

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

**C**ALIFORNIA 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.