



EXPOSURE SUIT—For submariners swept overboard at sea, the Navy has developed a new kind of coverall to protect the sailors from exposure.

Made of neoprene-coated nylon, the coveralls have detachable boots and mittens. That permits small men with big feet to be fitted as easily as tall men with small feet. The mittens can be left off or worn, depending upon the work being done by the sailor.

Should he be carried overboard by a wave, the sailor can inflate his water wings by pulling a cord that releases carbon dioxide into the life vest. With boots and mittens on, the sailor can stay afloat in the ocean without getting wet.

The rubber boots, actually the forerunner of those now being worn by servicemen in Korea, have a steel ring imbedded in their tops. An expandable rubber cuff attached to the trouser leg of the coveralls stretches over the boot's ring, providing a watertight seal. The same arrangement is used to seal on the mittens.

About 500 test suits already have been tried out in the Atlantic and the Pacific. T. J. Seery, head of the clothing research development section of the Navy's Bureau of Supplies and Accounts, reported that the coveralls were received enthusiastically. Clothing specialists now are working on what they believe is the "final model." The coveralls soon should be standard equipment for all submarines, Mr. Seery suggested.

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ASTRONOMY

Universe Found Heavier

► THE WEIGHT of the universe has been underestimated. It weighs almost ten times as much as previously believed, according to estimates just reported by Dr. Thornton Page of the Operations Research Office of Johns Hopkins University, Chevy Chase, Md.

The average galaxy of stars is about as massive as 80 trillion suns, Dr. Page figures. His measurements were made with the 82-inch reflecting telescope of McDonald Observatory in Texas while on the staff of the University of Chicago.

The universe is very widely spread, however. On the average, there is only about one pound of the cosmic material of which stars are made in the space occupied by 40,000 earths, the astronomer calculates.

Double galaxies provide the best means that are presently available for determining

the mean density of the universe, Dr. Page believes.

Just as the masses of double stars can be approximated, so can the average mass of double systems of spiral nebulae be estimated by measuring their distance apart and the speed with which these huge aggregations of stars swing around each other.

There are many heavyweight and many lightweight galaxies in the universe, but few with masses in between, if the 40 pairs of galaxies studied are typical of double systems throughout the universe. The lightweight systems weigh about five trillion times as much as our sun, the equally numerous heavy ones average 150 trillion times the sun's mass, Dr. Page reports in the latest issue of the *Astrophysical Journal* (July).

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MEDICINE

Water-Logging Stopped

► WHEN HUMAN bodies become waterlogged because of congestive heart failure, cirrhosis of the liver or high blood pressure without known cause, synthetic resins can relieve the condition.

The resins are chemically related to plexiglass and similar to those used in water softeners. The patient swallows them in the form of a finely ground powder stirred in water or fruit juice.

Successful use of this treatment was reported by Dr. B. L. Martz of the Indianapolis General Hospital, Indianapolis, at the meeting of the American Medical Association in Denver.

The water-logged condition in heart and liver patients, he explained, comes because the body cannot eliminate sodium, a mineral in table salt and many foods. Rigidly low sodium, or salt, diets plus injections three or more times a week of mercurial compounds have been necessary to remove the excess water and sodium from the bodies of such patients.

The new resins eliminate or greatly decrease the need for the mercurial injections and allow the patient a more palatable diet.

Dr. Martz reported good results in the resin treatment of 50 patients with congestive heart failure, and in all but one of 18 patients with ascites, or fluid accumulation, due to cirrhosis of the liver.

Of 18 patients with high blood pressure, eight were brought to normal by restriction of sodium and the use of resin. In five more cases the blood pressure was reduced significantly. The other five failed to respond.

Because of the relatively large bulk of material that had to be swallowed in this form of treatment, there were some cases

of mild or marked gastrointestinal disturbances. Side-effects prevented continuance of treatment in eight.

Drs. K. G. Kohlstaedt, O. M. Helmer and R. S. Griffith, all of Indianapolis, cooperated with Dr. Martz in the study.

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TECHNOLOGY

Radioactive Tracers Mark Pipe-Line Oil

► OIL COMPANIES now are using radioactive materials to label different kinds of oil routed through the same pipe-line to various points along the pipe-line's length.

Dr. Paul C. Aebersold of the Atomic Energy Commission reported to the American Management Association that oil wastes can be cut by the new technique.

Since a pipe-line may be used to carry many different kinds of oil, it is difficult to get "clean separation" at the point where one batch of oil ends and a different grade begins. By putting radioactive materials into the line just before changing the grade, engineers have provided themselves with an effective label.

Geiger counters trace the radioactive material as it moves through the line. When it gets to the terminal scheduled to receive the grade of oil following it, terminal operators detect the radiation and draw off only the oil they are supposed to receive.

One company already is using the method to label oil flowing through its 550-mile pipe-line from Salt Lake City to Pasco, Wash.

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