GENERAL SCIENCE

Proposes Special Colleges For Science in England's Service

Sir William Bragg Points Out Peril of Neglecting Science, Leaving Its Use to Others Less Well Disposed

POST-WAR England will have special colleges devoted to training men for a career in applying science in the nation's service, if the proposal of Sir William Bragg, president of Britain's Royal Society, is carried out. (*Nature,* Dec. 7, 1940)

These colleges devoted to applied science would be founded just for this purpose as in the past schools were founded to train men for the ministry or for the State.

The war has brought to England an appreciation of the importance of science in the service of the nation, Sir William points out.

The recently formed Scientific Advisory Committee, British parallel to our own National Defense Research Committee, is in close and direct association with the Cabinet, the nation's governing body. Its functions are broader than merely to give advice in carrying on the war. It is, Sir William explains, "to watch all occasions and opportunities for the employment of science in the service of the nation, and also for the continuous encouragement of that employment."

"Science," Sir William told the Royal Society, "may be rightly or wrongly used. There is a prime danger if those who are in the position to use it rightly shut their eyes to its presence and its power, like an army which relies on bows and arrows when its enemies know how to use machine guns.

"It is not universally or even sufficiently understood how important natural knowledge has become. It is true that in a vague way the nation is brought by the happenings of war to guess at the meaning of scientific research in every kind of enterprise. But still it would be difficult for most people to grasp the significance, much less the meaning, of the description of a fact like this: that the Royal Air Force could not carry out its operations without the knowledge resulting from the studies of cathode rays and electrons made by our physicists, which is equivalent to saying that by this time we might well have lost the War. . . .

"Since experimental science has assumed such a commanding influence on all our affairs, so that we run the risk of great perils if we take no account of it, and leave its uses to others, let us say, less well disposed than ourselves, and, on the other hand, have opportunities of great benefit if we use it rightly, it becomes a first duty to direct our steps accordingly.

"Just as in former times schools and colleges were founded to train men for the service of Church and State, in ways which were appropriate to that high end, so now we have to see to it that the men are produced by our educational systems who can appreciate and act up to a new state of affairs. This can be done without jettisoning any of the fine instruction which has been a proud feature of our older systems."

Science News Letter, February 1, 1941

PHYSICS

Swiss Scientist Invents Improved Cyclotron

AN IMPROVEMENT on the present form of cyclotron, powerful atom-smasher invented by Dr. E. O. Lawrence of the University of California and now in use in many laboratories, will, it is claimed, give more punch to its atomic bullets.

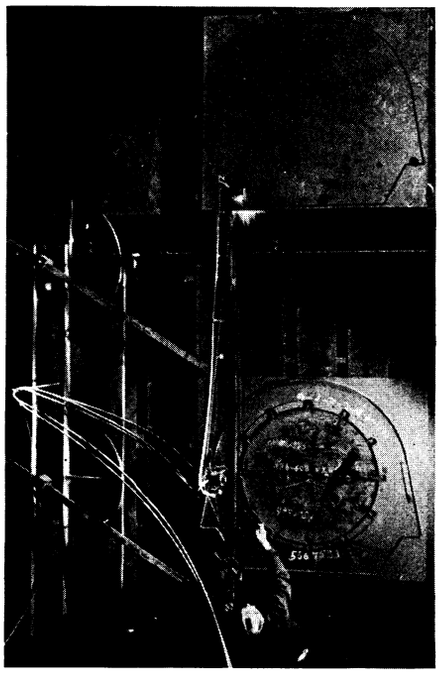
The new device has just been granted U. S. patent 2,229,572, awarded to Julius Jonas, of Zurich, Switzerland. His rights have been assigned to Aktiengesellschaft Brown, Boverie and Cie, of Baden, Switzerland.

Cyclotrons as now constructed, Mr. Jonas claims, neglect the fact that, as the atomic bullets are speeded by being whirled around and around, their mass increases, in accordance with the relativity theory. This, he states, sets a limit to their speed with current designs.

In the ordinary cyclotron, the electrical field which acts on the accelerating particles is constant. The improvement, quoting from the first claim of the Jonas patent, "comprises progressively increasing the strength of the electric field from the center to the outer portion thereof by an amount equivalent to the retardation of the charged particles due to the relativistic mass increase of the charged particles at extremely high velocities."

In other words, as the particles move in bigger and bigger circles, and faster and faster, more electricity is put into them to compensate for the increased mass or "weight."

Science News Letter, February 1, 1941



PANTOGRAPH

A familiar drawing instrument for copying a design is less well known in this form which cuts out steel plates for turbine generators in the General Electric plant at Lynn, Mass.

MEDICINE

Diet Important Part of Sulfanilamide Treatment

THE kind of food eaten by patients being treated with sulfanilamide may have an important bearing on the results of the treatment and whether or not the sulfanilamide causes toxic effects, it appears from research by Dr. M. I. Smith, Dr. R. D. Lillie and Dr. E. F. Stohlman, of the U. S. Public Health Service and National Institute of Health.

If the patients get too little protein food, such as meat, eggs and milk, they may be more likely to experience toxic effects from the drug, but the drug may be more effective because of reaching higher concentrations in the blood when the dietary protein is low, it appears.

Rats were the patients in the National Institute of Health studies. A low pro-

tein diet (7% protein) increased their susceptibility to sulfanilamide "by increasing the mortality rate and the incidence of anemia as compared with similarly treated rats on a diet containing 30% protein," Dr. Smith and associates report.

The concentration of the drug in the blood was somewhat higher in the rats on the low protein diet which, the investigators say, "may possibly account for the greater toxicity.

"This also raises the interesting question," they continue, "as to whether this might not be more than offset by the obvious advantages of higher concentrations of blood sulfanilamide in the therapeutic (remedial) application of the drug."

Science News Letter, February 1, 1941

GENERAL SCIENCE

American Campuses Urged For New Sort of Refugee

A NEW sort of intellectual refugee to join the ranks of those driven to our shores by political injustice, is suggested by Dr. Joseph Needham, of the University of Cambridge, after conversations with university professors in the United States.

The peaceful campuses of American universities would be a welcome haven, he believes, to elderly English scholars who have been robbed of their students by war and whose knowledge of antiquities or ancient languages are of little help to the war effort.

As prominent among American professors proposing some such scheme, Dr. Needham mentions Prof. H. S. Taylor and Prof. O. Veblen, of Princeton.

"American sympathy for the British cause is so great," Dr. Needham told his colleagues through the British scientific journal, *Nature* (Dec. 7), "that if at some later date owing to destruction of laboratories by bombing it should be necessary to evacuate a good many British men of science to the New World, nothing could exceed the welcome they would receive from their American colleagues."

Science News Letter, February 1, 1941

Tigers have been known to jump higher than 15 feet.

Normally, 99% of the *calcium* in the human body is in the bones and teeth.

The *American Red Cross* is training 300,000 men in the CCC in first aid.

PUBLIC HEALTH

New Air Raid Shelter Danger Worse Than Epidemics

AHITHERTO unmenticned danger of air raid shelters, said to be greater than the danger of epidemics, is reported by Dr. Keith Simpson, of London. (*The Lancet,* Dec. 14, 1940)

The danger is that of death from pulmonary embolism which threatens elderly people forced to spend the night in a sitting or reclining position in air raid shelters.

Pulmonary embolism is a condition in which blood clots plug the arteries of the lungs. Dr. Simpson reports a six-fold increase in deaths from this condition.

The patients died suddenly, usually after leaving the shelters after a night or a succession of nights in them. Most of them were elderly, a little obese, and often had varicose veins in the legs.

"The precipitating condition," Dr. Simpson states, "was without doubt a long period of rest in a deck chair or some similar seat, the front edge of which pressed into the legs as they lay over it, compressing the veins and causing obstruction, statis (stagnation of the blood), edema (swelling) and thrombosis (clot formation)—probably in that order.

"The danger to life of pulmonary embolism clearly exceeds the danger (as distinct from inconvenience) of common colds, sore throat, bronchitis, minor epidemic infections and contagious skin diseases to which the Horder Committee have directed their main attentions. There has been no similar rise in the incidence of grave epidemic maladies as far as the death-rate can show.

"The moral is clear: people—especially elderly people—who are forced to spend long periods in air-raid shelters must be given provision for lying down.

"It is noteworthy that cases of fatal pulmonary embolism are already decreasing again, concurrently with the provision of bunks for sleeping."

Science News Letter, February 1, 1941

AERONAUTICS

Russian Passenger Airliner Has Six Engines, 8,000 H. P.

TECHNICAL data concerning the new Soviet passenger airliner, the L-760, accommodating 64 passengers and a crew of ten, are given in the British aviation weekly, *Flight.* (Dec. 12, 1940)

The ship is a monoplane with a wing span of 210 feet, and weighs 46 tons with full load, it is revealed. Six engines, mounted on front of the wings, have a total horsepower of 8,000. There are five cabins in the fuselage and four sleeping compartments in the wings.

"The L-760," says the writer, "was put on to the run from Moscow to the Caucasus last June and covered the 965-mile route at an average speed of 125 m.p.h. This is not fast according to modern ideas, and one does not have to look far for the reasons. The fixed undercarriage is one of them and the large wing (and therefore low wing loading) is another. In comparing it with the Douglas B-19, it is evident that the wing is about the same size (both have spans of 210 feet), whereas the weight of the Douglas is about 50 per cent greater. The powers of the two craft are about the same.

"Another reason for low speed is the rather ungainly fuselage shape, which is very reminiscent of the huge Maxim Gorky. The engines are liquid-cooled with the air outlet controlled to regulate flow through the radiator."

It is stated that the total air route mileage in the Soviet Union increased during 1939 by 4,350 miles to a total of 88,325 miles. Though present-day figures about air traffic are hard to obtain, it is said, even in 1937 it amounted to 203,000 passengers, 9,000 tons of mail and 36,000 tons of freight.

Science News Letter, February 1, 1941