

GENERAL SCIENCE

For These Things, Thanks

For the end of killing, for atomic power, albumin, globulins, streptomycin, DDT, ANTU, and for the opportunity for confidence and understanding.

By WATSON DAVIS

►FOR THE END of killing, thanks. For the lifting of the gnawing fear of sudden death for ones loved, thanks. Stresses of world-wide war fade into conflicts of peace. Thanks, too, for this.

May 8 . . . Aug. 14.

Out of the dead and wounded past comes future hope. Costly offense to fend our ways brings ways to bright new worlds; weapons of war wrought into shares of well-being.

Pearl Harbor . . . Nagasaki.

War is blood-letting. Millions at home gave their Red Cross blood that soldiers might be unshocked. Plasma, clear life-fluid, powdered and then reconstituted on the battlefields, countered the clawings of high explosive shells.

By-products of plasma—by-products of war—came out of the laboratory to minister to ailing people. A blood fraction prevents measles, another makes a plastic that, because it is part of the body, covers surgeon's woundings and returns to the body. A substance to make blood-typing quicker and surer. Future medical riches from the good red blood. Some use for the red blood cells, and protectors against other ills.

Albumin . . . fibrin . . . globulins.

Propellers that fan give way to jets that spurt. Puffs and streams of exploding gases thrust new aircraft at speeds that rival the swift travel of sound. Seven hundred miles an hour plus brings tussle of flight with reluctant air. Compressibility puts up a barrier that research will thrust aside by sleeker, smoother, aerodynamically cleverer wings. New foils will foil the momentary pause in aeronautics ever faster, faster. Despair-born V-1, V-2, sudden death in each explosion, to those unborn are mere models for some useful rocket, bearing mail, probing weather aloft, or whisking human cargo through the stratosphere.

P-80 . . . P?

Bigger, longer armed, higher reaching, more heavily burdened B-29s and

all their bomber ilk are prototypes of peaceful ships to drop new commerce and mutual exchanges of trade and culture upon our neighbors half around the globe. Air paths war-blazoned around the earth, with smooth, hard landing ribbons in arctic wastes and tropic jungles, are breathing and refresher spots in the airplanes to a united world. We have talked of one world; these are the ties to compress our sphere to three-score hours.

USAAF . . . ATC.

Gold is yellow. So is the lowly mold that gives up the penicillin drug that outcures even the marvelous sulfa family of chemicals. More precious than gold ever was or ever will be is this mold chemical, mass-produced in giant factories with priorities as high as explosives, or bombers, or atom bombs—almost. Good from the evil of war, this antibiotic of great value, worth to the future some of the suffering of the recent past—almost.

Syphilis treated in a mere nine days. Gonorrhea conquered and non-infective in one single day. Deadly pneumonias laid low in hours. Were these not modern medicine they would be miracles. Thousands willing to let their blood be tested now that cures are speedy, sure. In the hopeful glassware of experimental laboratories other growths of other fungi give hints of conquests to come. And new chemicals with promise for attacking other diseases.

Streptomycin . . . Promin.

Greatest flying foe in the early stages of island hopping toward Tokyo and the yellow heart of Japan was not bomber Mitsubishi or pursuit Zero. Rather it was malarial plasmodium carried by Anopheles, mosquitoes to you. Quinine was preclusively captured by the Japanese overrunning of the East Indies. Out of the other Axis enemy, Germany, came a chemical substitute, atabrin, as good or better than the time-honored quinine. U. S. perfected and produced, this chemical, becoming as G. I. as K rations, out-fought malaria. Who cares it turns U. S. marine and soldier a yellow hue? Who

could confuse G. I. with Jap? Still a world problem, malaria comes under the control of war necessity.

Guadalcanal . . . Bougainville.

Other front attacks on the insect foe on Pacific isles, in teeming jungles, conquered cities and home cottages. Dichloro-diphenyl trichloroethane, DDT for short, is death to disease and insects. Sprayed from the air, it has captured territory held by insects that our armed forces could otherwise occupy only at cost of disease losses. DDT stands for "deals death to typhus." Sweeter than the most exotic perfumed talcum is DDT powder to an army fighting typhus-carrying lice or to civilians in a city gripped by rising typhus epidemic. New poison warfare against rodents is ANTU and not kind to rats is 1080, both new chemical compounds to keep in check the animal foe "underground" in all our cities. No hope of getting the rats to join the UNO.

DDT, Naples . . . ANTU, Baltimore

It has been a metallic war with steel by the millions of tons, more aluminum than ever dreamed of before, lighter magnesium snatched from the sea, and tin and lead and copper closely hoarded to serve the machines of Mars. New alloys of steel, using metals we have much of instead of those we have not so much of, are here to serve the huge demands of reconversion and depleted shelves of commerce.

Electricity coats the precious tin upon tin cans to be; a saving method that will work in peace as well as war to keep our tin can civilization going. Substitutes, plastics and the like, lend metals a helping hand, and competition will tell whether the assistance will turn to rivalry. Machines for cutting, shaving, forming metals, produced in larger volume than the world has ever known, give us the best productive capacity for a machine-operated, expanding industry for creative peace, replacing destructive war.

Steel 1808 . . . Al-Mg 4303.

We were bouncing along merrily on rubber when war punctured the flow of our plentiful stream of latex from the East Indies. Great chemical works making synthetic rubbers of several different kinds have mushroomed in our tem-

Do You Know?

Stories that *swordfish* sometimes attack whales are unconfirmed.

Oranges in 1944 accounted for 73% of the total world citrus crop.

Unbreakable *mirrors* are made of transparent plastic coated with silver.

Botanical drugs are being grown experimentally on a Pennsylvania farm.

Colors in fishes are in general produced by oil sacs beneath the skin, or in some cases beneath the scales.

Pitchy spots and knots on new *lumber*, before painting, should be covered with shellac or aluminum paint.

The U. S. Maritime Commission is selling surplus boat *anchors*—by the pound.

A machine that digs, picks and sacks *potatoes* in one operation has been constructed and is in successful use.

Potted plants usually grow better if the pot is sunk deeply in sand or peat moss that is kept moistened; the moisture enters the pot through the porous clay wall.

American *scientists* are now in Germany studying such wood products as cellulose, wood sugar, ethyl alcohol, feeding yeast and others that supplied the Nazi war machine during the war.

perate industrial climate to replace rubber trees, native to the Americas, but cultivated so laboriously in the tropical east. Our guns, our ducks, our jeeps, our airplanes, our auto pools, our buses, our thousand and one rubber-hungry mechanisms were kept shod with precious stocks of natural rubber and increasing supplies of man-made rubber. Self-sufficient, thanks to war, our rubber age can expand and run smoothly, using each complexity of elastic stuff to its best abilities.

GR-S . . . Neoprene.

Old plastics were put to new uses and new plastics were put to old uses. The silicone family took its utilitarian bow, showing how a mere breath of an airy compound could waterproof paper, for instance, and how this combination of very plentiful elements could moisture-proof spark plugs and do other fighting jobs. The vinyl family coated fabrics and made sheetings that replaced textiles. Nylon left the legs of ladies to parachute aviators to safety. Milk, soybeans, and other protein sources became raw materials for wool-like textiles. The postwar era will be a plastics age.

Bakelite . . . nylon.

Ill-fed, as FDR observed about a third of our depression USA, characterizes an unhappy part of humanity in war and

postwar. Yet we know more about eating well and our farms can produce more with less effort. The seven kinds of foods that all should eat, and the ability to live healthily on rationed food and even like it. Dehydrated food saved the costly transport of water overseas in precious cargo space, and front-line fighters lived well out of clever combinations in cans. Quick freezing brought Florida in April to the Pacific in December. For kitchens of the future these war devices hold much promise, decreasing the drudgery of feeding the family and increasing the pleasure of eating. For ravaged peoples, potential defense against starvation until their earth is green again.

Vitamins . . . Amino Acids

In blackest night, foggiest sea, cloudiest sky and at highest height, an airplane can be spotted with electronic eyes called radar. Whole landscapes can be "seen" where there is no light. Big and little guns can be aimed effectively at ships or shore or aircraft that the gunner never sees. On bombing raid or transport flight airplanes can locate themselves accurately in a few seconds, using a radio navigation device called loran. New radio, television, frequency modulation, walkie talkie, and a dozen others. These new electronic devices and others

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Faster . . . better . . . cheaper.

Atoms rule the world. When plutonium cyclically fissioned over Hiroshima, either extinctive future war began or a very energetic future world of goodness was made possible. Controlling the human beast is now more important than man's mastery over inanimate nature. What goes on in human minds and emotions precasts the future more irrevocably than any conversion of mass into energy. The human equation can negate or use the Einstein equation. Human behavior must learn to use atomic behavior. Statesmen need scientists who understand human thoughts and emotions to help them control the people who can keep the atoms under control. We face the world's grandest opportunity or largest disaster.

U . . . Pu.

For the opportunity of remaking a brave, new world, thanks. For powers large enough to do it, thanks. For confidence and understanding among all who inhabit the earth, we hope.

Science News Letter, November 17, 1945

ENGINEERING

Simplest Engine in World Helps Launch Gliders

➤ A MODEL of an engine, claimed to be the simplest engine in the world today, was demonstrated recently at the Polytechnic Institute of Brooklyn by Zygmunt Fonberg, the Polish rocket expert and inventor of the first bazooka in Poland prior to the war. It is a ram jet motor of new and unusual design.

This new engine was designed to help launch gliders into the air. It consists of a cylindrical tube, which appears to be just an empty pipe, mounted on a restraining structure which has a free moving arm to permit the engine to swing in a circle around it when in operation.

The lining of the tube expands from a smaller diameter in the front end to a larger diameter at the other. The space on either side of the lining and the outer wall contains the gas which runs into a nozzle at the forward end of the cylinder. Air mixes with the gas coming through the small holes of the nozzle during combustion, thus providing the force of propulsion.

Science News Letter, November 17, 1945

On Antibody Formation

It is well known that severely underfed patients with nutritional edema are excessively susceptible to infections, that infections superimposed on wasting diseases or marasmic states show a rapid, frequently fatal course: In the light of recent findings, both of these facts—heretofore but poorly understood—may well be on the way to conclusive explanation.*

Evidence is rapidly accumulating that antibodies, our chief weapon against infection, are modified proteins of the globulin type. During active immunization, antibody formation presents a continuous process, requiring its share of amino acids.

Experimentally it has been demonstrated that induced hypoproteinemia reduces the capacity to produce agglutinins, precipitins, hemolysins. Adequate protein intake thus gains increasing significance as an essential factor in the resistance to infectious disease.

Among the protein foods of man meat ranks high, not only because of the percentage of proteins contained, but principally because its proteins are of high quality, able to satisfy every protein need.

*Cannon, P. J.: *J. Am. Diet. Assn.* 20:77 (1944)



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