News of Science

Physicians from Abroad and Medical Competence

The admission into the United States of large numbers of graduates of foreign medical schools is described as "reminiscent of the diploma-mill era of fifty years ago" by Willard C. Rappleye, dean of the Faculty of Medicine at Columbia University, in his annual report to President Grayson Kirk of Columbia. After pointing out that at the present time more than 25 percent of the house staffs in the hospitals of the United States are aliens, and that the percentage in a few states is more than 50 percent, the report says:

"It has been predicted recently that over 5,000 foreign-trained physicians will enter the country this year, compared with a total of 6,977 graduates of all the American medical schools. Most of the foreigners will be graduates of unapproved medical schools. In many sections of the country there are now two classes of citizens as far as medical services are concerned: those who are to be cared for by physicians who have had a satisfactory preparation for medical practice, and those whose medical care will be provided for by physicians who are graduates of substandard schools. . . . It is to be hoped that in fairness to the American public as well as to the individuals involved some equitable plan can be worked out to offer opportunities to foreign-trained physicians who would be welcomed as additions to the medical profession in this country, provided they meet reasonably satisfactory standards of educational preparation."

Rappleye's report also discusses a related medical problem, the national supply of physicians: "The gross ratio of the number of physicians in the nation's population—one doctor to about every 750 persons—is approximately sufficient if all were adequately trained, better distributed, up-to-date in their knowledge and skills, and more effectively used in relation to actual needs." Rappleye states that during the last 45 years the number of medical graduates has risen 117 percent, while the population has grown 76 percent:

"The output of the medical schools in recent years has increased more rapidly than the population. Last year the additions to the profession in this country totalled 7,917, almost twice the number of physician deaths reported—about 4,000. The net gain was about 3,900. The figures, however, are the least significant part of the picture, because the quality and competence of doctors are far more important than their numbers."

U.S.-Australian Submarine Cruise

Observations made on a recent United States-Australian scientific cruise on a British submarine will help to determine the exact shape of the earth and have contributed to knowledge of the formation of mountains. Sponsored by the Office of Naval Research, the 7500-mile cruise was made by *H.M.S. Telemachus* between 1 June and 1 Aug. The project was suggested in 1954 by Lloyd V. Berkner, president of Associated Universities, Inc., and the program of gravity measurements was laid out by Maurice Ewing and J. Lamar Worzel of Columbia University's Lamont Geological Observatory, J. M. Rayner of the Bureau of Mineral Resources of Australia, and A. Robertson of the New Zealand Department of Scientific and Industrial Research.

The *Telemachus* crossed the Tasman Sea from Sydney, Australia, to New Zealand, then zigzagged across the Tonga-Kermadec Trench between the Tasman Sea and the open Pacific Ocean. The vessel also visited Wellington and Auckland, N.Z., and the Fiji and Tonga Islands. Observations were made from the submerged submarine at depths ranging from 50 to 200 feet, where disturbances from surface waves are sufficiently reduced to allow precise measurements.

The Tonga-Kermadec Trench, which is about 1200 nautical miles long, extends from Samoa to New Zealand. Along the sides of the trench, the ocean depth is about 15,000 to 20,000 feet, and the trench itself is about 10,000 feet deep, making the distance from the surface of the ocean to the bottom of the trench a total of about 25,000 to 30,000 feet, one of the deepest ocean floors in the world.

A complex pendulum apparatus, invented by F. A. Vening-Meinesz of the Netherlands, was used for gravity observations. During the trip, about 130 gravity measurements were made by Hugh H. Traphagen of the Lamont Geological Observatory and Stewart Gunson of the Australian Bureau of Mineral Resources.

Gravity varies with geographic location because of the shape of the earth and the geologic structure of its crust. The *Telemachus* observations will be used to determine the types of rocks and their thicknesses in this ocean region. The resulting information will be pooled with other gravity observations for a more precise determination of the shape of the earth, a long-sought goal.

The Tonga-Kermadec Trench has been of particular interest to geologists and geophysicists, since it is believed to be an initial stage in the development of a new mountain range. Measurements taken aboard the *Telemachus* furnish new details of this mountain-building process. Sounding and seismic measurements of the trench were previously carried out in 1952–53 by Russell Raitt, of the Scripps Institution of Oceanography, La Jolla, Calif. Results of the work done on the *Telemachus* will be presented at a scientific meeting in Australia in December of this year.

Brain of Birds

It has long been recognized that cerebral evolution in mammals and in birds has gone in different directions. For, whereas in mammals each cerebral hemisphere has come to be dominated by a multilaminated cortex or pallium of superficial gray matter, in birds it consists largely of a deeply placed mass, the corpus striatum, which lies at the base of the telencephalon. The striatum is so uniquely complex and large in birds that it comprises most of the cerebral hemisphere, there being little overlying material that can be termed cortex. Since the olfactory sense tends to be degenerate in birds, it is not surprising that their archipallium, the primitive olfactory cortex, is poorly developed when compared with that of mammals or reptiles.

But what of those cerebral components that have evolved into the nonolfactory, neopallial cortex of mammals? To what extent are they present in the rudimentary cortex? Have they otherwise failed to develop? Or are they also included within the massive corpus striatum? If so, to what degree?

The matter of avian homologs of the mammalian cerebral cortex has occasioned some dispute. An archipallial cortex is indubitably present in birds. Some

workers have also identified a neopallial cortex; but this at best is small and poorly differentiated. In addition, portions of the hyperstriatal area of the corpus striatum have been regarded as homologous to neopallial cortex. Most of the avian corpus striatum, however, has been equated with parts of the mammalian corpus striatum composed of the so-called basal ganglia. Thus the total neopallial component of the bird's brain has been thought to be rudimentary when compared with that of mammals.

Such a concept of the bird's neopallium has been challenged by Stingelin [*Experientia* **12,** 242 (1956)], who states that recent embryological studies by Kallén [*Acta Anat.* **17,** 72 (1954)] show that only the deepest part of the avian striatal complex (palaeostriatum primitivum and palaeostriatum augmentatum) —rather than most of the striatum, as hitherto supposed—is homologous to the mammalian corpus striatum or basal ganglia, whereas by far the major part of the avian striatum (hyperstriatum, neostriatum, archistriatum) is homologous to the neopallium of mammals. This concept, Stingelin thinks, is supported by recent investigations in morphology, physiology and animal psychology. The stratified arrangement of the avian striatum in highly cerebralized forms, moreover, indicates that it is a structure of integration. Hence, concludes Stingelin, the neopallial complex of birds is strictly comparable to that of mammals in both function and organization.—W. L. S., JR.

Galapagos Research Station

European biologists are attempting to establish an international biological research station on one of the Galapagos Islands, which are in the Pacific 658 miles west of Ecuador. The project is being sponsored by the International Union for Cooperation, Brussels, Belgium. The union has received approval of the plan from the Ecuadorian Government, which will provide part of the staff and an island site if funds can be raised elsewhere.

The Galapagos were first surveyed more than a 100 years ago by Charles Darwin during his round-the-world voyage. He noted on his return to England "the manner in which closely allied animals replaced one another in proceeding southward" and considered that the Galapagos fauna in particular had provided him with "the origin" of his views on the creation of species.

Subsequent surveys have shown that 37 percent of the coastal fish, 40 percent of the plants, and 96 percent of the reptiles on the islands were not found anywhere else in the world. This is thought to be a result of geographic isolation.

The great tortoises on the islands, weighing up to 400 pounds, and the iguana lizards, are now reported to be in danger of extinction from semiwild dogs and pigs that eat their eggs.

U.S. Physician and Laos

Thomas A. Dooley, a young physician from St. Louis, Mo., has gone to Laos, where he has offered his services to the Laotian Public Health Department. During the war Dooley served as a naval physician at a refugee camp at Haiphong in northern Vietnam. His return trip has been financed by proceeds from the sale of his book on his experiences. United States companies have given Dooley drug supplies and other equipment, and he is accompanied by three former Navy medical corpsmen who served with him at Haiphong.

In an interview in Hong Kong on 27 Aug., Dooley commented that the Communists who are infiltrating the underdeveloped Asian countries "appear to practice exactly what we preach." For example, they have sent 22 physicians to Cambodia.

Radioactive Reserpine

Reserpine, a drug extracted from the *Rauwolfia* plant and used for the treatment and cure of certain mental disorders and for the reduction of high blood pressure, has been produced in a radioactive form at Argonne National Laboratory. The new drug was produced by growing the plant in an atmosphere containing radioactive carbon dioxide.

The research team that carried out the work consisted of Edwin A. Peets and Arthur Schulert, of Columbia University's Lamont Geological Observatory, and John Skok and William Chorney, of Argonne's biological and medical research division. Radioactive reserpine will be used at Columbia in studies that involve physiological and biochemical actions in the animal body.

Arctic Flora Study

A "coldhouse" to study arctic flora is to be built at the Botanical Gardens in Copenhagen, Denmark. A refrigerator will be used to keep temperatures just below freezing in winter and at a maximum of between 55 and 60°F in summer.

The Copenhagen University Institute of Biology estimates the cost of the project at approximately 250,000 kroner (about $35,000). The Rockefeller Foundation has contributed $20,000 and Danish foundations will provide the balance.

The coldhouse was planned by two Copenhagen University botanists, Tyge Boecher and Thorwald Soerensen, both of whom have made botanical expeditions to Greenland. Last month Boecher visited Copenhagen University's Arctic Institute on Disko Island off the coast of Greenland to collect seeds and plants for the coldhouse. Plans are also being made to grow seeds collected from other parts of the Arctic, Canada, Norway, and the Alps, and other mountain areas.

Nuclear Energy Notes

The U.S. Atomic Energy Commission has approved the negotiation of a contract for limited development work on a unique nuclear power reactor system that was proposed jointly by the Chugach Electric Association of Anchorage, Alaska, and the Nuclear Development Corporation of America of White Plains, N.Y. The proposal is for a power reactor of 10,000-kilowatt capacity that would use heavy water as moderator, liquid sodium as coolant, and slightly enriched uranium as fuel. The plant would be located at Anchorage.

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The Danish Atomic Energy Commission has purchased a farm on the island of Risoe, west of Copenhagen, where a nuclear research station is to be erected. The farm will be used for experimental work in such projects as the application of radioisotopes to the improvement of crops and the storage of farm products.

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The European Organization for Nuclear Research (CERN) has recently accepted a $400,000 grant from the Ford Foundation, to be spent over 5 years, to help in strengthening cooperation in nuclear physics research, primarily with the United States and with other countries not members of CERN. The grant is expected to be used mainly to enable guest professors to visit CERN and to give young scientists opportunities to work in its laboratories.

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Construction of France's first electronuclear power plant for peaceful uses will begin soon in the Loire Valley. The installation will be built by Electricity of France, the nationalized electric power industry, at Voine, between the Vienne and Loire Rivers. The plant's reactor, which is to be completed in 1959, will have an initial capacity of about 60,000 kilowatts, with a probable expansion to 300,000 kilowatts.

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The U.S. Atomic Energy Commission has reduced its prices for carbon-14 and iodine-131. The cost of carbon-14 is now $28 per millicurie for shipments in amount of 199 millicuries or less; for shipments in amounts greater than 199