

ENGINEERING

Gas Turbine Warplanes Are Already in the Air

➤ GAS TURBINE-powered warplanes are already in the air, thanks to the discovery that certain alloys, added to steel, provide a material able to withstand the very high temperatures at which such engines must operate for efficiency.

Discovery of these alloys, which he called "vitamin alloys," was disclosed by Fred K. Fischer, an engineer of the Westinghouse Electric and Manufacturing Company at the meeting of Western Massachusetts Engineering Society, in Springfield. All early attempts at development of successful rotary gas engines have failed, he said, because the science of metallurgy has never until now been able to provide the materials to stand these high temperatures.

"It is only with the recent discovery of the formula for adding the 'vitamins' to steel, a formula to which many men and many laboratories have contributed, that this difficulty has been overcome," he stated.

"Censorship will not permit the actual 'recipe' of the new steels to be disclosed," he added, "but it does permit the disclosure that the combination of elements used is tungsten, molybdenum, columbium and titanium. These are used with such bases as nickel, cobalt and chromium. It is the proportionate quantities of all these that is secret."

Science News Letter, September 30, 1944

PSYCHIATRY

NP Discharged Soldiers Not Getting Needed Care

➤ MEN REJECTED or discharged by the Army for neuropsychiatric reasons are many of them in need of psychiatric treatment or advice, but only a very small proportion are able to get this help, a study by the New York City Committee on Mental Hygiene of a typical group of men in that city shows.

The group studied included 314 men rejected by the Army and 309 who were discharged. Of these 623, about 80%, or 492, were found to be in need of some form of psychiatric help. About 25%, 123, realized themselves that they needed help and wanted it. But only 25 men were actually getting it. This shows that facilities for this sort of care are totally inadequate even in New York City.

The total number of men discharged

or rejected for neuropsychiatric reasons amounts to about 135,500 in New York City alone.

The survey is considered by the committee to have national as well as local significance, and the report has been submitted to the War and Navy Departments, the U. S. Public Health Service, National Selective Service, and other agencies interested in this problem.

The study was made under a grant from the Commonwealth Fund and was conducted by a committee on psychiatric needs in rehabilitation, with Dr. Lawrence S. Kubie as chairman.

Science News Letter, September 30, 1944

ANTHROPOLOGY

Wide Geographic Gap Between Early Races

➤ A STRANGE and very wide geographic gap exists in the distribution of the earliest known races of man, Prof. Fay-Cooper Cole of the University of Chicago pointed out in his address as retiring vice president of the American Association for the Advancement of Science's section on anthropology.

Some scores of thousands of years ago during the last great Ice Age, Pithecanthropus appeared in Java and Sinanthropus in China. At approximately the same time Heidelberg man appeared in Germany and two ancient (and still-disputed) human types in England. But in the whole vast continental stretch between northwestern Europe and southeastern Asia no human remains of comparable age have yet been found.

Prof. Cole also cast some doubt on the claim of Africa to title as cradle of the negro race. There are some indications, he stated, that negroes may have originated in northern India and that their occupation of Africa may be of relatively recent date, in terms of evolutionary time.

Science News Letter, September 30, 1944

GENERAL SCIENCE

Speaking for an Audience Aids Memory of Speaker

➤ TELLING a story before an audience, a speaker remembers more details, puts in more interesting description and makes more effort to clarify and elaborate difficult ideas than he does in talking to an individual. Dr. Nelson G. Hanawalt and Katharine Ford Ruttiger found in a study made at the New Jersey College for Women, Rutgers University.

Science News Letter, September 30, 1944

IN SCIENCE

NUTRITION

Brain Activity Depends On the Food You Eat

➤ "WHAT you think about depends on what you eat and not on the books you read," declared Dr. T. C. Barnes of the Hahnemann Medical College, Philadelphia, in the course of a paper on the physiological basis for the electrical activity of the brain.

Brain waves, the rhythmic electrical pulsations that can be measured by sufficiently delicate detecting instruments through skin and scalp, are greatly influenced by the concentration of sugar in the blood, Dr. Barnes found. These waves, he explained, are produced by a complex chemical known as acetylcholine, which requires sugar and carbon dioxide for its build-up.

Science News Letter, September 30, 1944

AERONAUTICS

System Keeps Oil Flowing Freely at 45,000 Feet

➤ A NEW lubrication system that assures perfect flow of oil at altitudes up to 45,000 feet will enable Army and Navy planes to fly higher than any known Axis aircraft, Dr. P. H. Schweitzer, professor of engineering research at Pennsylvania State College, and A. P. Sharples, president of the Sharples Company, Philadelphia, told a meeting of airplane engine manufacturers, lubrication experts, and representatives of the Army and Navy.

Ordinary lubrication systems fail because of low barometric pressures encountered at high altitudes, the authors stated. The new system gets around this through the use of a scavenger pump, ordinarily used to carry excess oil from the engine back to the oil tank, as a booster. When the oil pressure begins to get low, the scavenger pump supplies enough mixture of air and oil to permit efficient operation of the engine.

The design of the new system, known as the S-S Lubrication System, permits the location of the oil tanks at any point on the plane, they said.

It is probable that the new system will be used after the war for commercial flying in the stratosphere.

Science News Letter, September 30, 1944

CE FIELDS

ORDNANCE

New Incendiary Bullet Penetrates Gasoline Tank

➤ A NEW armor-piercing incendiary bullet is now being used by American gunners on all battlefronts as an offensive weapon to penetrate enemy gasoline tanks and ignite the explosive vapors, the War Department announced.

The .50 caliber incendiary bullet explodes inside the pierced tank. It was developed by research under the direction of the U. S. Army Ordnance Department. The bullet has been kept secret for about a year.

Even a self-sealing gasoline tank with protective armor can be blown up with the new bullet. It is now in mass production and has been supplied in large quantities to Army Air Forces and other air groups in Europe and the Southwest Pacific.

Science News Letter, September 30, 1944

CHEMISTRY

Stream Pollution Abated At Reasonable Cost

➤ ABATEMENT of stream pollution from factory wastes can be successfully carried out at a cost commensurate with the accruing benefits, declared William S. Wise, chief engineer, Connecticut State Water Commission, speaking at the meeting of the American Chemical Society in New York.

"The economic loss resulting from stream pollution is a real one and of considerable magnitude, even though it cannot readily be evaluated on a monetary basis," he said.

Stream pollution abatement problems in general are made up of a number of complex and intangible factors, such as stream size and characteristics, character and volume of wastes, natural laws and self-purification, local conditions and needs, and the uses made of water courses. The development of successful waste treatment processes depends upon a thorough knowledge of their composition and reaction, Mr. Wise added.

It is physically possible for manufacturers, he said, "to carry treatment of practically all industrial wastes by a process or combination of processes to a degree of purity which would permit

their discharge into almost any water course."

There is an economic balance determining for what purposes a stream can or should be used, the speaker continued. "Reasonable classification of all waterways in a state or region, designed to restore and maintain them in a state of purity economically feasible, provides a foundation upon which a pollution abatement program can be developed," he added.

Science News Letter, September 30, 1944

MEDICINE

T. B. Death Rate Declines Slightly During 1943

➤ THE TUBERCULOSIS death rate declined slightly throughout the nation during 1943, the National Tuberculosis Association has announced on the basis of provisional reports from state health departments.

Total number of tuberculosis deaths for the year were 56,178, with 118,042 new cases reported. The 1943 death rate was 41.9 per 100,000 population, compared with 43.1 in 1942.

An increase in deaths generally was noted, however, in reports from highly industrial states.

Despite the decrease for the nation as a whole, the downward trend in tuberculosis deaths has slowed, Dr. Kendall Emerson, managing director of the association said, warning that every precaution will be needed to prevent a wartime increase.

Science News Letter, September 30, 1944

INVENTION

Soft, Spongy Cushion Made From Hair and Bristles

➤ A CUSHION for airplane pilots and bombardiers made from cattle hair, pigs' bristles, and reclaimed rubber was one of the features of the Firestone Tire and Rubber Company's war industries exhibit in New York.

Other items shown include an anti-aircraft gun, a barrage balloon, an autogiro, the world's largest and smallest tires, giant military pontoons, pneumatic rafts and life belts, bullet-sealing gasoline tanks, automobile tires that can run after being torn by bullets, plastic jungle screening that retains its shape even if a pencil is pushed through it, and hundreds of other products created from rubber, metals, and plastics.

Science News Letter, September 30, 1944

ZOOLOGY

Rat Population Averages 77 Per City Block

➤ THE PIED PIPER, if he should return today to one of our modern Hamelin Towns, would have to exchange his pipe for an adding machine: rat extermination has gone statistical.

At the meeting of the American Association for the Advancement of Science, Dr. John T. Emlen, Jr., of the Johns Hopkins Hospital told how a rat census was taken in 89 city blocks in Baltimore during intensive extermination campaigns. Box traps were used until about 90% of the rats in a block had been taken, and the remnant was then wiped out with gas and poison bait.

Rat populations of individual blocks varied. They ranged from none at all to 200 per acre, with an average of 20 per acre or 77 per city block.

Science News Letter, September 30, 1944

ASTRONOMY

Fireball's Path Traced To Indiana-Ohio Border

➤ THE GREAT fireball of Aug. 18 that streaked across Indiana and Ohio in daylight has had its path traced, thanks to about 150 reports sent in by readers of newspapers served by Science Service.

Dr. Charles P. Olivier, director of the Flower Observatory in Pennsylvania, and president of the American Meteor Society, has traced the fireball's path back to near the Indiana-Ohio border southeast of Portland, Ind.

The meteor exploded over Wabash County, Ill., at a height of 10 to 20 miles. Fragments seem to have gone considerably farther, Dr. Olivier finds, and meteorites or "stones from heaven" should be sought in that region.

Loud sound effects are reported from many places. A smoke train, along the latter part of the path, lasted fully 10 minutes and drifted southward.

Anyone in southeastern Illinois who saw the object in the sky about 8:15 a.m. CWT on Aug. 18 who has not yet reported his observation is urged by Dr. Olivier to do so in order that more accurate and complete heights and orbit can be determined.

The height and rate of drift of the smoke train are of great value to scientists since this information will give facts about the upper atmosphere that can be obtained in no other way.

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