

## PHYSIOLOGY

**Russians Report Changes In Kidneys of Aviators**

► **FLYING** at altitudes around 15,000 feet causes characteristic changes in kidney function as a result of the lack of oxygen, experiments at the Central Institute for Post-Graduate Physicians in Moscow show.

The oxygen lack acts as a stimulus to set up a conditioned reflex connection between the brain and the kidneys, a woman scientist, Dr. Tarasanko found. Such reflex connections between the brain and many other organs were described by the great Russian physiologist, the late Academician I. P. Pavlov, and the present work is said to offer further evidence to support his teachings.

The discovery of the kidney changes caused by oxygen lack was made in the course of experiments under reduced barometric pressure corresponding to altitudes of about 15,000 feet. Analysis of the kidney excretion of persons who had been at this experimentally induced high altitude for an hour unexpectedly revealed characteristic and constant changes in certain components appropriate to marked oxygen starvation.

The kidney reflex reaction to artificial high altitude gradually disappears after seven to nine tests but can be induced again by return to the experimental high altitude environment.

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## GENERAL SCIENCE

**Scientists Urged to More Political Activities**

► **SCIENTISTS** are urged to greater political activity and to formulate their views in order that the interests of science may be more ably presented and its progress accelerated. This is the message of an editorial (*The Review of Scientific Instruments*, August) written by Dr. Gaylord P. Harnwell, physics professor at Princeton University, and editor of the journal.

Scientists, he says, are predominantly individualistic and ordinarily take little interest in politics. But endowments are shrinking and scientific research is being increasingly supported by public funds and by industry. Moreover, the government has its own research institutions which with the war emergency have enormously expanded so that scientific activities are coming more and more under government direction.

"The action of Selective Service Boards," Dr. Harnwell continues, "affects not only present scientists but future ones through a diversion of talent from scientific training . . . it is our obligation as scientists to be sure that our point of view and interests are ably presented and adequately considered."

"The number of scientists is too small," Dr. Harnwell says further, "for its vote to be of significance. However, an organized minority, particularly if it enjoys wide popular respect and is sufficiently articulate, can exert an influence well beyond that of its individual members . . . and an effort should be made to crystallize our basic tenets in order that the needs of science in our society may be more ably presented."

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## GENERAL SCIENCE

**Offer Soviet Cooperation To American Colleagues**

► **CONFIDENCE** was expressed that "cooperation between Russian and American scientists will contribute to the extermination of the common foe of Hitlerism" in cabled greetings transmitted to Science Service by the Soviet Scientists Anti-Fascist Committee in Moscow. It was suggested that information should be exchanged between scientists of the two nations. The Soviet Committee has transmitted to Science Service reports of current Soviet researches.

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## NUTRITION

**Cheaper Vitamin B<sub>2</sub> Can Be Made From Yeast**

► **CHEAPER RIBOFLAVIN** (vitamin B<sub>2</sub>) for bread enrichment is the prospect held forth by Dr. Jonas Kamlet of Miles Laboratories, Inc., New York City. Ribose, a special sugar which is the only raw material from which riboflavin can be elaborated, is produced by a strain of yeast that is fed on waste sulfite liquor from paper-pulp mills, one of the most troublesome of all industrial wastes.

The process was developed first at the National Bureau of Standards, Dr. Kamlet stated, and the first commercial installations are two plants set up in Canada by a Swedish engineer, G. Heijkenskjold. Similar plants will be built in the United States after the war.

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**IN SCIENCE**

## CHEMISTRY

**Dyes Made From Coal Instead of Coal Tar**

► **DYES MADE** directly from soft coal, instead of the time-honored coal tar, were described before the meeting by Dr. H. B. Charmbury of the Pennsylvania State College. The coal is first treated with nitric acid, to obtain a foundation material which is then treated with organic acids and inorganic alkalis to produce the dyes themselves. These direct-from-coal dyes were tried by Dr. Charmbury on animal fibers like silk and wool, vegetable fibers like cotton and linen, and synthetics like rayon and nylon, with successful results.

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## MATHEMATICS

**Criminal Statistics Now More Speedily Digested**

► **CRIMINAL** statistics can be more quickly worked up and more accurate conclusions drawn by the modern method of "judiciously" sampling the whole available material with regard to accuracy and completeness of data, instead of taking many hundreds or perhaps a thousand or more cases, as heretofore, and attempting the herculean task of working them all up.

This is the view expressed by Dr. Ruth Struik, mathematician of Radcliffe College, and Dr. Miriam van Waters, penologist and superintendent of the Massachusetts Reformatory for Women in Framingham, in a paper presented at the annual meeting of the American Mathematical Society.

The old method, they said, was long and expensive, requiring a whole staff of clerical assistants of doubtful reliability, and depended on the mathematics of large numbers to cancel out, more or less, the conflicting errors. The results did not always agree with the experience of those dealing for years with criminals, and sometimes were startlingly different.

By the new method, one expert can carry out a whole investigation and reach results quickly and accurately.

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# E FIELDS

## NUTRITION

### Vitamin A Helpful in TB, Test on Animals Shows

► **DESTRUCTIVE EFFECTS** of tuberculosis germs in the lungs of diseased mice were reported to the American Chemical Society by Dr. C. P. Katsampes and Dr. A. B. McCoord of the University of Rochester School of Medicine.

They produced tuberculosis in 120 white mice by infecting them with human tubercle germs. Half of the mice received plenty of vitamin A, the remainder none. Within 28 days, about 60% of the mice died. However, the animals receiving the high vitamin A diet tended to live longer. While the lungs of normal mice contain a considerable amount of vitamin A, the lungs of the diseased mice had scarcely a trace of it.

Blood of severely ill human TB patients, the investigators found, is lower in vitamin A than that of healthy persons. They called attention to the general practice of giving tubercular patients cod liver oil and other foods rich in this vitamin.

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## TEXTILES

### Sex Equality in Clothes, Textile Expert Predicts

► **ONE TIME-HONORED** quarrel between husbands and wives will be eliminated this winter. Thinly-clad wives will no longer say, "Dear, turn up the thermostat, it's freezing in here," while their husbands growl, "Why don't you put some clothes on if you're so cold?"

For one thing, there won't be that much heat. For another, men and women will be wearing approximately the same weight of clothing—heavier for women, lighter for men, according to the prediction of M. Earl Heard, Dean of the Philadelphia Textile Institute of the Philadelphia Museum of Art.

This further step toward equality between the sexes will be made necessary by wartime fabric shortages, reports Mr.

Heard (*Journal of Home Economics*, Sept.). This will necessitate the production of wools and wool blends which can be used interchangeably for both men's and women's wear.

Doctors and hygienists who have complained for years about the unhealthy dilemma of winter-clad men who must swelter in steam heat, or take the risk of their wives' catching pneumonia with the temperature below 75 degrees, should be pleased with this news. Marital harmony should be enhanced, too, when husbands cannot say, "Put on some clothes," nor wives properly retort, "Why don't you take off your coat if you're so hot?"

"Accent on the heavier slack or suit-weight utility clothes" will be the fabric trend this winter, Mr. Heard believes. He quotes a market authority that 1943 staples will be gabardines, whipcord, men's suitings adapted to women's wear, flannels, coverts, tweed-type rayons.

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## CHEMISTRY

### New Process Gets Alcohol Cheaply from Wastes

► **SMOKELESS** powder and synthetic rubber can be made cheaply and abundantly, using alcohol from watery wastes now poured down the sewer. The economics of the method, which by-passes the expensive distillation process, were explained before the meeting of the American Chemical Society at Buffalo by Dr. Donald F. Othmer and Dr. R. L. Ratcliffe of the Polytechnic Institute of Brooklyn.

Waste liquors from paper mills and other industrial plants, as well as sawdust, straw, cornstalks and other agricultural wastes, contain sugars capable of being fermented into alcohol. But the solutions are so thin and watery that the fuel needed for distillation is worth more than the alcohol that could be obtained.

Key to the riddle is fusel oil, one of the most troublesome devils of the late unlamented bootleg era. Fusel oil dissolves alcohol but will not mix with water. So this toper's enemy is put to work getting the alcohol out of the watery wastes. Subsequently a chemical divorce between the alcohol and the fusel oil is arranged.

A similar use of fusel oil can be made in getting acetone and other valuable industrial solvents out of solutions until now considered too thin to be profitably worked.

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## MEDICINE

### Many Animals Can Carry "Rabbit Fever"; Ask Report

► **RABBIT FEVER** is the popular name for tularemia, but remember that it is not just rabbits that can carry the disease. Tree squirrels, opossums, skunks, coyotes, quail, ground hogs, muskrats, deer and red fox are among the animals that have given the disease to those who handled or were bitten by them. Certain ticks and deer flies can also transmit the disease.

Tularemia is increasing yearly in the United States and has now been added to the diseases on which the U. S. Public Health Service receives weekly telegraphic reports from the state health officers. It has recently become quite a problem in the northwestern part of Arkansas, where 58 cases have been reported this year so far, but the disease is by no means limited to Arkansas.

"There is no specific preventive or curative treatment for the disease," the federal health service states.

Best way to avoid the disease is to avoid handling wild rabbits with the bare hands. Be careful also about handling any of the other wild animals that may have the disease if they appear sick and are easily caught or shot. Their sickness might be tularemia.

Unlike many other germs, the germ of this disease can go through healthy skin without having to have a cut or scratch or bite to get through the skin. Those who skin, dress and cook or otherwise handle wild rabbits should therefore protect themselves by wearing rubber gloves, being sure there are no tears or pinholes in the gloves to let the germs through to the skin. Infected meat is made safe by thorough cooking but the germ will remain alive and virulent in the red juices of partly cooked game.

Liberal use of soap and water, followed by disinfection, is recommended to remove the blood or other infected material if any gets on the hands or splashes on arms or face of those handling, dressing or cooking wild rabbits. The same precaution should be observed after touching the fur of wild rabbits killed in areas where tularemia exists.

Carcasses of rabbits or other game in which peculiar whitish spots are found on both liver and spleen should be suspected of tularemia and should be discarded and buried or burned.

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