

and cooperation can achieve miracles, and they are impatient to carry this great experience into other fields. This is a natural enthusiasm, but it needs to be tempered by patience and wisdom.

In the next twenty years a scientist, whether in or out of government, must expect to work under limitations of secrecy in almost every branch of science. These limitations on discussion, publication and free interchange of ideas are, of course, opposed to the whole tradition of science and will inevitably hamper its growth. Our constant effort must be to limit secrecy to those areas where it is necessary for national safety and to remove it as quickly as we can from all other areas. This involves constant review and revision, and is today one of our most important responsibilities. In the future, government will need increasingly men who understand both the values of science and the realities of the political world. I believe that scientists in the next twenty years will play a far more important role in government than ever before, and I hope they will accept government service if they are asked to do so.

Integrity Vital

As we prepare to defend this country and our allies against the possibility of aggression in the period ahead of us, we must all remember that no country is stronger than the integrity of its individual citizens. Because scientists are more apt to have access to secret information than other groups, they must be even more conscious of this fundamental truth. The scientists of this country are a high-minded, intelligent and loyal group of men and women. Thousands of American scientists have had and still have access to secret information upon which the safety of this country depends, and daily these scientists fully understand the nature of this public trust. It is very rarely indeed that a scientist fails to carry

into public life the integrity that is the hallmark of his profession. All Americans, no matter what their occupation, will need to remember in the period ahead of us that no possible excuse can exist for a man to break his word of honor. If he does not believe in the objectives of the society for which he works, he is free to criticize those objectives, but he is never free to betray them. Criticism is a very different thing from betrayal and this again is something all of us will need to remember as we stand firmly for defense of our constitutional rights at the same time that we work for the defense of our country.

There are many thoughtful men who are frightened by the developments of modern science. I do not share that fright. Those who work in modern science know that it is based not only on objective analysis but also on originality of mind and on cooperation, tolerance and integrity. All scientists depend on the work of their predecessors and progress through the cooperation and honest criticism of their colleagues, criticism which is instantly accepted if it is valid. Men and women have of course developed these same qualities in other fields. I believe that if men are intelligent enough to

create mathematical formulae, airplanes, radios, and atomic weapons, they are also intelligent enough to learn how to live together. I believe we will achieve this, and not be destroyed by the tools we have made. I hold firmly to my conviction that we are greater than our tools. For this reason I believe that the prize winners here tonight will ultimately practice their profession in an era of peace.

As scientists in the second half of the 20th Century, you will have an opportunity to join that happy company of men who have felt a compulsion to inquire, to understand, to interpret, and to create. Such men, whether artists, scientists or statesmen, have enriched the vigorous and free society that is our heritage. You will know the pleasure of thought, the exhilaration of building a structure of logic based on established facts and under the discipline of inexorable laws. You will test your ideas by experiment, or see others test them. You will know what it is to struggle through a problem alone and suddenly find the truth as if by revelation. To use your mind in this way is one of the great experiences of life. I hope that each of you who have won these awards tonight will share in this experience.

Science News Letter, March 10, 1951

MEDICINE

Germ Chemicals Heal

► SUCCESSFUL use of two chemicals from hemolytic strep. germs to speed healing of infected wounds is reported by Drs. Joseph M. Miller, Milton Ginsberg, Raymond J. Lipin and Perrin H. Long of the Johns Hopkins School of Medicine (JOURNAL, AMERICAN MEDICAL ASSOCIATION, Mar. 3).

Drs. Miller, Ginsberg and Lipin are also associated with the Veterans Administration Hospital at Fort Howard, Md., where the patients were treated.

The two chemicals are called streptokinase and streptodornase. They act to liquefy blood clots, pus and other waste products

produced in certain types of infections and injuries. Removal of this material from infected and wounded areas is necessary for healing and growth of healthy tissue.

The strep. chemicals do not act like antibiotics to check the growth of disease germs, but they may be used with antibiotics if these are needed.

Bedsore, rectal infections, amputated stump infections, pilonidal cysts with abscesses, soft tissue infections and collections of blood in the chests were the types of conditions treated.

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GEOLOGY-PHYSICS

Earth Structure Studied

► THE PULL of the sun and the moon on the earth should provide new knowledge about how the earth is constructed.

As the moon moves around the earth and the earth around the sun, the gravitational forces they exert are different in different parts of the world. But these variations are often greater or less than would be expected merely because of the positions of the moon and sun.

Studies carried out in Honolulu and on the California coast show variations about 132% of that which should be expected

from a theoretically rigid earth, Dr. Louis B. Slichter of the Institute of Geophysics of the University of California at Los Angeles reports (SCIENCE, Feb. 23).

The earth, under the crust, may be stiffer at some points than at others, accounting for the difference. Or there may be other reasons connected with the earth's structure which causes these variations.

The variations will be investigated further to see whether they give any clues as to what the inside of the earth is like.

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