GENERAL SCIENCE

JFK's New Science Advisor

Dr. Donald F. Hornig, the new top science advisor to President Kennedy has wide interests, not only in scientific fields, but also in sports and music.

➤ BY PICKING Dr. Donald F. Hornig to be his top science advisor, President Kennedy once again has demonstrated his deep concern for the nation's space program.

For although Dr. Hornig is chairman of Princeton University's chemistry department, his scientific talents extend in many directions and have been concentrated lately on the problems of space.

During the monthly two-day meetings of the President's Science Advisory Committee, on which Dr. Hornig has served since 1960, he has been the chief consultant on the scientific aspects of space exploration.

President Kennedy doubtlessly has been impressed by Dr. Hornig at those meetings. Dr. Hornig presents "brilliant and lucid" off-the-cuff ideas in "beautifully organized prose," one observer said.

He can speak well, too, on oceanography and atomic energy.

During World War II, while in his mid-20's, he was a research associate at the Woods Hole, Mass., underwater explosives research laboratory and later was a group leader in developing the first atomic bomb.

Dr. Hornig will move permanently to Washington within the next few months and take over the desk of Dr. Jerome B. Wiesner.

Dr. Wiesner has been appointed dean of the School of Science at the Massachusetts Institute of Technology, Cambridge, succeeding Dr. George R. Harrison who is retiring.

Dr. Hornig is slated also to take over Dr. Wiesner's job as director of the Office of Science and Technology, a $22,500-a-year post.

His new office is on the second floor of the ornate Executive Offices, with a view of the First Division Monument out of one window and the White House out of another.

Before 1961, when President Kennedy tapped Dr. Wiesner, the office was occupied by Dr. James R. Killian and Dr. George B. Kistiakowsky, both close friends of Dr. Hornig.

Besides occasional skiing trips with Dr. Kistiakowsky, who has returned to Harvard University, Dr. Hornig's hobbies include tennis, listening to music and playing the violin.

His wife, Lilli, has a Ph.D. in organic chemistry and is the daughter of a well-known organic chemist, Dr. Erwin Schwenk. She used to teach, but now has her hands full taking care of the four Hornig children.

As a departmental head, her husband is loaded with administrative duties, too. But he still teaches graduate courses in molecular structure and advanced physical chemistry.

Often, late at night and on weekends, he can be found in the Princeton laboratories working on special experiments related to missile and space research. He currently is examining problems of molecular spectroscopy, quantum chemistry, the kinetics of shock waves and the use of intense light in chemical reactions.

"He has more energy than anybody around here," Dr. Hornig's secretary, Mrs. Inge Flesch, said of her boss. "When there is a job to be done, he just gets up and goes to it."

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BIOCHEMISTRY

High Metabolism Caused By Action Inside Cells

➤ BY PROBING with the electron microscope into unrealized complexities of the living cell, medical biologists are discovering that disorders within this unit of living matter can cause disease.

In an unusual case reported from Sweden, a woman who continued to have unusually high metabolism, such as is seen from an overactive thyroid, continued burning her food at a high rate even when the thyroid gland had been removed.

A part of the ultrastructure of the cells of her body was found to be overproducing the hormone usually supplied by the thyroid. This case has caused medical researchers to search for other instances of this kind of disorder. They are also alert for undisclosed functions of the many kinds of complex mechanisms that are being recognized in the cells.

A team made up of Drs. Bert Vallee and Warren Wacker of Harvard University and Peter Bent Brigham Hospital, Dr. Don W. Fawcett of Harvard and Dr. Howard K. Schachman of the University of California at Berkeley told a conference in Cambridge, Mass., arranged by the Council for the Advancement of Science Writing about the new molecular approach to medicine.

For the future, enzymes, protein substances made by the body and synthetically, are expected to play a large role in the diagnosis and cure of disease. Already one enzyme, lactic dehydrogenase (LDH) has been shown capable of diagnosing, by rise of its level, cases of acute myocardial infarction (acute heart attack) that cannot be positively spotted by electrocardiograms.

Similarly, increased LHD allows recognizing the most common pulmonary disease, embolism, and distinguishing it from misdiagnosed pneumonia. LHD determinations can be used to screen cancers of the kidney and bladder from benign cysts.

Enzymes also give promise of being useful in treating both alcoholism and ethylene glycol (antifreeze) poisoning.

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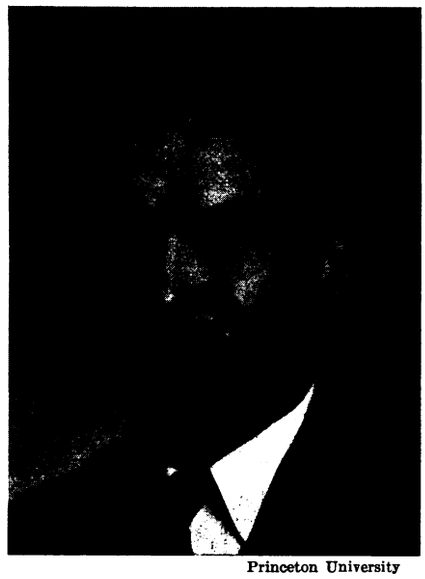

Princeton University

DR. DONALD F. HORNIG

NATURAL RESOURCES

Frozen Ground Rich in Treasures

➤ VAST TREASURES lie frozen underground, waiting for modern science and technology to dig them out.

Rich deposits of coal, iron, gas, petroleum and minerals are buried in vast chilly regions toward the North and South Poles.

If man could unlock the hydroelectric power that is frozen deep in North America, he would have a source of power equivalent to the potential waterpower from all the rest of the continent, according to Prof. Kenneth B. Woods of Purdue University, an authority on permanently frozen ground.

The region of permafrost, as the frozen ground is called, is a curious world. Here ice can take geometric forms such as wedges, lenses and polygons; water has been found in fluid form, and remains of 20,000-year-old mammoths have been found remarkably preserved.

Permafrost underlies one-fifth of the world's land area, including most of Alaska, nearly half of Canada and a vast area of Russia. It also stretches under the exposed rim of Antarctica, as well as under many islands and the higher parts of some of the world's mountain ranges. Depth of permafrost may range from a few inches to 2,000 or more feet.

Details about this strange, silent land, and problems of extracting its riches were reported at the first International Conference on Permafrost at Purdue University, Lafayette, Ind. Scientists and engineers from ten countries, including Poland and Russia attended the conference.

The Russians pioneered in permafrost research in the late 19th and early 20th centuries while building the 4,500-mile Trans-Siberian Railroad. Most U.S. research has been developed since the beginning of World War II.

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