

PSYCHOLOGY—PHYSICS

Detect Camouflage

Men with faulty color vision have advantage in spotting camouflage but colorblind men don't need to rush to enlist—Army probably has enough.

► **OBSERVERS** with weak color vision do have an advantage in detecting faulty camouflage, Dr. Deane B. Judd, of the National Bureau of Standards, told the Washington Academy of Sciences.

This need not be a signal for colorblind men to rush to enlist in the Air Forces, however. Men who are completely colorblind or even partially colorblind do not have this advantage, Dr. Judd said. And since, out of every 20 men, about one man has weak color vision and another is colorblind, the Army probably already has a good share of men capable of spotting the enemy's blunders in camouflage.

The most common form of colorblindness is the inability to distinguish red from green. Men with this color vision defect find it difficult to pick out ripe strawberries from green or to pick a rotten apple from a barrel of red apples.

Since the vision of such persons for blue and yellow is normal, they are said to be only partially colorblind.

To hide a military position from such a person it would be necessary to see that it was no lighter and no darker than the surrounding country. And it must be no bluer or no yellower.

But the partially colorblind person would not notice if the position happened to be a little redder or a little greener than objects around it.

The partially colorblind person, therefore, usually has no advantage over the man with normal color vision in detecting camouflage. If a roof or a gun-shield is painted so that the normal eye cannot tell it from the ground or the foliage, the partially colorblind person cannot distinguish it either.

Since nature provides the best camouflage, the Army usually prefers to use actual vegetation or dirt whenever possible to hide positions. But cut branches change color when they dry out and the leaves wilt. Dirt used in this way may dry out more rapidly after a rainstorm than the dirt on the ground. This produces slight differences in color and results in imperfect camouflage. Another fault in camouflage is in paint intended to match the surroundings. Such paint, even when it is a close match,

is likely to differ in reflectances in some portions of the spectrum.

It is such imperfections, not noticeable to the normal eye, that are picked up by those with weak color vision.

There are a few situations in which the red-green colorblind man has an advantage in detecting camouflage, Dr. Judd pointed out. In a variegated pattern made up of patches of reddish brown earth and yellowish green foliage, areas that are a little too light or too bluish are lost to the normal eye because of the larger red-green differences.

But the colorblind observer doesn't see a variegated pattern of irregular red and green splotches. To him, there is a nearly uniform yellowish-brown field. A spot that is too light or too bluish would show up conspicuously to his eyes.

The normal individual cannot make use of filters to fake weak color vision in order to detect camouflage, Dr. Judd indicated. In order to screen out red and green, a filter would also screen out most of the light and make it very difficult to see anything. And the filter would not accurately duplicate the color vision of the partially colorblind person at that.

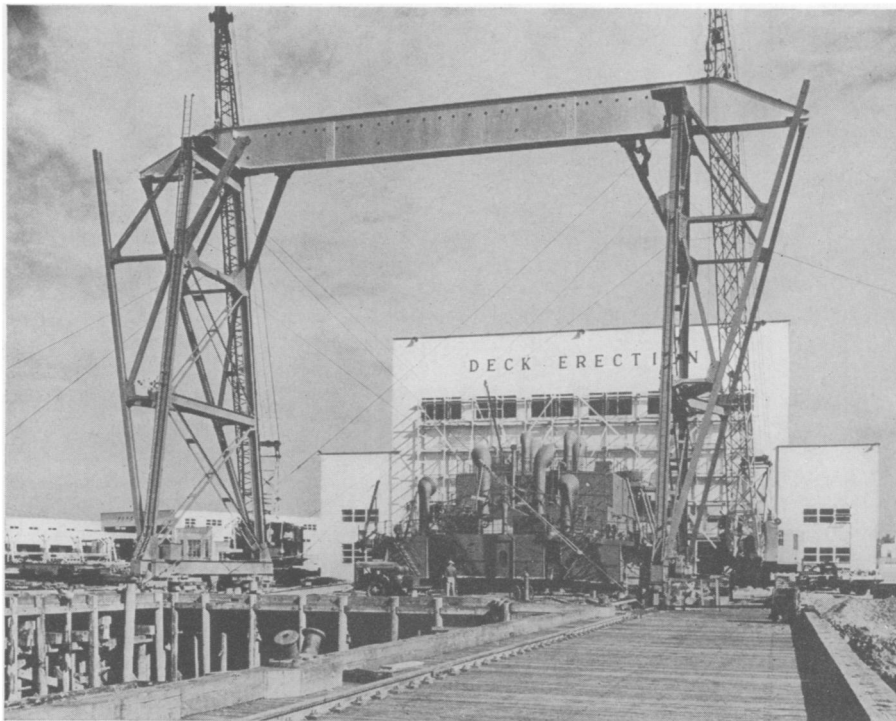
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ENGINEERING

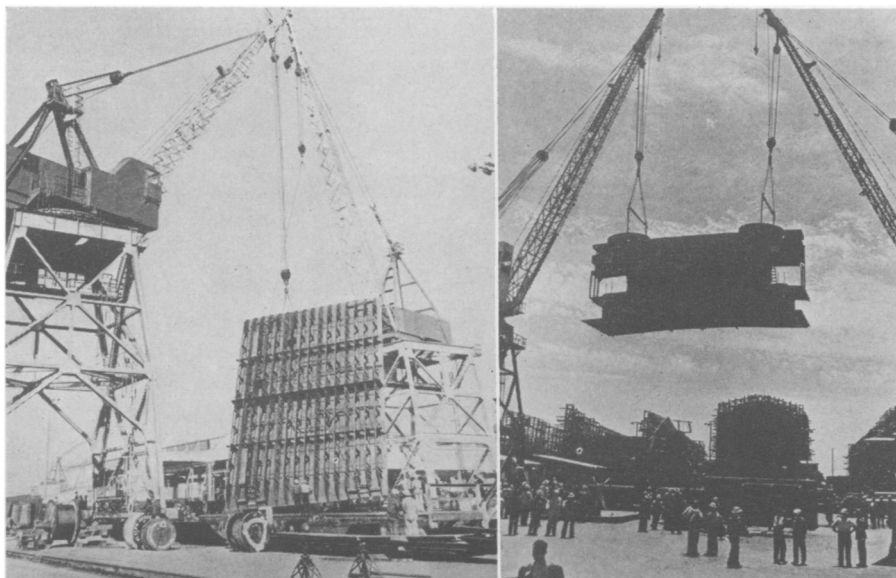
Yards Break All Records, Admiral Land Reports

► **FROM KEEL-LAYING** to launching, work on our merchant ships is being speeded at whirlwind tempo. The *Ec-2* ship, for example, has had production time cut by more than two-thirds during the past eight months, Rear Admiral Emory S. Land, chairman of the U. S. Maritime Commission and head of the War Shipping Administration, declared in his presidential address before the Society of Naval Architects and Marine Engineers meeting in New York.

"We have now expanded merchant shipbuilding facilities to the point where there are more than 60 yards, having



SHIPBUILDING SPEED—Assembly line methods are what enables the shipbuilder, Kaiser, to put his ships together so fast for war use. The deckhouse is erected in the "Deck Erection" house shown here. It starts at the back and is moved forward through the various stages of completion. Finally it moves outside. Then a huge crane lifts the deckhouse onto the ship in the dock in foreground where the various huge parts are fastened together.



PREFABRICATION—A deckhouse is here being lowered into place on a ship being built in record time for war use. The huge section on the left is a part of the hull. The photographs and the one on the facing page, showing modern prefabrication methods of ship construction, are official photographs of the U. S. Maritime Commission.

in excess of 300 ways," he declared, "constructing various types of vessels for the Maritime Commission."

Over 6,000,000 tons of shipping had been contracted for this year up to October 1, despite the diversion of a considerable part of merchant shipbuilding capacity to the construction of spe-

cial types of ships for the armed forces, Admiral Land reported. And the Maritime Commission not only expects to meet the goal of 8,000,000 tons for this year, but also the President's demand for 16,000,000 tons of ocean-going vessels for 1943.

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NUTRITION

Foods Keep Vitamins

Fruits dehydrated by new processes retain more vitamins than when sundried. Several dehydrated vegetables better than canned.

➤ MANY VITAMINS are found in dehydrated foods if they are properly treated, Dr. Agnes Fay Morgan, head of the Home Economics Department of the University of California, told the representatives of the dehydration industry at the Western Regional Laboratory in Albany, Calif., summing up results on vitamin retention brought out by the past several years of research at the Berkeley university.

Fruits dehydrated under the new factory processes retain more vitamins than those preserved by sundrying. While prunes, peaches, and apricots are good sources of vitamin C, only those treated with sulfur dioxide retain this vitamin.

On the other hand, the sulfur treatment destroys two thirds of the vitamin B₁, as the thiamin molecule is split by sulfur dioxide. Since peaches and apricots are not rich in B₁, sulfuring is probably desirable in their dehydration. Vitamin A is stable and is retained in both dehydrated and sundried fruits, but riboflavin is quickly destroyed by light so that sundried fruit has lost most of its vitamin B₂, while dehydrated fruit shielded from light, retains it.

In the past two or three years, Dr. Morgan and her staff have been interested in the retention of vitamins in dehydrated vegetables.

Several of the dehydrated vegetables

have better vitamin retention than the same ones canned. Spinach, for instance, lost 75% of its B₁ when canned, as compared to the fresh spinach, but in dehydrated spinach the B₁ was preserved almost 100%; canned peas lost 73% of B₁ as compared to a loss of 10 to 20% in the dehydrated. Concentrated tomato juice, tomato paste, and dehydrated broccoli are good sources of vitamin C, Dr. Morgan pointed out.

In summing up the value of the dehydrated vegetables, she stated that the vitamin C loss was from 20% for broccoli to 80% for string beans. For B₁, the loss in several vegetables ran from 14% to 33%; B₂ 25% to 50%, with an exception in dehydrated carrots which had a loss of only 12%. In all the vegetables tested the carotene destruction was small, while 1/3 to 1/2 of the nicotinic acid was lost, probably due to leaching.

Studies on meat showed that there was less loss of vitamins B₁, B₂, and nicotinic acid in dehydrated than in canned meat. The cooked dehydrated meat compared favorably with the cooked fresh meat, since there is always some loss in preparation for the table.

Dr. Morgan warned research workers against the short methods of vitamin determination.

Vitamin assays up to three to four years ago were solely a matter of feeding animals. These take at least two months and are only reproducible within 15 to 20%. Chemists have attempted to shorten the process by the use of chemical and micro-biological methods.

"There is no consistency between the various tests," Dr. Morgan stated.

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CHEMISTRY

Resins Improve Method Of Softening Water

➤ NEW RESINS are replacing old zeolite minerals and greensands for special uses requiring softened water of excellent quality, such as in breweries, canneries and beverage manufacturers.

Extended application of the resins to prevent spoilage of medicinal enzyme preparations, to purify drugs, and to recover vitally needed metals from industrial wastes, was predicted by Dr. Robert J. Meyers of the Resinous Products and Chemical Company Laboratories of Philadelphia, speaking at a meeting of the Western New York Section of the American Chemical Society at Buffalo.

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