Warmth of Clothes Measured

Physics

New Machine Simulates Both Wind and Cold

YOU need not wear an overcoat to find out how warm it is. Instead, wrap it around the heating unit of a new thermal transmission apparatus, turn on the refrigerating coils, start the fan and then read the dials showing the measure of the coat's resistance to cold.

This new method of testing the effectiveness of different kinds of cloth as protection from winter weather was developed by Ephraim Freedman of New York City, who described it before a meeting of the American Society for Testing Materials.

The heating unit is held at body temperature and the heat it consumes is applied and measured electrically. A wind velocity as great as 25 miles per hour can be obtained with the fan, and a refrigerating unit is able to reduce the temperature to 20 degrees Fahrenheit.

With wind velocity slightly more than 14.2 miles per hour tests showed that a square foot of gauze allows 10.608 British thermal units of heat to pass through it every hour for each degree difference in temperature between the heat unit and the surrounding air. The corresponding figure for plain weave duck is 8.684; for flannel coat lining, 5.460; nap filled, twill weaved blanket material, 3.151; curl faced overcoating, 2.220; and Alaska seal, 1.856.

LIKE bad boys, iron thrives on punishment. The more licks it is given, the stronger it gets.

But here the analogy breaks down, because cast iron which has many flaws gets much stronger than iron made in an open hearth furnace which is very homogeneous. It was necessary to give the cast iron 15,000,000 licks to cause the greatest increase in strength.

Under this number of stresses, each just below the original endurance limit, the final endurance limit for cast iron became 31.2 per cent. greater than the original, Prof. J. B. Kommers, of the University of Wisconsin, reported. The endurance limit of open hearth iron was increased about 10 per cent.

AVERY stringent law of magnetism which says there shall be twice as many lines of force through a piece of iron as through another piece twice as large in cross-section has been very neatly evaded if not actually disobeyed by two scientists of Johns Hopkins University, Prof. W. B. Kouwenhoven and A. C. Seletzky.

Prof. Kouwenhoven and Mr. Seletzky have made a set of balanced resistance coils which will accurately compare the magnetic properties of a piece of iron or steel with a standard piece even though they differ in cross-section.

Alternating current is used, and it was found that when the phase angle of the current is properly controlled the adjustment of the balancing coil is independent of the cross-sections and dependent only upon the magnetic properties of the material.

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Archaeological No-Man's-Land

Archaeology

WEST VIRGINIA is an archaeological no-man's-land waiting to be put on the map of prehistoric America, in the opinion of D. T. Stewart, anthropologist, of the Smithsonian Institution, who has just investigated on behalf of Science Service a reported mound grave discovery near Salem, W. Va.

Mr. Stewart was asked by Science Service to trace down a report that skeletons of four giant men seven to nine feet tall had been unearthed in two prehistoric West Virginia mounds. He visited the site, accompanied by Ernest R. Sutton, professor of geography at Salem College and finder of the prehistoric graves, and since the bones unearthed there have been lost or disintegrated he set to work to explore the mound further.

So little is known about the early inhabitants of this mountain region, Mr. Stewart said, that scientific maps showing the distribution of Indian tribes or the spread of Indian languages fade off into blank whiteness in the West Virginia area.

Directing a squad of young volunteer excavators from Salem College, Mr. Stewart dug into the large mound which had yielded three burials. No further graves were found, but some fragments of pottery were discovered which suggest that the West Virginia mound builders knew the same pottery technique as the more famous Ohio mound builders.

Spear points, well shaped, and discovered by the earlier excavation, were examined by Mr. Stewart and pronounced similar to those of the mound building Indian tribes which occupied the Mississippi valley and spread through the valleys of the Mississippi tributaries in pre-Columbian centuries.

Of the four skeletons found by Prof. Sutton and several associates practically no trace remains. The fragile state of the bones led the finders to consider them not worth keeping. Hence, measurements of the skeletons, which lay with the bones separated, cannot be checked by scientific methods. Fragments of arm bones which had been preserved were shown to Mr. Stewart, who said they appear to be average in size.

Isolated cases of giantism among Indians have been known. The Smithsonian Institution has the giant bones of one Sioux who lived into historic times, and who was more than seven feet tall. Frequent reports of the discovery of some tribe of prehistoric giants who inhabited America come to the attention of Smithsonian anthropologists, but no such report has ever been backed up by skeletal evidence sufficient to convince the anthropologists that any part of the continent was inhabited by real giants. Some tribes of Indians were more powerfully built than others, just as Americans in some parts of the country today average taller than those of other sections.

Exaggerated ideas of human size may be easily obtained by looking at skeletons in ancient graves, Mr. Stewart explained, because the bones become separated, and the layman does not know how "to allow for skrinkage" in fitting the bones together.

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