

MEDICINE

Hands Called Unimportant In Spread of 'Flu

► DISCOVERY that the influenza viruses type A and type B die in a few minutes if put on human skin, such as the palm of the hand, and allowed to dry there, was announced by Commander Albert Paul Krueger, in command of Naval Laboratory Research Unit No. 1 at the University of California.

"Virus solutions so strong that a teaspoonful would kill half a billion mice lost all disease-producing capacity within 10 minutes," Commander Krueger, formerly professor of bacteriology at the university, stated.

"These results emphasize again the importance of tiny virus-containing droplets sprayed into the air when one sneezes, coughs or even talks vigorously, as a means of spreading influenza. Hand to hand distribution of the virus and eventual hand to mouth transfer would appear to be unimportant hazards."

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CHEMISTRY

Millions of Gallons of Chemicals To Be Reclaimed

► MILLIONS of pounds of scarce chemicals, millions of gallons of war-essential oils and solvents, will be saved by methods demonstrated in the WPB chemical salvage exhibit which opened at the National Chemical Exposition.

"We cannot afford to waste our precious chemical resources," declared S. Donald Perlman, executive chemical director of the Industrial Salvage Section, Conservation Division, WPB.

"Too often these chemicals are thrown away after a single use. If this program is willingly entered into by every commercial user of solvents and oils we will have succeeded in making available for war production reclaimed dirty or contaminated solvents which in the past have been discarded as waste."

To users of chemicals and solvents who are in attendance, the exhibit indicates the urgency of putting an end to this waste in their plants.

A feature of the exhibit is a series of small-scale models which demonstrate recovery of oversprayed paints. Behind the jeeps, shells or other equipment being painted, a curtain of water catches the overspray. This is collected in a trough, precipitated as a sludge, and then reclaimed. Improved and widened

application of the process is already saving nearly a third of the paint formerly wasted in many branches of industry, WPB officials report.

Other sections of the exhibit show the reclamation and refining of lubricating and cutting oils and the recovery and reclamation of industrial solvents.

Current solvent reclamation can be increased from 50% to 75%, it is indicated by conferences held between Mr. Perlman and industrial executives.

Such chemicals, formerly wasted and often difficult to replace, can often be reclaimed for a few cents a gallon, only a fraction of their original cost.

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ASTRONOMY

Brightest Star Is Twins And Each One a Giant

► EVIDENCE that S Doradus, a star 600,000 times brighter than the sun, is a double star in which one star revolves around the other in a period of 40 years, has been presented by a Harvard astronomer, Dr. Sergei Gaposchkin, to the American Association of Variable Star Observers. The star, brightest in the sky except for the brief-lived super-novae of far-off galaxies, is located in the Large Magellanic Cloud, invisible in the United States. Dr. Gaposchkin's work has been done on photographs taken at Harvard's southern station at Bloemfontein, South Africa.

S Doradus has long been known to be a variable star, but the cause of its fluctuations was unknown. Dr. Gaposchkin has concluded that, as the two stars revolve, they alternately pass in front of each other as we view them, and thereby produce eclipses during which their total light is reduced noticeably. These eclipses occur regularly at 40-year intervals, thereby determining the length of time in which the stars revolve. From the resulting light curve, Dr. Gaposchkin finds that each star is about the same size as the orbit of Saturn—that is, about 1,800 million miles in diameter. This makes them among the largest stars known, which is to be expected from their high luminosity.

Often we hear of Sirius, the Dog Star, as the "brightest star," which it is as far as apparent brilliance goes. But S Doradus has an intrinsic brightness 600,000 times the sun's, while Sirius is only 25 times as bright as the sun. Of course, the Dog Star is very close—8.8 light-years distant, while S Doradus is about 95,000 light-years away.

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IN SCIENCE

MEDICINE

Tests for Virus Diseases Described at Meeting

► AID FOR fighting epidemics of influenza, infantile paralysis and 22 other virus-caused diseases was presented by Dr. S. Edward Sulkin and Dr. Carl G. Harford of the St. Louis Health Department and Washington University School of Medicine, before the meeting of the American Public Health Association in St. Louis. Latest laboratory tests diagnosing these diseases, so that after the first few cases health officers will know exactly what epidemic they are facing and can take appropriate action, were described. The doctors made it clear that the tests had been developed by other scientists and their part was to bring the scattered information together for health department laboratory workers attending the meeting. Up to the present time the only virus disease which health department laboratories have been diagnosing has been rabies. No specific test for the common cold exists, Dr. Sulkin said.

Very new is a test for a virus-caused venereal disease, lymphogranuloma venereum.

Importance at this time of assisting employed women to avoid having unwanted children without resorting to abortion was stressed by Dr. Eva Dodge of the Alabama State Health Department. In one large industry a recent survey has shown a very high pregnancy rate among married women employees and also showed that many of these women resorted to life-endangering abortion to avoid having more babies than they could support and care for.

In New Mexico the wife of an American soldier can get medical and hospital care for herself and child when she has a new baby, or for a sick infant, by applying to the State Health Department. Details of this plan for assisting the wives and children of our fighting men were reported by Dr. Stuart Adler of the New Mexico State Health Department. Hospital and doctor bills are paid by the state with funds from the U. S. Childrens Bureau.

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E FIELDS

PALEONTOLOGY

Grapes Grew in U. S. A. 19 Million Years Ago

► NOAH MIGHT have got into his little difficulty with the juice of the grape some 19 million years before he did, had he landed on the mountains of Nevada instead of on Ararat. Grapes grew in what is now the western United States away back in the Miocene times, long before there were any human beings, and the only creatures who might have appreciated them were animals like humpless camels, long-tusked mastodons and giant hogs.

Evidence of their existence then is supplied by a bit of petrified grapevine found in western Nevada. It is the first fossil of its kind to be found in this country, though fossil grape leaf imprints have previously been reported.

The piece of fossil vine is about 2½ inches long and a little over half an inch in diameter. It has the bases of two stout tendrils wrapped around it, and its internal structure has been so well preserved that the pores in the wood and the pith-rays are plainly visible.

The specimen, which was sent to the National Museum by Mark M. Foster, of Denio, Ore., has been studied by Dr. Roland W. Brown of the U. S. Geological Survey. In the new issue of the *Journal of the Washington Academy of Sciences* it is given the scientific name, *Vitoxylon opalinum*.

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INVENTION

Propeller Blades Revolve Reversely

► A PROPELLER, whose two single blades revolve in opposite directions without racking the aircraft to pieces, is the invention of Gage W. Tidd of Willow Grove, Pa. (U. S. Patent 2,297,815). The rights have been assigned to the Autogiro Company of America.

A single propeller rotating in one direction sets up a reaction which would rotate the aircraft the other way if not resisted. One way to do this, is to mount two two-bladed propellers on one shaft

and rotate them in opposite directions. This is okay for airplanes, says Mr. Tidd, but for the horizontal lifting propeller of a helicopter or an autogiro, with its long blades, four blades are too many. So he removes two of them.

But a single blade swinging around would yank the engine after it in a smaller following circle. Hence there must be a counterweight on the other side of the shaft just as for an engine crank. But here, Mr. Tidd finds, it is not sufficient to provide that the center of gravity of blade and weight shall coincide with the center of the shaft, which does very nicely for an engine crank. The resistance of the air to the long rotating blade differs greatly from that offered to the stumpy counterweight. This sets up a new force which rocks the engine from side to side.

To counteract this new force, Mr. Tidd either uses a second counterweight a quarter way around the shaft from the first one, or displaces the original counterweight a bit to one side so that the center of gravity of blade and weight falls a little to one side of the center of the shaft. By proper adjustment, the centrifugal force of this unbalanced weight can be made to counteract the differential air resistance, and the propeller runs smoothly. A little point like this often spells the difference between failure and success.

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CHEMISTRY

Army Raincoat Saves 1¾ Pounds of Rubber

► A NEW featherweight Army raincoat weighing 1½ pounds less than the old model, and saving 1¾ pounds of rubber in the making, captured attention at the National Chemical Exposition in Chicago. Other war-important items on display included rayon "bubbles" for filling life preservers and for heat insulation, plastic buttons for uniforms, a synthetic insecticide replacing the pyrethrum we used to get from Japan, and synthetic bristles for long-wearing paint brushes.

Many other all-American "ersatz" materials were shown—most of which are turning out better than their war-banished predecessors. In all, 32 American chemical firms participated in the show, which was arranged by *Industrial and Engineering Chemistry*, official publication of the American Chemical Society.

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SEISMOLOGY

Earthquake Makes Repeat Visit to Coast of Ecuador

► AN EARTHQUAKE, one of several to strike in the same general region since last spring, shook the Pacific ocean bottom off the coast of Ecuador early on the morning of Thursday, Nov. 19, U. S. Coast and Geodetic Survey seismologists stated after examining records transmitted telegraphically through *Science Service*. Last May 14 there was a shock centering at the same place causing considerable destruction on shore.

The epicenter was calculated as in latitude 1 degree south, longitude 81 degrees west. Time of origin was 4:51 8 a.m., EWT. Stations reporting were those of the Jesuit Seismological Association at Fordham, Georgetown and St. Louis Universities, and the observatory of the U. S. Coast and Geodetic Survey at Tucson, Ariz.

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PSYCHIATRY

War Reduces Suicides by Changing Mental Outlook

► BENEFICIAL by-product of war is the change in mental outlook which reduces the number of suicides, statisticians of the Metropolitan Life Insurance Company point out.

The death rate from suicide among the company's policy holders this year is about the same as last year and is, with one exception, the lowest on record.

England and Germany have also both had decreasing suicide rates since the war. In England the rate fell consecutively from year to year between 1939 and 1941 with the 1941 rate approximately 15% below that of 1939. The opening months of war in 1939 saw a sharp fall in the number of suicides. The most recent German figures likewise show a fall of 30% from 1939 to 1941 in the suicide rate.

In our own country the first World War also caused a decline in the suicide rate. It dropped more than 50% between 1915 and 1920, and has never returned to its pre-World War level, not even during the economic depression.

Reasons for the universal decline in suicide rates during wars are: 1. Increase in incomes; 2. Change in mental outlook. Petty, personal complaints and difficulties of the individual are forgotten in the urgent desire to help the nation in a time of crisis.

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