

## TECHNOLOGY

**Hard-Wearing Cable Withstands Army Trucks**

► A NEW and tough communication cable for Army telephone and telegraph circuits even stands up under the rumble of heavy trucks running over it constantly.

Saving one-third or 160 pounds of weight per mile, it carries 12 channels instead of the four of the cable it supersedes. Its rubberless vinyl and polyethylene insulating jacket lasts longer and allows the new multiple wire to be used in climates from the arctic to the tropics. It already is carrying messages in Korea.

The cable's up-to-date design should cut production costs \$18,000,000 during the next 12 months.

Developed and tested for almost four years at the Army's Signal Corps Engineering Laboratories, Fort Monmouth, N. J., the cable can be strung on poles, laid along the ground, buried or submerged in water without damage. In contrast to the old cable which could be stored only five years, the Spiral-4, as it is called, can be stacked in storerooms indefinitely.

The cable consists of four separately covered message-carrying wires that spiral around each other. The modern design permits the size of the copper strands to be cut, saving about 16,500,000 pounds of copper annually.

Stainless steel braiding replaces the regular steel covering, adding strength and reducing electrical losses.

With its associated terminal equipment, the cable can carry 12 messages simultaneously over 200 miles of rugged terrain. The old cable could handle only four messages at a time and could carry them only 100 miles.

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## NUTRITION

**Summer Salads Can Be Nourishing**

► WARM WEATHER brings the season when salads have a special appeal.

They are both appetizing and easy on the cook, since the ingredients can be prepared before the hot part of the day. But if the family is to be well-fed and nourished on salad meals, the housewife must plan something considerably heartier than a few greens tossed with dressing. The trick in making a main course salad is to use other vegetables besides greens and to add enough meat, fish, eggs or cheese to provide needed protein.

The U. S. Bureau of Human Nutrition and Home Economics suggests the following salads. A two-cup serving for each person provides a complete meal except for bread, beverage and perhaps desert.

Super Supper Salad—½ medium-sized head lettuce, 12-15 leaves chicory, 8 large leaves romaine, 1 medium-sized cucumber, 2 medium-sized tomatoes, 1 cup coarsely cut cooked chicken, 2 hard-cooked eggs, 1 cup

diced cured luncheon meat, 5 pepper rings and 4 small green onions. Serve with a tart French dressing with blue cheese added.

Hearty Chef's Salad—2 cups shredded cabbage, 2 large romaine leaves, 20-24 chicory leaves, 2 medium-sized tomatoes, 6 radishes, 4 cooked frankfurters, 1 cup thinly sliced cooked chicken, and 4 deviled eggs.

Serve with a tart French dressing with chopped onion and green pepper added.

Tropical Chef's Salad—20-24 chicory leaves, 8-10 romaine leaves, 1 cup shredded cabbage, 2/3 cup small pineapple pieces, 1 cup chopped celery, 1 medium-sized cucumber, 1 medium-sized carrot, 1 cup coarsely cut cooked chicken, ½ cup diced sharp cheese, ½ cup finely shredded salami.

Serve with a clear, tart oil dressing.

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## ICHTHYOLOGY

**Bounced Sound Waves Spot Lone Fish in Sea**

► INDIVIDUAL FISH swimming in the sea can be spied upon with echo sounders, usually used to measure the depth of the ocean.

Marine scientists have known that fish shoals can be spotted with their sound-bouncing equipment, but now they will be able to follow the reactions of a single fish to learn, for instance, what it does when the temperature of the water suddenly drops several degrees.

The spying on individual fish, as small as 30 inches, with sound waves was reported in the journal *Nature* (July 12) by Dr. F. R. Harden Jones, zoologist of Cambridge University here, and Drs. G. C. Trout, A. J. Lee and I. D. Richardson of the Fisheries Laboratory, Lowestoft. They also found, in studies made from the R. V. Ernest Holt, that sudden changes in water temperature can be spotted with their sound-bouncing equipment.

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## GERONTOLOGY

**Work Stops at 65 For Only 50% of Men**

► CONTRARY TO what many people think, lots of men continue working for a good number of years after their sixty-fifth birthday.

At ages 65-69 more than half of all men are still working and nearly three percent are looking for work, Metropolitan Life Insurance Company statisticians in New York report. Even at 70-74 years about 40% are in some gainful activity. Not until ages past 75 does the proportion employed drop below 20%.

These figures are based on unpublished data made available by the Bureau of the Census. The Census figures show that a large proportion of older women, however, are outside the labor market. Almost 87% of women at ages 65-69 are neither working nor seeking work.

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**IN SCIENCE**

## SURGERY

**Plastic Instruments For Surgery of Brain**

► PLASTIC INSTRUMENTS for brain surgery, through which the surgeon can see, have been developed by Dr. Frank T. Padberg of the Northwestern University Medical School, Chicago.

He has devised the tools for brain surgery out of methyl methacrylate (Lucite), a transparent, light plastic. They include brain retractors, spoons and a small mallet.

Dr. Padberg says the plastic instruments are superior in many ways to their metal counterparts. They are inexpensive and easy to make. They have a smooth surface and rounded edges, which protect the brain. The Lucite is transparent and the underlying cortex and white matter can be seen. It does not shine reflected light into the surgeon's eyes and it does not conduct electric current.

One set of the instruments, Dr. Padberg reports in the *Journal of the American Medical Association* (July 12), has been in continuous use for more than four years.

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## TECHNOLOGY

**Electron Microscope Answers Rubber Riddle**

► AN ELECTRON microscope has solved the riddle of the rubber bushings.

Tests conducted on rubber shock absorber bushings showed some bushings failed, although others remained intact. No apparent reason could be found to explain the difference in performance.

Under the powerful magnification of the electron microscope, samples showed Chrysler Corporation engineers that the good rubber bushings had tiny bits of carbon black mixed into the rubber along with the usual larger-sized particles. Only the larger-sized particles were seen in failures.

Dr. Sumner B. Twiss, head of the engineering division's physical-chemical research laboratories, said it would have been impossible to discover that difference without the electron microscope. Neither the larger nor the smaller carbon black particles could be seen with ordinary microscopes.

The electron microscope has a magnification of 100,000 diameters. Instead of light passing through a system of optical lenses, a beam of electrons passes through electromagnetic focusing fields.

As in a television set, the electron beam bombards a fluorescent screen. Photographs can be made by placing a piece of film beneath the screen. The film responds to the electron beam as it would to light.

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# E FIELDS

## ELECTRONICS

### Transistors Now Have TV and FM Applications

► TRANSISTOR RESEARCH conducted by the Radio Corporation of America has produced a germanium device that may be used in your future TV or FM set.

Formerly restricted to frequencies below 50 megacycles, the transistor now may be used in the very-high-frequency range. Television and FM stations operate in the VHF part of the radio spectrum.

Originally announced in 1948 by the Bell Telephone Laboratories, the transistor is a small germanium crystal to which wires have been attached. It can perform many functions of vacuum tubes, although it is only the size of a corn kernel.

During RCA's experiments on the devices, one transistor operated satisfactorily at a frequency of 225 megacycles, reported B. N. Slade, transistor engineer.

Mr. Slade said a definite relationship exists between the transistor's response to different radio frequencies and the spacing of its wire contact points. The closer the spacing is, the higher the frequency response is.

Further tests showed that a transistor's frequency response and stability also are determined partly by the amount of resistance that the germanium crystal puts up to the flow of an electric current.

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## PUBLIC HEALTH

### Polluted Water Can Look Fresh

► POLLUTED WATER can look safe, smell safe and taste delicious, yet be as dangerous as a dose of poison. Just because it bubbles from a spring or runs in a fairly swift current does not mean that it is safe, either for drinking or for swimming.

Remember that when you are tempted to swim or drink at a wayside stream. And teach the children, before the first warm days tempt them to dive into the nearest stream or swimming hole, that typhoid fever and other dangers may lurk in streams.

This is especially true of those in or on the edges of towns and cities that use streams for wastes and sewage.

Many health departments, both city and state, regularly inspect and test the water from springs, streams, pools and lakes. If they find the water safe, a sign saying so is usually posted. In some communities, such as Baltimore, signs warning that the water is not safe for drinking or swimming are also posted. If the spring, pool or stream has no sign to show the quality of its water,

play safe and avoid it. Try to find a supervised, inspected and health department approved pool for the children to swim in.

If you live on a farm or in a small town and have your own well or cistern, you should have it inspected from time to time by the health department. Even if your home water supply has always been safe, there is always the danger of the well walls cracking and allowing polluted water, perhaps from the privy, to seep in. The walls of a cistern should be inspected every time the cistern is cleaned.

City people who have just moved to the country or to a house outside the town with its safe water supply are especially likely to be ignorant of the danger of unsafe water.

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## TECHNOLOGY

### Detect Brushes With Inferior Horsehair

► A BETTER buy in paint and other brushes is promised from a bristle test developed at the National Bureau of Standards. It tells whether the brush is made of bristle, which is the hair of swine, or has been adulterated with other fibers, usually horsehair.

Most of our supplies of bristle are imported, with the best grades coming from China. After Korea, bristle supplies fell and prices rose, leading to use of considerable quantities of horsehair in brushes, even though they were labeled pure bristle.

Such adulteration was "of widespread occurrence." A quick, easily-made test that would identify the foreign fibers was needed. Sanford B. Newman of the Bureau staff has now perfected such a test for spotting fibers.

Paper-thin slices of the questioned bristle are examined under a microscope. The color pattern shown by such a cross section is an "accurate and rapid means of differentiating bristle and horsehair," Mr. Newman states. This method is not subject to change because of geographic location, type of hair or location of the hair on the animal.

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## INVENTION

### Patent Plane Wings For Supersonic Speeds

► A RADICALLY swept-back wing for airplanes designed to travel above the speed of sound has been invented by Pierre Henri Satre, Toulouse, France, and assigned to the Societe Nationale de Constructions Aeronautiques du Sud-Est. It received patent number 2,603,437.

The new wing is made up of two overhanging elements secured to each side of the fuselage. It is a single-spar type wing and the main spar extends into the area of maximum thickness of the wing. A transverse beam receives a shearing stress from the main spar, making it possible to attach the spar by a pair of supports only.

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## MEDICINE

### Millions of Women Are Too Anemic to Give Blood

► FROM SIX to ten million or more American women from the ages of 18 through 59 are too anemic to donate blood, the American Red Cross has found through its blood procurement program.

Compared to one percent of the men, 12.6% of women coming to blood donor stations during an 18-month period had hemoglobin levels below the minimum requirement, Drs. George W. Hervey and Ross T. McIntire and Miss Virginia Watson of Red Cross National Headquarters report to the *Journal of the American Medical Association* (July 19).

If hospital demands for blood continue, greater numbers of women may have to be called on for donations, the scientists point out. Consequently, they state, the anemia found in women of blood donating ages is "bound to engender rising medical interest."

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## PUBLIC SAFETY

### Avoid Fire Danger In Summer and Winter

► GUARDING AGAINST the danger of fire is a year round job. Just because the home heating plant is off in summer does not mean you can relax in your vigilance.

In summer, there is the job of helping to prevent forest fires. Hunters, fishermen and vacation campers are being urged to take special precautions to guard against these fires that each year ravage some 30,000,000 acres of forest land besides killing countless numbers of wildlife and fish.

Even if you do not hunt, fish or go camping, you are likely to have at least one Sunday outing in the woods, or a drive through some cool woodland area. The burning cigarette stub or match you flip through the car window may well start a disastrous fire.

Most of the fires in our woodland, 90%, are man-made, the result of carelessness or indifference. And with prolonged dry spells in summer, the need for care is greater than ever. So when you are in the woods, remember to take the following precautions:

1. Care of matches: Be sure your match is dead before throwing it away. Always break it in two.

2. Cigarettes and pipes: Make certain cigarette stubs and pipe ashes are cold before throwing them away. Never throw them into brush, leaves or needles.

3. Making a campfire: Scrape away all flammable material from an area 10 feet in diameter. Build your fire in the center. Always keep it small and never build it against trees or logs or near brush.

4. Putting it out: Never break camp until your fire is out. Sprinkle water over coals and charred sticks. Turn them and drench both sides. Wet the ground around the fire until every spark is dead.

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