the universities to fit the Nazi ideology. Reorganization and unification of study in various fields has been complete. To speed the production of doctors, chemists, and other immediately useful scientists, the period of study has been curtailed. Scientific work and practical training are being tied more closely together.

The armament boom in Germany has caused an acute shortage of qualified chemists, for example, although in the post-war period there was an oversupply of men academically trained in chemistry.

Coincidently with this pressure for technically trained personnel to serve the Nazi state and despite the need of research in building the Nazi war machine, there is a deep disdain for the intellectual worker and the researcher.

Nazi Secretary of Education Rust has told university professors to be teachers first and think less of their publications and research. Nazi Secretary for Propaganda Goebbels declares: "An intellectual is a man in whom civil valor is in inverse ratio to knowledge acquired through studies. . . . This intellectual is in reality an artificially highly bred accumulation of knowledge."

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CHEMISTRY

Find Cheaper War Gas and A Super-Elastic Thread

Nation's Chemists Survey Progress for Science Service; Cite Industrial Developments and New War Materials

A NEW, cheaper and easier way to make deadly wartime mustard gas.

The use of deadly, glass-eating hydrogen fluoride to bring about new reactions for producing new synthetic dyes and other chemicals.

A new kind of elastic thread made from new synthetic "rubber."

These are the three latest achievements in chemistry, that science which day by day builds new industrial achivements for peace and war.

No longer is American chemistry the stepchild of European laboratories as it was in 1914. It is almost self-contained, producing new wonders daily.

In Boston at the meetings of the American Chemical Society and each week in Washington through the clearing house of the U. S. Patent Office, the surge of research progress brings new chemical marvels.

Through a telegraphic survey of the chemical industry by Science Service, word comes from Dr. Gustav Egloff, research director of Universal Oil Products Co., that by the new dehydrogenation process, "ten per cent. of the available supply of natural gas in the United States, estimated at 2,500,000,000,000 cubic feet a year, can be converted into olefins for the production of super motor fuels and other useful and valuable substances."

From Commercial Solvents Corp., supplying chemicals to other chemical companies comes news of the commercial availability of a whole new class of chemical compounds derived through basic research by Prof. Henry B. Hass of Purdue University on the nitration of paraffin hydrocarbons.

"Several hundred derivatives of the nitroparaffins have been prepared in the laboratory," says C. L. Gabriel, manager of the market development division of CSC. "Initial production will cover but a small number of these."

Nitromethane and nitroethane are two of these products, however, which are important now because they can be converted into explosives.

Dr. C. E. K. Mees, research director of Eastman Kodak Co., pictures continual improvement of color photography for home motion pictures "through the production of organic chemicals of complicated structures which aid in sensitizing the film emulsions and in producing colors in the finished pictures."

In the chemical laboratories of Brooklyn's Polytechnic Institute two scientists, Donald F. Othmer and Donald Q. Kern have studied a new, simple way of making the chemical known as thiodiglycol, the starting material for the manufacture of mustard gas, most feared of all war gases which came into service during the World War.

Production of mustard gas during wartime by the German method (discovered in 1886 by V. Meyer) was costly, the Brooklyn scientists told the meeting of the chemists. The advance made by the new process is to speed the reaction of ethylene oxide and foul-smelling hydrogen sulfide. In the gas phase the reaction is slow but after dissolving in thiodiglycol the reaction goes swiftly, with yields amounting to almost the theoretical maximum to be expected.

The significant report of Othmer and Kern indicates the ability to assemble data suitable for manufacturing on a large scale.

Since World War days there have been recurrent rumors, never substantiated, of new and powerful chemical agents in warfare (as the U. S. Chemical Warfare Service chooses to call poison gases). But experts still believe mustard gas outranks all gases known in its wartime utility. A new and easier way of making mustard gas should make possible in case of need the world production of this poison gas far beyond its peak of the last war when at the Armistice 300 tons daily could be produced.

Hydrogen fluoride assumed a new role at the chemists' meeting. It can now serve as a superior catalyst for a host of vital organic chemical reactions. Pennsylvania State College's Prof. J. H. Simons summarized more than three years of research on the amazing ability of anhydrous hydrogen fluoride to act as a passive agent (catalyst) in making compounds like benzene, toluene and other "aromatic" compounds, react faster, easier and with greater yields with acids like acetic, with esters like benzyl acetate and other favored stepping stones by which organic chemists turn sticky black coal tar derivatives into brilliant synthetic dyes, high explosives, valuable drugs and other products.

Hydrogen Fluoride Catalyst

Prof. Simons hailed hydrogen fluoride as a preferred industrial reagent.

Not only can many intricate chemical syntheses be carried out more easily with the hydrogen fluoride catalyst, but reactions never before possible have been achieved, Prof. Simons stated.

"There are reactions that hydrogen fluoride promotes that have not been reported using other reagents," states Prof. Simons. "One of these is a reaction between an aliphatic halide and an olefin. Two examples are . . . the reactions of tertiary butyl chloride with trimethylethylene and with cyclohexene."

While much of the university research in chemistry has been saved for the chemical society's Boston meeting, the great chemical research parade of industry has been sweeping on, with the first hints of progress coming often from the

U. S. Patent Office in Washington. Industrial chemistry makes its progress behind the protection of patents, with a large company like du Pont getting 20 new patents in a three weeks' period as it did recently, during August.

Guarded behind this patent wall is the newest type of elastic fiber recently invented by Peter J. Gaylor of Elizabeth, N. J., and with patent rights assigned to the Standard Oil Development Co.

The new elastic fibers of synthetic rubber are ideal for elastic threads for clothing since they do not deteriorate rapidly in the fiber form. Even with the use of inhibitors and vulcanizing agents ordinary rubber in threads undergoes deterioration, says the Gaylor patent (No. 2,170,439). Laundering, dying and cleaning all add to its quick loss of elasticity.

The new rubber-like material is synthetised by the polymerization of isobutylene to create polymers having enormous molecular weights of 200,000 to 300,000.

The material can be extruded as a thread or as a flat sheet which can be cut into narrow strips. While in solution dyes may be added to give the rubber-like fibers various shades.

The rubber-like fibers can be coated with a covering of silk, cotton, wool and the various rayons and woven into an elastic cloth. Fabrics resembling the covering materials—but highly elastic—can thus be secured.

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GENERAL SCIENCE

"Those Guilty of Starting War Are Traitors to All Men"

By DR. WALTER B. CANNON

President, American Association for the Advancement of Science

Science Service asked Dr. Cannon as president of one of America's leading science organizations to comment on what war means to science and mankind. Dr. Cannon is professor of physiology at Harvard Medical School.

WHEN confronted by war we must remember that the most universal and persistent enemies of mankind are moral degradation, ignorance and the heavy forces of poverty and disease. Against these powerful foes every race, every nation should be willing to struggle with untiring zeal. Any victory over them is a benefit to all.

Those who are guilty of starting a war between human beings are traitors to all men for in war it is these same persistent enemies which will secure immensely increased advantages.

Brutal injustice, hatred and lasting bitterness spread through great populations and drive out feelings of mutual respect and good will. Disease and hunger and privations make devastating inroads until hosts of innocent people are swept away in pestilence. Vast resources which might be used to bring enlightenment, comforts and conveniences into the lives of the less privileged are appallingly wasted in wanton destruction. Seekers after new knowledge which might be serviceable in lessening human ignorance and in increasing human welfare are compelled to cease their free labors and concentrate attention on problems of military importance.

With tens of thousands of young men killed, there will be destroyed the lives of many promising leaders in the fight against the unresting enemies of mankind.

When the barbaric struggle is ended, these adversaries will still be ranged against us, more strongly entrenched than ever.

We who are not directly engaged in warfare against our fellows are favored by their opportunity to continue the fight against injustice, ignorance, disease and wretched poverty. We may hope that the progress we make in overcoming these ancient enemies we share in common will later be helpful to others less fortunate than ourselves.

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SEISMOLOGY

World's Earthquake Center Is "Somewhere in France"

THE earthquake center of the world is now "somewhere in France."

Almost since the turn of the century Strasbourg has been the seat of the international organization for seismology where earthquake reports are sent so that there will be one place where all of Mother Earth's shivers and shakes (natural, not war-made) can be recorded. Dr. E. Rothé, long secretary of the world organization, removed his records and some instruments to an unannounced location farther from the German border.

Then he came to America for the international geophysical meetings, but he spent only one day here, hopping a return ship when the crisis deepened. All his assistants and sons are in the French army. He alone intends to hold the earthquake line for the internationalism of science.

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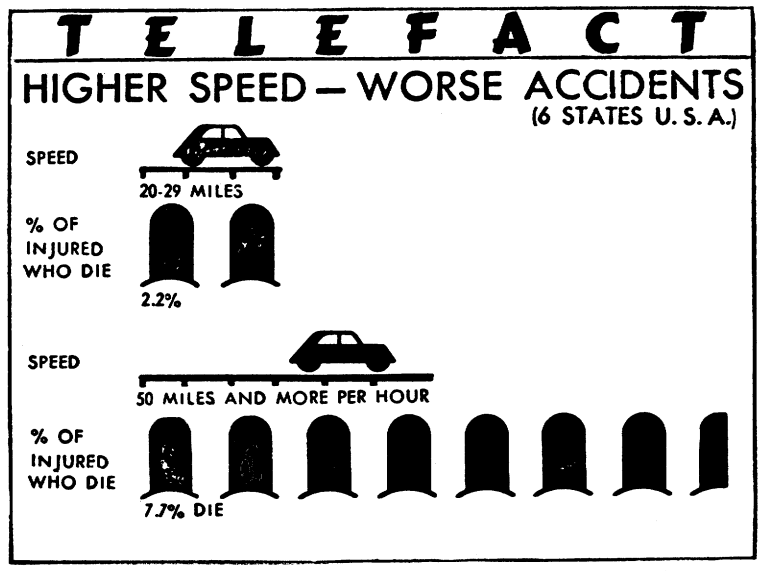
"Lost" fawns, small squirrels, rabbits, raccoons, and other small animals and birds are as safe in their native habitat as a child in its cradle and should not be removed, wildlife authorities say.



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