ANTHROPOLOGY

How Big Are American Feet? Scientists May Find Out

Shoe Sizes Have No Exact Meaning, Government Experts Have Found; They Do Not Reveal Variations in Contour

HOW BIG are American feet? And what shapes? Nobody knows. Extensive measurements have never been made.

But measuring thousands of American feet will be undertaken, so that fitting shoes can become a science, not an art, if a new report by the U. S. Bureau of Home Economics leads to action.

In the report just issued on "Shoe Sizing and Fitting," Mrs. Carol Willis Moffett, collaborator of the Bureau, says that the Bureau is now doing research on new methods of measuring feet, taking into account curves as well as simple length and width. The Bureau's big job of measuring 150,000 American children and 15,000 American women, to make sizing of clothing more scientific, showed that getting a broad cross-section of scientific data on what American people are like physically can be accomplished. Manufacturers are beginning to put the facts and figures to use.

The report calls to public attention such facts about feet and shoes as these:

It is possible to put the same adult foot into any one of six sizes of shoe, although one of these will be a better fit.

There is no agreement among retailers as to whether customers' feet should be measured with weight on or off the foot, though it may make considerable difference in foot size.

Blind size markings, used by many manufacturers and retailers, have helped to conceal from consumers the confused practices in sizing and fitting. More than 160 codes are used today to indicate size.

A broad shoe is made longer than a narrow one of the same size to give a more streamlined look. Thus, says Mrs. Moffett, a 7A will be shorter by one-sixth of an inch or more than a 7E.

Most consumers think that widths stated in letters such as A, B, C are the width at the sole of the foot. In fact, they represent girth measurements at the ball, waist and instep of the foot. Last manufacturers may vary these measurements, adding a sixteenth of an inch or more to one girth and taking it from another, in efforts to produce a better fitting last.

"Shoe sizes have no exact meaning today," adds the report, "because they do not reveal important variations in dimensions and contour."

Everybody knows what a foot looks like, but no one has ever precisely defined what a foot is in size, shape and rate of growth or change, although this is needed for mass production of an article of clothing that is as unalterable to suit individual variations as shoes are, says Mrs. Moffett.

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METALLURGY

Lead-Tin Alloy Softens As It Grows Older

ALLOYS that harden with age have often been observed. But an alloy that softens as it grows old is something really new under the sun. Such an alloy was discovered four years ago by Prof. H. Vance White, head of the metallurgy department of the Virginia Polytechnic Institute, in lead alloyed with a small quantity of tin.

To discover the cause, an X-ray study of this substance has now been made by Miss Bertha H. Weaver, graduate student.

The X-rays showed the characteristic pattern or "lattice" of crystalline lead, but with here and there an atom of tin substituted for an atom of lead. This meant that the tin was dissolved in the lead, forming a "solid solution" of tin in lead.

Examination with the spectroscope, the instrument which by analysis of light tells what things are made of, showed at first no "lines" of tin. Later these lines developed, showing that the tin was being slowly precipitated from the lead lattice.

Curiously, this is exactly the same thing that happens with alloys that harden with age. How could the same process account for both hardening and softening?

It had been supposed that the loosened particles got in between the slip planes of the crystals, thereby creating friction which impeded their slipping one over the other, like sand between the sliding parts of machinery. The hardness of alloy steels is explained in this way.

Miss Weaver suggests that in the lead-tin alloy the precipitation had already begun while the mixture was still molten and that the critical size of particle for maximum friction had been surpassed by the time the alloy was solid. As the particles further increased in size they began to act more like ball bearings than like sand or gravel, and promoted instead of impeding the slipping. Thus the alloy became softer.

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MEDICINE

Sulfathiazole Successful In Treating Dysentery

SUCCESS with sulfathiazole treatment of bacillary dysentery is reported by Dr. Merlin L. Cooper, Dr. Ralph L. Zucker and Dr. Stewart Wagoner, of the University of Cincinnati College of Medicine and the Children's Hospital Research Foundation (*Journal, American Medical Association,* Nov. 1).

Their patients were babies and small children. The treatment succeeded only when the dysentery was caused by the germ known as Shigella paradysenteriae. Other cases of dysentery, such as have frequently been epidemic in hospital nurseries in recent years, were not affected by the sulfathiazole treatment. The dysentery that was successfully treated, however, is the type especially prevalent in tropical countries.

The little patients who received the sulfathiazole treatment recovered much faster than those not getting the drug for bacillary dysentery. All but one of the 17 stopped discharging the germs by the time they left the hospital, whereas 17 of 34 patients who did not get sulfathiazole were still discharging germs at the time of leaving the hospital.

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