rather than chromosomal or gene ones, but I am inclined to consider it from that angle at present. The important point which I wish to emphasize is that malignant cells are permanently altered cells that breed true. They are new types or species of cells. This undoubtedly holds for the malignant cells of spontaneous as well as induced tumors. Many spontaneous tumors seem to arise *de novo* as the result of unknown factors at play within the organism entirely unconnected with any outside environmental effects. Others seem to arise from a combination of environmental and autofactors as in locations of chronic irritations. I often wonder if irritable people are more subject to brain tumors than placid ones. If autofactors can produce malignant cells perhaps they can also produce useful alterations. Who knows but that something of this sort has played an important rôle in our evolution and even in our development from the egg. Genes seem to hold the stage just now, but it is not at all clear just how they induce development or evolution. The field is still open to speculation, one of the great sports of mankind.

SCIENTIFIC EVENTS

THE BRITISH NATIONAL PHYSICAL LABORATORY

THE annual report of the National Physical Laboratory, which appeared recently, according to a summary in the London *Times*, states that during 1934, the year under review, there was an increased demand for industrial investigations, which was most marked in the work called for by the shipbuilding industry. The much greater attention given throughout the country to the subject of noise was also reflected in the work of the laboratory, and there was an increase in the number of investigations.

At the William Froude Laboratory no fewer than 60 different designs of ships were tested, this being the highest number since the laboratory was opened in 1911. The modifications in design suggested and carried out by the laboratory have effected large improvement in connection with the resistance of a number of the vessels, and it is estimated that, assuming only one ship of each type was built, that each was steaming for only 200 days a year, and that the life of the ships was 20 years, the net saving to the industry in coal bills alone would be £500,000. Observations made of the height of waves in the Atlantic showed that in a storm they might be up to 25 feet high, rising to 40 feet in a hurricane and that the distance from crest to crest might be about 275 feet.

The subject of noise abatement received much attention in the new acoustics laboratory, and assistance was given to the Ministry of Health in connection with the sound-proof properties of modern walls for use in flats, to the Building Research Board on sound transmission through floors, and to the Ministry of Transport on the limitation of noise from mechanically propelled vehicles.

A new wind tunnel has been designed, and is now in operation, which can be used for studying the behavior of miniature aerofoils, a few inches in length, at a wind speed of 650 miles an hour.

The old British radium standard, which was prepared by the late Mme. Curie in 1913, has been replaced by a new standard consisting of a sample of radium chloride of higher purity. The British radium standard is used for determining, by comparison, the quantities of radium in the needles and other containers used by hospitals.

A section of the report dealing with road research states that special apparatus has been constructed at the laboratory for continuous measurement of impact forces while a vehicle is running along a road. Extensive tests are also being carried out with a heavy six-wheeled lorry running over rough and smooth roads near London, and over obstacles placed on the roads, and on a private road near Oxford impact forces at speeds up to 40 miles an hour are being observed. The results so far obtained show that the maximum impact causing damage to road and vehicle does not necessarily occur at the highest speeds.

Tests made with the object of enabling an aeroplane to fly stalled have led to the trial of a new biplane arrangement in which the upper wings are very much tapered while the lower wings slope considerably so that their tips come close behind the narrow tips of the upper wing. This arrangement was found to be as good as that of a normal biplane as regards performance, and to have a much higher degree of steadiness in stalled flight.

The report, a quarto volume of 260 pages, with 59 illustrations, is obtainable from H. M. Stationery Office for 13s. net.

EDUCATIONAL GEOLOGIC TRIPS IN PENNSYLVANIA

THE Pennsylvania Topographic and Geologic Survey in cooperation with the Pennsylvania Department of Public Instruction has recently inaugurated a plan for conducting geologic field trips for teachers and other interested Pennsylvanians. As a preliminary to the trips, some 2,000 copies of the Survey's bulletin 113, "Pennsylvania Geology Summarized," accompanied by a preliminary announcement of the trips, were distributed in March to high schools, normal

schools, colleges and universities throughout the Commonwealth. This pamphlet summarizes the basic principles of geology and presents a condensed résumé of the geology of Pennsylvania. Following its distribution, return-reply cards were mailed to persons likely to be interested in field trips in two selected regions. It was thought advisable to begin with a limited number of trips until it was determined how the scheme would be received. Three excursions were subsequently held. On May 4, two trips were conducted, the first in the morning and the second in the afternoon, in the region of Chambersburg. These were in charge of R. W. Stone and Dr. Bradford Willard, of the Geologic Survey, and Walter E. Hess, of the Department of Public Instruction. Mr. Hess handled practically all the distributing of the literature and notifying the science teachers in high and normal schools. On May 11 a single trip was conducted by Dr. Willard at Stroudsburg. Mr. Hess again represented the Department of Public Instruction.

Elements of physiography, structural geology, paleontology, stratigraphy, mineralogy and economic geology were discussed on the trips with actual illustrations in the field. An average of 40 attended each of the three trips. The relatively small number made for easier handling of the parties and greater individual attention to questions. On the whole the trips were considered satisfactory both by the persons attending them and those who were instrumental in their planning and execution. Because of their success it is hoped to conduct similar trips in different parts of Pennsylvania in the future.

BRADFORD WILLARD

GRANTS FOR RESEARCH OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES

AT its meeting on April 10, the American Academy of Arts and Sciences announced grants-in-aid from the Permanent Science Fund as follows:

To Frank M. Carpenter, Museum of Comparative Zoology, Cambridge, $350, for expenses in connection with a collecting expedition to Kansas for the purpose of adding material necessary for his work on a "Revision of the Lower Permian Insects of Kansas."

To Tenney L. Davis, Massachusetts Institute of Technology, $300, for technical assistance in the preparation and analysis of certain compounds essential to the completion of his study of the reaction of phosphorus trichloride with cuprous chloride.

To Fred W. Emerson, New Mexico Normal University, Las Vegas, $100, for aid in defraying expenses in connection with a study of the plant associations in the White Sands area near Alamogordo, New Mexico, and in collecting material for the study of palisade cells in desert plants.

To Walter S. Hunter, Clark University, $150, for apparatus, assistance and other expenses to be incurred in investigating the inhibition and disinhibition of conditioned reflexes in human subjects.

To J. W. McBain, Stanford University, $250, for material and equipment to be used in a study of adsorption in the air-water interface of various solutions.

To Arthur S. Graves, Brooklyn Botanic Garden, $250, to help meet expenses in an investigation designed to produce a chestnut resistant to *Endothia parasitica*.

To Professor Robert Weill, of the Faculty of Sciences of the University of Paris, $300, for aid in defraying expenses of a visit to the Bermuda Biological Station to study the nematocysts of Coelenterates.

Applications for grants-in-aid from the Permanent Science Fund of the American Academy of Arts and Sciences will be received by the committee until September 15, 1935, for action at the October meeting of the academy. Applications should be made to Professor E. M. East, *Chairman*, Permanent Science Fund Committee, Bussey Institution, Forest Hills, Boston, Mass.

AWARDS OF LATIN AMERICAN FELLOWSHIPS

THE award of six fellowships of the John Simon Guggenheim Memorial Foundation to Latin American scholars who will come to the United States has been announced.

These fellowships are granted on terms generally similar to those governing the John Simon Guggenheim Memorial fellowships awarded to citizens of the United States. They are awarded to men and women, married or unmarried, without distinction of race, color or creed. The stipends both for Latin America and for the United States are usually $2,000 a year.

At the present time Latin American fellowships are available to citizens of Argentina, Chile, Cuba and Mexico, and also to Porto Ricans. The selection of the fellows whose names are now announced was made by a committee which met in New York, with the advice and assistance of leading scholars and advisory committees in the countries concerned. Two hundred applications were presented this year.

The awards now announced to assist the investigations specified are as follows:

PROFESSOR ALFREDO BAÑOS, JR., professor of theoretical physics, National University of Mexico: Studies of the physical nature of dielectric constant and of the conductivity of dielectrics, at the Massachusetts Institute of Technology.

DR. PEDRO J. BERMÚDEZ HERNÁNDEZ, assistant in zoology and paleontology, University of Havana, Havana, Cuba: Studies of Foraminifera, especially from the paleontological point of view, with the purpose of contributing to a correlation of the Eocene faunas of Cuba