

on navigation, gunnery and torpedo methods, on psychological tests and medical protection looking toward the better training, health and morale of the personnel. Research makes navies better and more economical at the same time.

The point has been proved dramatically by the post-war German navy. Trimmed down to vest-pocket dimensions by the terms of the Treaty of Versailles, the new German ships have taken advantage of every ounce allowed them by intensive use of the products of research: lighter but stronger steels, welding instead of riveting, improvements in armament—until the French have felt themselves compelled to “answer” the 10,000-ton ships of the “Deutschland” class with “Dunquerques” two-and-a-half times as big.

Yet while we in the United States prepare to spend the ransom of a hundred kings on naval expansion, we have in the name of “economy” disrupted the very research programs and institutions that could be saving us a part of that money. The National Bureau of Standards, the Naval Research Laboratory, the national, state, university and private research institutions and laboratories have had their budgets cut to the bone (or deeper), have postponed the installation of needed new equipment, have dismissed younger scientists and demoralized older ones with salary cuts below decent family living standards. We as citizens owe it to the National Defense as well as to National Recovery to demand of our Congressmen that they spend at least a per cent. or two of this enormous sum for naval increase in getting us better value for our money through properly directed efforts of science.

Science News Letter, February 10, 1934

PUBLIC HEALTH

### Defective Plumbing Menaces Health in Cities

**S**TRIKING evidence of the health hazard of defective plumbing may be seen in the discovery that this was the source of the Chicago outbreak of amebic dysentery in the summer and fall, from which nearly 800 cases and many deaths have been reported.

A committee which studied the outbreak, found three important groups of structural sanitary hazards in both Chicago hotels from which came most of the cases. These were:

“1. Old and generally defective water and sewerage piping layouts, potentially at least permitting back siphonage of a number of fixtures, such as bath tubs and flush toilets, into water lines.

“2. Chance breaks in sanitary sewers or heavy overflows of mixed sanitary sewage and storm water drainage in and outside of the basements.

“3. Cross-connections of serious character between water and sewer lines or between water lines carrying potable water and water potentially subject to contamination.”

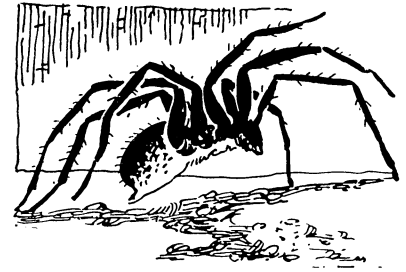
The editor of *The Journal of the American Medical Association* points out that “the laws of practically every state and city forbid the existence of cross-connections in plumbing which permit sewage or contaminated water supplies to mix with supplies of water for domestic uses.”

Nevertheless it is apparent that such cross-connections do exist in many of these hotels and buildings and are a “constant menace to the health of human beings.”

Science News Letter, February 10, 1934



BIOLOGY—TECHNOLOGY



#### A Lesson From Arachne

**I**SN'T IT ODD, how men learned from such humble creatures as spiders and caterpillars how to make the lovely rayons and similar synthetic fabrics that fill our shops today!

Many years ago entomologists, with no more practical motive than to find out how these thread-spinning small animals carried on their craft, painstakingly dissected their silk glands. They worked with amazingly slender tools, and carried on their operations under microscopes. They were rewarded by the simple satisfaction of their curiosity, and being only simple scientists were contented with that.

They found that the threads spun by spiders, caterpillars and other lowly, many-legged creatures were not formed within their bodies and unreeled as off a spool or out of a coil. Within the body there was simply a gland that secreted a thick, sticky liquid like glue. When this was squeezed out through a group of little pores, the “spinnerets,” it hardened instantly and became a tough thread of almost miraculous strength. Weight for weight, a spiderweb is commonly asserted to be much stronger than steel wire.

But the secret discovered by the inquisitive scientists was not destined to be let alone, nor to remain without its practical application. Two of the most outstanding of man's qualities are his imitativeness and his insatiable appetite for putting everything he sees or learns to use for his own personal satisfactions—both of which qualities he shares with his humbler and less successful cousins, the apes. So that as soon as men knew how the silkworm spun its thread there were other men who asked, why not do this ourselves?

They were a long time about it, and

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