

## PSYCHOLOGY

## Special Sights for Dusk

► THE GI crawling through the underbrush to make a dawn attack should have special sights on his rifle to help him get a bead on his enemy.

This is the conclusion of Dr. C. J. Warden, Columbia University psychologist, as a result of experiments on marksmanship with various kinds of sights in dim illumination.

The Springfield or notch type of sight should be abandoned, Dr. Warden recommends. The aperture or ring type of rear sight used on the Garand rifle is far superior under all kinds of light, he found.

But the ring should be larger for dim light as the pupil of the eye expands. The best size is about half the size of the pupil of the eye.

In the Garand sight, a blade mounted near the end of the rifle is lined up with the target and the rifle held so that it is centered in a ring mounted fairly close to your eye. In the Springfield type the blade lined up with the target is centered over a notch in rear sight.

For dim illumination, the blade of the front sight should be bright colored—white, gold, or yellow—and not black as in the regulation rifle. The colors should be dull, however, to prevent glare.

All military rifles should carry two sets

of sights, urges Dr. Warden. They should be mounted so that a flick of the mechanism will turn the right sight into place and the other will be on the reverse side of the barrel out of view.

Aside from permitting greater accuracy, the sights recommended by Dr. Warden cut down on the time required to aim, the difference being as much as two and a half seconds per shot.

Girls taking part in Dr. Warden's experiment developed just as great speed and accuracy in firing as did the men tested.

Some 23 of the 33 persons who took part in the experiment had experience with shooting, ranging from two hours of hunting to boot training in the Navy or basic training in the infantry. This group made slightly better scores in the experiments than did the inexperienced, but the difference was not large enough to be significant. Dr. Warden explains this on the basis of the training given preliminary to the experiment.

Dr. Warden urges further investigation to find out whether the standard Garand sights could be improved for ordinary daylight use. Details of his investigation are published in the *JOURNAL OF GENERAL PSYCHOLOGY* (April).

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denser of stainless steel, capable of withstanding the rigorous task of condensing sulphite liquor.

Sulphite liquor looks like black coffee and contains from 8% to 12% of solids. For processing, it is run through long vertical tubes in the condenser under high temperatures. The water comes off as steam and the liquor is boiled down to about one-fifth its original volume. The evaporated material, half water and half solids, has the consistency of molasses and under proper furnace conditions it can be burned.

A number of problems such as techniques of burning and of disposing of the fluffy ash that results remain to be solved. The problems differ in detail for each sulphite pulp mill.

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## CHEMISTRY

## British Use Color Test To Reveal Carbon Monoxide

► THE STANDARD British method of detecting the presence of poisonous carbon monoxide gas in the air in factories, garages and homes is now a war-developed process, which utilizes a small tube containing silica gel and a yellow reagent that is stained by the gas.

If carbon monoxide is present in the air drawn through the tube, even in very small quantities, the reagent is discolored. A dark brown stain appears at the junction of it and the gel. The length of the stain gives a measure of the amount of carbon monoxide in the air.

The adoption of this method as standard is announced in a recent publication of the British Department of Scientific and Industrial Research. Several methods of detecting carbon monoxide are presented in the leaflet but this war-developed method is described as best to give a rapid indication of the relative safety of the atmosphere.

The industrial tube recommended by the government agency is relatively small in size and has plain silica gel at each end with the yellow reagent between. This reagent is potassium pallado-sulphite. Air to be tested is forced through the tube by a rubber bulb. The function of the gel is merely to remove condensable vapors.

A version of this same carbon monoxide detector is in use in the United States. It was developed by the National Bureau of Standards and widely used during the war. The American government institution gave full credit to the British for the invention but its version, it claims, is more sensitive and better adapted to field conditions.

The Bureau of Standards describes its detector as using a yellow silica gel impregnated with a complex molybdate compound and catalyzed by means of palladium sulfate. The yellow mixture turns green if carbon monoxide is present in the air passed through it.

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## CHEMISTRY

## Fuel from Paper Mill Waste

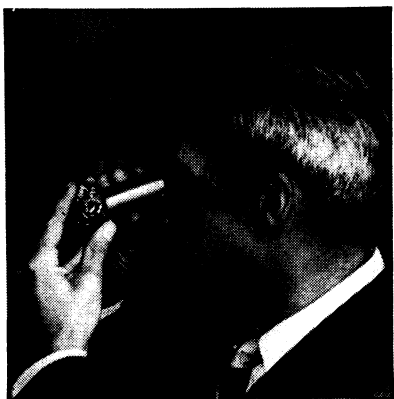
► WASTE liquor from the paper industry's sulphite pulp mills—long Wisconsin's No. 1 industrial water pollution problem—may turn out to be a valuable "coal mine," if experiments by the Sulphite Pulp Manu-

facturers' Research league in Appleton, Wis., continue to be successful.

Scientists of the league, operated by paper mill owners, assert that the 1,400 tons of wood solids dissolved in the sulphite liquor produced daily in the state could become the equivalent of about half that many tons of coal if the sulphite-fuel theory can be worked out to become completely practical.

"Primary incentive behind the research is to find some economical method of getting rid of the sulphite liquor instead of flowing it into the streams," said J. M. Holderby. He recently resigned as director of the league to join the technical staff of the Rhinelander Paper Co., at Rhinelander, Wis., which is conducting experiments on the disposal of sulphite waste. "The waste material contains sugars, which decrease the oxygen dissolved in the stream water into which it goes. This makes the environment less desirable for fish life, and, under extreme conditions, drives fish out of the area," Mr. Holderby explained.

While studying paper making methods in Europe last fall, three league researchers found that Swedish mills were using a small amount of sulphite as fuel. Back in this country, they imported a Swedish con-



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