemorrhage for a month at a time prior to the institution of this treatment.

(3) In our study of the blood we attempted to find the cause of the prolongation of the clotting time. We found the blood platelets to be very resistant to hypo and hypertonic salt solution. When the resistance of the blood platelets was overcome mechanically the blood clotted in normal time.

We are continuing our study of hemophilia as our experiments are far from complete.

CARROLL LA FLEUR BIRCH
COLLEGE OF MEDICINE,
UNIVERSITY OF ILLINOIS

GLAUCONITE IN FOSSIL FORAMINIFERAL SHELLS

THIS brief communication has two purposes: (1) to add two more cases from the United States of glauconite occurring in fossil shells of foraminifera; (2) to question the following statement of Twenhofel: "Although there may be some connection between foraminiferal shells and modern glauconites, it is difficult to find any evidence therefor in those of the geologic section."[1]

(1) The writer has been occupied in studying the sediments of the Calvert formation (Miocene) in Maryland. In the field, these sediments show a predominantly light to dark olive-green color. They overlie, unconformably, the highly glauconitic Eocene sands. A laboratory study has revealed the surprising absence of glauconite, except as follows. In Zone 13 (Miocene volume, Maryland Geological Survey), three miles below Chesapeake Beach pier, Calvert County, and at an elevation of 38½ to 45 feet, there occur a number of foraminifera which have in their interiors glauconite. This substance is, in this case, a shiny, dark olive-green; in texture it resembles very fine fish-roe, the individual spheres being quite distinct. The enclosing sediment is a dull, earthy olive-green; no grains of glauconite were seen outside the shells.

In material from the Oligocene Vicksburg group of Mississippi (Brown's Cave, Leaf River), there are numerous foraminiferal shells bearing glauconite in their interiors. Here the color is a somewhat dark peagreen; grains of glauconite are numerous in the enclosing sediment.

(2) In the standard American literature on glauconite, the writer has seen but one specific reference to the occurrence of that substance in fossil foraminiferal shells, and that one is by R. M. Bagg, Jr.[2] In that work no distinction is made between glauconite grains which might have been washed into the shells subsequently and glauconite which obviously formed in the shell itself.

Some material from the Eocene of Chaumont, Paris Basin, furnished me together with that from the Oligocence of Mississippi by Dr. R. E. L. Collins, of Johns Hopkins, shows conclusively that the glauconite now found in the shells had its origin there. Several foraminifera were broken in mounting, and sections of the interior exposed. In all cases the glauconite exactly fits, as a unit, the chamber in which it is found; no sign of finer texture can be seen, in all cases the "unit" of glauconite completely fills the chamber and conforms to all its irregularities. In some cases only several of the innermost chambers are filled and the outer ones show no sign of ever having contained glauconite. It seems impossible to explain such relations by appeal to subsequent filling.

Twenhofel's statement, then, as quoted above, seems unwarranted, since in the Miocene example first described the evidence seems strongly to favor an origin of glauconite in the fossil shells and in the Eocene material from the Paris Basin no doubt can remain that such an origin must be postulated.

A. L. DRYDEN, JR.
BRYN MAWR COLLEGE

[1] William H. Twenhofel, "Treatise on Sedimentation," p. 340, Baltimore, 1926.

[2] R. M. Bagg, Jr., *Bull.* 88, U. S. Geol. Surv., 1898, p. 13.