

that keep it at a temperature just above freezing. It will be ready for emergency use with no preliminary preparation other than warming it. Blood for this purpose can be obtained from civilians, from slightly wounded and convalescent soldiers, and from the dead. Such "blood banks," originally developed for saving lives of mothers threatened by child-birth hemorrhage and victims of peacetime accidents, proved their war value in Spain. French and British physicians months ago laid plans for blood banks that would withstand war-time runs, and other nations have probably followed suit. The feat of drawing life from the dead by saving their blood for transfusion into patients who would otherwise bleed to death was first accomplished by Prof. Serge Judine of the Institute Sklifasovskiy, Moscow's great emergency hospital.

The automobile and the air liners of peace-time have contributed their gruesome bit to medical knowledge which will be turned to war-time use. Automobile accident victims with broken legs and backs who died before they reached the hospital because they were improperly transported have been the subject of many a medical sermon in recent years.

A patient with a broken neck or back should be carried flat on a stretcher in an ambulance or truck. He should never be jack-knifed into the back seat of an

automobile, even if there must otherwise be some delay in getting him to the hospital. In spite of the delay, his chances of coming out alive are better.

Broken legs and arms should be splinted before the patient is moved from the scene of the accident, to keep the broken ends of the bones from damaging the tissues so badly that the leg or arm may be beyond repair and have to be amputated. It may not be possible to splint an arm or leg under shellfire, but the importance of splinting before moving is so well recognized that U.S. Army first aid equipment now includes splints for legs and arms.

War use of airplanes as ambulances for evacuation of the wounded has been much discussed, but except in exceptional cases such air ambulances are not likely to be used. Difficulties of landing planes anywhere near a battlefield and the chances of the air ambulances being mistaken for observation or military planes and consequently being shot down are reasons why these are considered impractical.

CHEMISTRY

Robot Chemist Analyzes Solutions And Draws Curve

A CHEMICAL robot that can analyze complex chemical substances faster and better than trained scientists was described at the annual Michigan-Ohio regional meeting of the American Chemical Society at Michigan State College.

Only a routine assistant is needed to help the robot make intricate quantitative chemical analyses, for the only care it requires is to be "fed" chemical solutions. Not only is the robot a super chemist, but it can write, too, drawing its results on a chart for later study by scientists.

Scientists H. A. Robinson, R. H. Briggs, R. W. Cermak and R. H. Boundy, all of the Dow Chemical Company, described the new machine which, to scientists, is known as an automatic electrometric titration apparatus.

Electrometric titration is a common enough technique of chemical analysis. Usually it is done by hand by adding small amounts of reagents to a solution and watching the voltage established across the apparatus as the solution's current flows. Each new voltage gives a

single point on a curve of final results. The whole process is time-consuming.

Doctors have learned some ways of minimizing or eliminating the dangers civilian pilots have had to face in peacetime. Notable among these accomplishments in aviation medicine is the development of practical apparatus for supplying oxygen at high altitudes. Many war planes will probably be equipped with this new apparatus.

So much for protecting the men from disease and from loss of life and limb. There will still be, as there were in the last war, thousands who come back maimed, blinded and disfigured. Civilians as well as soldiers will face this fate if unprotected cities are bombed. There is some hope even for these pitiful creatures. Surgeons have perfected their skill, acquired in the last war, at restoring lost parts. Skulls, ears, noses, whole faces can be replaced or remade more skilfully than ever before and artificial arms and legs are better fitting and more useful than formerly.

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PSYCHOLOGY

Sophomores Pessimistic About Americans' Ability

A GLOOMY view of democracy is held by sophomores at the University of California.

A majority of the 350 sophomores questioned (62%) believe that about one American out of three is incapable of participating in a thoroughly workable democracy. Some are even more pessimistic. Half the public were declared incapable by 16% of the sophomores and 11% think three-fourths of the population unworthy of the democratic form of government.

Not so gloomy are professional psychologists recently gathered in Berkeley for a meeting of the American Psychological Association. Most of these authorities on the human mind (80%) agreed that nine out of ten Americans are quite capable of taking part in running the democracy.

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single point on a curve of final results. The whole process is time-consuming.

The robot duplicates these acts, adding reagents in small amounts and recording the voltage on a graph automatically after each addition. Main advantage of the new apparatus is to remove the human element in the titration method. Little bumps on the curves take on new meaning when it is certain that there are no human mistakes and that the curves are made on apparatus which will duplicate results time after time.

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METEOROLOGY

Dry Year in Prospect For Sunny California

CALIFORNIA faces the prospect of less-than-average precipitation for the 1939-40 rainy season, the studies of Prof. George F. McEwen of the Scripps Institution of Oceanography indicate. Prof. McEwen's long-range forecasts are based on correlations of ocean temperatures and other factors with observed weather conditions several months later.

By regions, rainfall indications for 1939-40 are 11 inches for the south coast, as compared with a mean of 13.1 inches for the years 1916-39; for the Santa Barbara region, 13 inches as compared with a mean of 16.6; for the Hetch Hetchy val-

ley, 21 inches as compared with 31.1 inches. The expected precipitation for the north coast is 38 inches, as compared with a mean of 51 inches from 1919 to date.

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PSYCHOLOGY

Public Differs With Experts On How To Keep Out of War

Poll Conducted by Psychologists of 150 Social Scientists and 1,000 of Public Shows Differences

First of occasional articles prepared by the Society for the Psychological Study of Social Issues for distribution by Science Service. The SPSSI, comprising psychologists associated with the American Psychological Association who are doing active research on problems of social interest, emphasizes that it presents facts resulting from research conducted by competent psychologists, and that it will not take sides on controversial issues.

ON THE question of keeping America out of war, the general public opinion differs quite markedly from the ideas of men who have spent years studying the problem of war.

This is shown in a survey of American public opinion, made before the outbreak of the present war, conducted by a committee of the Society for the Psychological Study of Social Issues, and announced through Science Service.

This committee, composed of Professors Ross Stagner of Dartmouth College, J. F. Brown of the University of Kansas, Ralph H. Grundlach of the University of Washington, and Ralph K. White of Cornell University, polled 150 social scientists and over 1000 people scattered throughout the country.

The experts were evenly divided on the question of increasing the army and navy, 39% approved an increase, 39% disapproved, and 19% were doubtful. The sample of the American public voted approval by more than 3 to 1. Business men were more favorably disposed toward an increase in military and naval strength and salesmen, clerks, and both skilled and unskilled workers were almost equally in favor of an increase. Farmers, professional men, and teachers were least favorably disposed of all the lay groups, although the percentage of people desiring an increase among these groups was higher than among the experts.

People were asked to say whether they approved or disapproved of the following statement pertaining to a desirable foreign policy: "Make it perfectly clear that America is ready to defend herself—that anyone who attacks our honor or vital interests must count on fighting it to a finish." Such a statement received slight approval among the experts but strong approval from the general public. Again business men, skilled and unskilled workers disagreed most of all with the opinions of social scientists. Closer agreement was observed between teachers and professional men on the one hand and the social scientists on the other.

When the question of curtailing military protection for American citizens and for trade and investments abroad was raised, the experts favored this policy by a slight majority. The largest number of "no" votes came from business men, followed by salesmen, clerks, and professional men. Teachers, workers, and farmers were even more inclined to accept this type of neutrality than were the experts.

This committee, which is preparing a book on the psychology of war, concludes from the responses to these and other questions that either the American people in general are not acquainted with expert opinion or they do not wish to follow it. Business men, salesmen, and clerks differ most often from the experts. Farmers and workers are intermediate. Teachers and professional men come nearest to the views held by social scientists who have made intensive studies of war.

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More than half of the earth's people live on five per cent of the land.



Tree Preparedness

BEFORE heavy fighting begins, military surgeons and nurses get ready for the repair of the inevitable human wreckage that will come streaming back in the endless lines of ambulances. They lay out carloads of bandages, prepare thousands of beds. Healing and rehabilitation are planned for even before the wounds are inflicted.

In like manner, German foresters, if they have not forgotten the thoroughness and foresight for which they have long been the objects of the world's unenvious admiration, should by now have begun preparations for the reforestation of the valleys of the Saar and the upper Moselle, which are marked for denudation of the most dreadful sort when the big guns break into their full chorus of destruction.

Everyone knows what a major battle does to a forest; pictures from the World War showed how the trees were blasted into tortured splinters and snags, like a Doré illustration for Dante's Inferno. The French had a long job, reforesting these devastated regions. Since the present war is starting on German soil, it will be up to the German foresters this time.

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