

• New Machines and Gadgets •

⚙️ **MEASURING** the soldier's feet more quickly and accurately by a new device results in better fits of GI shoes. Less than 10 seconds are required to measure both feet.

Science News Letter, July 3, 1943

⚙️ **TEXTILE** fabrics that are warp or circular knit will be better and more resistant to shrinkage and stretch through use of a new type of drum dryer for drying and finishing, the manufacturer reports.

Science News Letter, July 3, 1943

⚙️ **WAVE METERS**, intricate instruments to check wave lengths of radio transmitters, now contain self-compensating devices to insure accuracy of the transmitters when subjected to rapid temperature changes. These devices are thermostatic controls somewhat similar to those used in automatic heating in homes. They are particularly valuable in aircraft.

Science News Letter, July 3, 1943

⚙️ **FEATHERWEIGHT**, compact radio transformer cores designed for war communications duty require only half the nickel and a tenth the copper formerly used. A workman is shown cutting ribbons of the special silicon steel which is responsible for the conservation and light weight.

Science News Letter, July 3, 1943

⚙️ **A NEW ROTOMETER** is more sensitive and easier to read than former instruments. It measures the rate of flow of liquids or gas through a conductor.

Science News Letter, July 3, 1943

⚙️ **NEW ARMY** bugles, made of a cellulose acetate plastic, are reported to be as good if not better than their metal predecessors. They are lighter in weight, give clear and true notes and have about the same carrying power.

Science News Letter, July 3, 1943

⚙️ **ELECTRIC** water coolers, developed through a series of tests simulating conditions on shipboard during stormy ocean weather, are being constructed for use on transport vessels to supply troops with suitable drinking water.

Science News Letter, July 3, 1943

⚙️ **AN AIR-LESS** fabric auto tire recently patented is composed of a great many cotton fabric pieces placed so that it runs on the ends of the fabric.

Science News Letter, July 3, 1943

⚙️ **AN AUTOMATIC** telephone dial operator has recently been patented. With it, an unlimited number of telephone numbers may be automatically dialed. It has a keyboard with individual keys, which are depressed to dial the numbers corresponding to the keys.

Science News Letter, July 3, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, 6, D. C., and ask for Gadget Bulletin 163.

ENGINEERING

Weight-Lifting Injuries Avoided by Wise Handling

➤ **BOTH** THE science and the art of weight-lifting should be studied by foremen and supervisors in factories and shops, and also by farmers and men in construction work. Strains, sprains, and hernia constitute about one-quarter of all industrial accidents, according to good authority. One-half of these accidents are caused by lifting and carrying weights.

Back strains caused an average time loss of 19 weeks per person per injury, in one state where a study was made. A hernia, it was found, usually lays a worker up for about eight weeks. Other disabilities often occur from over-lifting, such as the dislocation of joints and the fracture of bones.



Lifting the wrong way, and lifting by persons physically incapable of raising heavy weights with safety to themselves, are two of the most frequent causes of weight-lifting accidents, according to the U. S. Department of Labor, which has had a study made of this matter. It recommends to management an analysis of all lifting and carrying jobs, the installation of mechanical lifters and conveyors where desirable, and the control of individual efforts in keeping with their strength.

Women as a rule should not be required to lift more than one-half the safe weight for a man.

Many back strains result from raising an object from the floor by bending the back over it, and lifting with the back and abdominal muscles by straightening the body. The proper way is to spread the feet, bend the knees, and lift with the leg muscles and the shoulder muscles.

Science News Letter, July 3, 1943

GENERAL SCIENCE

Old Glory Is Hoisted Over Naval Research Laboratory

See Front Cover

➤ **HOME OF RADAR**, the U. S. Naval Research Laboratory, is celebrating its twentieth anniversary as you receive this copy of the SCIENCE NEWS LETTER. It was founded on July 2, 1923.

The illustration on the front cover shows the United States flag being hoisted into place with due ceremony by U. S. Marines. With the use of this timely photograph, SCIENCE NEWS LETTER joins other magazines of the nation in giving prominence to our nation's flag in celebration of Independence Day, July 4, of this war year.

Science News Letter, July 3, 1943

Dairying is reported to be America's largest industry; 26,000,000 dairy cows supply the materials.

MATHEMATICS DICTIONARY

Invaluable in reading any book that uses mathematics.

THE JAMES MATHEMATICS DICTIONARY, the only such book now published, provides standard definitions of the terms and phrases from arithmetic through elementary differential equations, the technical terms ordinarily used in the applications of these subjects, and more advanced basic terms. Easy examples, many illustrations and all sorts of formulas are included. The appendix contains tables of weights and measures, a list of mathematical symbols and the tables ordinarily used in handbooks.

This dictionary is a great deal more than a collection of definitions. It explains, illustrates and correlates, stressing especially those operations that are hardest to understand. One reader has called it "Ten texts in one."

Available in either flexible or non-flexible, blue fabrikoid binding, for \$3.00, from the Digest Press, Van Nuys, California, or Science News Letter.