

CHEMISTRY

# Uncle Sam's Laundry That Has No Customers

## Scientists' Findings About Shrinkage and Fading Of Clothes Will Aid Both Housewives and Laundrymen

**S**UPER-LAUNDRY equipment has been installed by the U. S. Department of Commerce at the Bureau of Standards in Washington. Though fitted with the most up-to-date laundry devices, this singular plant has no customers and clothing belonging to nobody is duly put through its suds.

The object of the Government's unusual laundry is to do right by the clothes of the nation. It stands between the much abused laundryman and the irate housekeeper, listening to the troubles of both and giving advice that will result in better satisfied customers for the laundry and longer-lived, cleaner clothes for the housewife.

Sometimes Uncle Sam's laundry specialists actually try to shrink a pair of stockings to as near nothing as they will shrink or rub as much of the color out of a cloth as will come out in an extra strenuous wash. For the aim and object of so much elaborate equipment is not to launder successfully any one particular item, be it sock, pants, dress, towel, or shirt, but to discover how and why clothes sometimes return from the laundry rejuvenated and then again come back looking as if they had been to the wars.

Thus if a gorgeous cloth of turquoise blue emerges from the water a pale, ænemic, sickly shadow of its former self, the Government is likely to witness a grave consultation of chemists. Just why did the blue fade? Was the fault in the dye itself or in the finishing of the fabric? Was the soap innocent or guilty of the laundry mishap? Could the accident have been avoided? And if so, how so? For the sleuthing chemist this would be a mere start on the hunt for facts. Small wonder that one of the first jobs undertaken by the new laundry was to devise a machine that would aid in scientifically answering questions and solving riddles concerned with washing.

A laundrometer was the result. This is a machine that provides for simultaneously washing twenty different samples under identically similar laundry

conditions to observe the behavior of the fabric and color. By varying the kind of water, the soap, the temperature and the duration of the process, the merits of different laundry methods applied to a wide variety of materials and clothing are likewise tested.

### Laundry Questions Answered

Many important laundry questions have already been answered at the test laundry. Women shopping for wash clothes are informed that the shade of a dress, whether it is yellow or blue or pea green, furnishes no clue to its fade-proof qualities. Experiments showed that the chemical type of the dye and the skill with which it was applied to the fabric, not the color, are the important factors in determining color fastness. This discovery by Uncle Sam's laundry specialists contradicts the conviction prevalent among housewives that yellow garments fade more quickly than others.

Many gay-colored dyes appeared practically fadeproof against ordinary laundry conditions but were affected by the brightness of the sun. This was revealed by dresses which survived the suds only to wilt in the sun. This observation blasts another pet theory of the general public, namely that a dye strong enough to withstand washing is likely to be able to withstand light. Actually, the opposite is more nearly the case, as only rare dyes are proof against both light and water, while most of those which are immune to sun, succumb to water, and vice versa.

The immediate value of this test is that it places the blame for a given laundry failure where it should belong. If a fabric proves too unstable to withstand a fair proportion of the test washings, the manufacturer is judged at fault. If, on the other hand, an unduly large proportion of the sample fabrics are damaged in one particular washing test, the process is blamed.

Following the lead of Uncle Sam's test laundry, some of the large department stores of the country have installed laun-

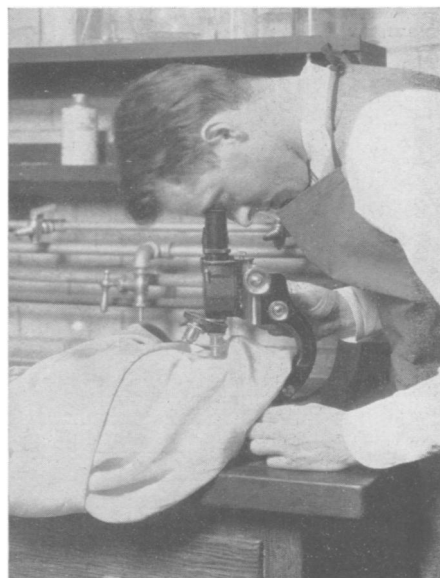
drymeters and are submitting all their piece goods to the test of average laundry conditions of their community before putting them on the counter. This enables the store to guarantee that it has done its part toward making the family wash a success and is leaving it up to the laundryman to do his bit.

For his part, the laundryman can take advantage of the tests to advise his patrons whether their clothes are wash-worthy and to warn them against dyes and weaves that will not survive the ordinary rigors of wash day.

While the tests are designed to protect the dependable manufacturer and laundryman against unfair blame, the individual housewife who buys the clothes and sends them to the laundry is expected ultimately to benefit as the new standards for textile manufacture and laundry methods are forced upon the backward business man by competition.

Soaps and the part they play in the success or failure of wash day constitute another problem now being attacked in a series of experiments at Uncle Sam's laundry. What soaps wash cleanest? What kinds are best for preserving the colors of the goods and what cause the least shrinkage?

The laundry specialists do not expect to discover one universally faultless soap among the thousand and one varieties now on the market. Laundry conditions and requirements vary too radically with time and place and clothing to be laundered for any such all round best soap to be chosen. *(Turn to next page)*



**LOOKING FOR DAMAGE**  
*Scientist determining the damage done by test washings and cleanings.*

Our grandmothers found old-fashioned yellow soaps best for their purposes but more and more the modern housekeeper leans toward white laundry soap for her ordinary washing uses. This is explained by the disappearance of the old-fashioned rain barrel and cistern and the growing use of hard water from the deep well supply of city mains. Hard water requires the addition of more alkaline constituents and the substitution of coconut oil for the rosin found in soft-water soaps.

To make a fair test of the cleaning ability of the different soaps, standards for dirt are likewise being set up in the Government laundry. Most hardworking housekeepers know to their sorrow that the most innocent looking spots of dirt sometimes prove terrifically stubborn. Carbon black, umber, and various oil combinations are being tried out as fairly representative and stubborn specimens of dirt.

After it has been discovered what soaps are best for a given cleaning job, the question still remains for the laundry chemist: What makes the soap clean well and what should a good soap contain?

By strict definition, all metallic salts of fatty acids are soaps but, as a matter of fact, only the fatty-acid salts of alkali metals are soluble in water and hence practical for ordinary cleaning. To a less extent rosin acids are used.

Soap is practically never used in its pure state, as various "builders" are added to adapt it to special uses. Sodium carbonate, borate, silicate, and

phosphate are added to make the soap harder and more effective in hard water. Clay, sand, volcanic ash, infusorial earth, pumice and starch in soap serve to scrape and wear the dirt away like good-mannered sandpaper.

To the point which these "builders" serve the purpose for which they are added, they enhance the value of the soap. Sometimes, however, the soap manufacturer is tempted to use an excess of the "builder" to increase the bulk of his product without increasing the cost. And it often happens as the unreliable manufacturer hopes, that the housewife is deceived into believing that she has found a bargain when she gets a large piece of soap for her money, though she is in reality paying dear for clay and starch.

Protecting wholesale soap buyers against such deceptions, the Government has formulated a set of standards for various kinds of soap, including white floating soap, liquid soap, soap powder, grit cake soap, automatic soap, chip soap, ordinary laundry soap, scouring compounds and hand grit soap. This enables the buyer to ask for soap conforming to certain minimum specifications and adapted to his needs and provides a test whereby he can readily determine whether he is being supplied in accordance with contract.

The cleaning ability of a soap is only one of its qualities measured in the tests. The shrinking effect of a given soap and its effect on dyestuffs are other factors that go into the ultimate rating.

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#### CHEMISTRY

## Radium Rays Three Times More Effective than X-Rays

**T**HOUGH radium rays and X-rays cause reddening of the skin to nearly the same extent, the radium is about three times more effective in producing certain other biological effects.

This is the conclusion announced to the Optical Society of America by Dr. G. Failla and P. S. Henshaw of the New York Memorial Hospital.

The work has required the development of an apparatus which would measure equivalent, comparable doses of the two radiations. It was found that 500 roentgen units of radium gamma rays produced the same reddening

of the patient's skin as 600 roentgens of filtered X-rays.

Other experiments were made on wheat seedlings. In both cases the effect of the radiation is shown as a stunting of the shoots and roots. Three times as much X-radiation was required in this case to produce equal effects. Hence it may be desirable to use higher voltages with X-rays for medical purposes.

Dr. Failla emphasized the fact that the suitability of a certain type of rays for a given tumor must always be taken into account.

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#### PALEONTOLOGY

## New Dinosaur Species Described in Washington

**T**WO NEW species of dinosaurs have made their bow to scientific society in Washington, with the publication of their description in the Proceedings of the U. S. National Museum by Dr. Charles W. Gilmore, paleontologist.

The fossil remains of these ancient reptiles were discovered on the Blackfoot Indian reservation in Montana. The bones were brought to Washington for preparation and examination.

One of the dinosaurs, *Paleoscinus rugosidens* by name, was a medium-sized monster with a skull about a foot and a half long. It had a well-developed armor of bony plates on its back in the region of its hips, and was ornamented with numerous formidable spines. The other species, *Styracosaurus ovatus*, resembled the well-known Triceratops, or three-horned dinosaur, though it is not known how many horns it had. Its outstanding characteristic was an array of radiating spines projecting from the edge of the bony frill that protected the animal's neck.

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#### ICHTHYOLOGY

## Fish Shoots Insects With Drop of Water

**A** FISH that shoots its insect prey with a drop of water is among the ichthyological incredibilities definitely assured as scientific facts by Dr. Hugh M. Smith, former United States Fish Commissioner, who recently returned to Washington from Bangkok, where he is adviser in fisheries to the Siamese Government. So accurately can the little fish hurl its liquid projectile that on at least two occasions Dr. Smith has seen lighted cigarettes extinguished in the mouths of smokers on a veranda a couple of yards above the surface of the pond where the fish were swimming.

When the shooting fish sights an insect that it considers a likely candidate for dinner, it quietly pokes its eyes and the tip of its snout above water, holding its body at an angle of about forty-five degrees. It opens its wide mouth just the slightest crack in the middle, like a veteran terbakker-chawer from the Ozarks, and at the same instant suddenly squeezes its gill-covers. The speeding drop of water that shoots forth seldom fails to bring down its mark. Dr.