

device. If the blanket of light were hung across a punch press, for example, a man's finger entering the danger zone would instantly activate the electronic shut-off switch for the machinery.

Used as an inspection device, the light could be reflected from speeding sheets of paper during manufacture; imperfections would be detected by the scanner since blotches on the paper would cause slight changes in light intensity. This untiring "eye" could similarly be adapted to other products requiring inspection of a large expanse.

Need for a more efficient automatic door opener mothered the new inven-

tion, which stems from the old idea of light scanning with mirrors.

Photoelectric methods now installed to open doors usually have several cells, instead of one, and use broad beams of light. When a truck with protruding pipes or lumber backs to the unloading door, the door may fail to open in time because only a small part of the beam is cut off by the thin projections.

This "maybe factor" is avoided by the new scanner since only a small segment of light registers at a time but the entire lighted area is checked in a fraction of a second.

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## ENGINEERING

## Most Electrical Ship

New battleship Iowa, largest of world's warcraft, can pour out 10,500 kilowatts of electrical energy from her generators, enough to supply a city.

► THE NEW battleship Iowa, hugest among the world's warships, also has the most elaborate electrical installation. Capt. H. G. Rickover, USN, sketched some of the high points of her equipment in an address before a meeting of the American Institute of Electrical Engineers in Roanoke, Va.

The generators aboard the Iowa can pour out a total of 10,500 kilowatts of electrical energy, which is enough to supply a city of 20,000 people. The huge ship carries 1,300,000 feet of electric cable, 900 motors, 5,300 lighting fixtures, 275 service telephones and 800 battle telephones.

Impressive though these figures are, they only serve as typical for the U. S. Navy in general. American ships are electrical ships, and have become increasingly so since the first World War. Then, Capt. Rickover pointed out, the over-all figure for generating capacity in the Navy as a whole was about one-twentieth of a kilowatt per ton of displacement; now it is approximately one-fourth of a kilowatt.

Some of the special problems involved in electrical installations on Navy ships were pointed out by the speaker:

"In addition to the characteristics normally required in electrical equipment for industrial use, it is necessary that certain special features be incorporated in the design for naval application. These special features include reliability, ruggedness, use of corrosion-proof materials, drip-proof and water-tight

features, ability to withstand the roll and pitch of vessels, and insulation and impregnation adequate to prevent failure due to the effects of moisture and salty sea water. It is highly important that disassembly, repairs, and re-assembly of the equipment be easily and quickly accomplished on the vessel with ordinary tools and readily obtainable parts.

"The vast shipbuilding program now in progress has introduced many problems requiring prompt action and solution to avoid delay in ship construction. In order to meet the tremendous demand for electrical equipment entire new plants have been constructed. One factory produces nothing but 6000 horsepower synchronous motors and one motor per day is completed in this plant. Another similar factory produces one 4600 kilowatt steam turbine condenser and generator per day. These generators supply the power for driving the 6000 horsepower motors."

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## ENGINEERING

## New Standards for Fiber Insulating Board Issued

► NEW FIBER insulating board standards have just been released by the National Bureau of Standards. They include classes of structural materials designated as building board, lath for plaster base, roof insulating board, interior board and sheathing. The publication is a revision of the 1935 standards.



**GIANT OF THE SEAS**—The massive 45,000-ton USS Iowa, mightiest man-o'-war ever launched, is shown in this official U. S. Navy photograph sliding down the ways of the New York Navy Yard.

The new standards cover minimum physical requirements and tests for thermal conductivity, transverse and tensile strength, linear expansion, deflection and water absorption. They cover also requirements for composition, construction and finish.

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## CERAMICS

## Glass-Mending Method Uses Refractory Paste

► BREAKING of a precious Venetian vase or Bohemian bottle is a domestic tragedy at any time, and much worse now that their sources are for the time completely cut off. This gives interest to a process for glass mending on which A. M. Landesman and Eugene Landesman of St. Louis have been granted patent No. 2,333,186. In mending a broken glass vessel, first the fragments are carefully set back in place, then the whole thing is embedded in a coating of refractory paste and placed in a small furnace. When the right temperature has been reached, a blowpipe raises the glass along the fracture lines to the melting-point, which causes the broken parts to fuse together.

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