



ATOMIC-AGE WORKER — Plastic protective clothing filled with compressed air is in use in Britain's atomic energy research establishments and production plants. It provides the wearer with protection against radioactive dust and particles.

TECHNOLOGY

Postmen Walk Around on New Shoe Leather Test

► "NEITHER SNOW, nor rain, nor heat" stayed Philadelphia postmen's insoles from outwearing original outsoles and resoled to prove that a new technique in tanning makes shoes last longer.

The walking test of daily wear by these "swift couriers" lasted from nine to 12 months and showed that insoles treated with basic aluminum acetate increases sole durability almost 70%.

Leather, first tanned normally with vegetable extracts, is then retanned with basic aluminum acetate. This chemical builds up resistance to acid deterioration, moist heat and mold.

Laboratory tests showed alum-treated leather 81% better in tensile strength. The postmen's walking experiments showed that after original outsoles and two resoled were worn through, 85% of the alum retanned insoles were still worth repairing. Only 49% of the ordinary insoles were in similar condition.

This new development in leather tanning can easily fit into the regular tanning operations, state the U. S. Department of Agriculture chemists C. W. Beebe, W. F. Happich, W. S. Kip, and J. S. Rogers, who perfected the new process.

Science News Letter, November 13, 1954

MEDICINE

Seek Arthritis Cause

While scientists search for basic reason for rheumatoid diseases, both new and old drugs are giving patients relief and helping to control attacks.

► NEW AND old drugs are holding the fort against the rheumatoid diseases, from gout to arthritis, while scientists seek the basic cause of these ailments and a single specific cure.

Progress with both the drugs and the basic research was reported at an American Rheumatism Association meeting in the Clinical Center of the National Institute of Arthritis and Metabolic Diseases, Bethesda, Md.

The newest of the drugs that show promise are on trial at this national arthritis institute.

Gout, said to be the oldest known disease of man, can now be effectively attacked by fast-acting drug called phenylbutazone, Dr. Charley J. Smyth of the University of Colorado School of Medicine, Denver, reported.

"Although there is no known cure for gout," Dr. Smyth said, "the control of the frequency and severity of acute attacks is now quite satisfactory. In contrast to other forms of arthritis, the treatment of gout is relatively effective and with the acute attacks properly managed the results are frequently dramatic."

In his investigation, Dr. Smyth studied the effect of phenylbutazone at various blood levels upon the blood and urinary uric acid in 10 gouty and eight non-gouty arthritics.

"A step-wise fall in blood uric acid to normal," Dr. Smyth said, "occurred in all but two of the gouty patients. The excretion of uric acid was increased in all but one patient and the maximum output occurred before the maximum fall in the blood level."

Dr. Smyth said clinical benefits usually began within a few hours and that the majority of patients experienced a complete remission in 48 hours or less. He said the new drug was found to be effective in patients resistant to colchicine, a drug that has been used in the treatment of gout since as far back as 1500 B.C.

The basic problem in arthritis, scientists now believe, exists in the connective tissue, the web-like framework which holds the human body together. Inflammation of this tissue is known as arthritis when it exists in the joints. When it exists elsewhere in the body, it is known as rheumatism or by some other specific name such as rheumatic fever.

For early treatment of rheumatic fever, aspirin combined with one of the adrenal or pituitary gland hormones was suggested by Dr. Edward E. Fischel of the Bronx Hospital and Dr. Charles W. Frank of Presbyterian Hospital, New York. Giving an adrenal or pituitary hormone over a long

period "may result in serious toxicity," they warned.

On the other hand, they said, short-term treatment with the hormones, cortisone, hydrocortisone or ACTH, is almost always followed by a flareup of rheumatic inflammation. To guard against such flareups, they recommend prolonged and uninterrupted use of aspirin.

A newly refined test for rheumatoid arthritis that is 92% accurate was reported at the meeting.

The test, using sensitized sheep cells and a euglobulin blood fraction taken from an arthritis victim, is still in the research stage. It was developed by The Study Group on Rheumatic Diseases of the New York University College of Medicine.

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PUBLIC HEALTH

Simple Paper Method Detects Unseen Smog

► A RELATIVELY simple way of detecting "smog" even when the air seems to be clear has been discovered by Drs. Bernard D. Tebbens and Jack D. Torrey of the University of California School of Public Health, Berkeley.

The method is paper chromatography, used in many laboratories to determine very small amounts of chemicals. Development of a colored spot on special paper when suitably treated material is placed on the paper tells the chemist what chemical is in the material.

The California scientists filtered samples of San Francisco Bay Area air and put the solid particles collected by the filter on the paper.

Salts of acetic and formic acids were discovered by this method in the San Francisco air. These gases were also found in the exhaust gas of a relatively new automobile, an incinerator, a gas fire and a wood fire. Raw natural gas, on the other hand, did not contain any filterable acetate or formate.

Smog, the scientists state in *Science* (Oct. 22), may be present even when there is no foginess to reduce visibility. The reduced visibility may be simply the result of water condensed on normally present nuclei.

A fluorescent, oily material was also discovered in the San Francisco air during several "characteristic air pollution episodes." This fluorescent oil and acetic and formic acids have also been found by Dr. Torrey in a sample of filtered air from Denver.

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