

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 “Dunquerque” 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

STRIKING 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.

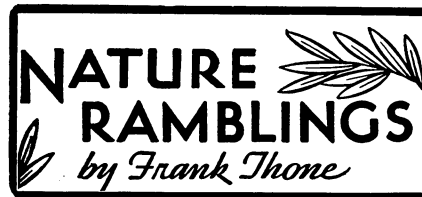
“2. Chance breaks in sanitary sewers or heavy overflows of mixed sanitary sewage and storm water drainage in and outside of the basements.

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

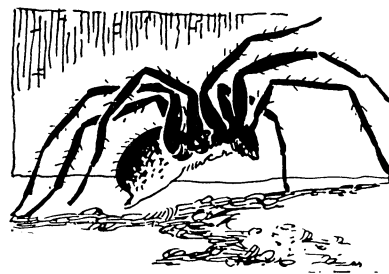
The editor of *The Journal of the American Medical Association* points out that “the laws of practically every state and city forbid the existence of cross-connections in plumbing which permit sewage or contaminated water supplies to mix with supplies of water for domestic uses.”

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

ISN'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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they made many false starts and experiments that ended in failure, but finally they did succeed in making fairly good "iron silkworms," and these are today pushing the natural silkworms hard for their share of the glossy-fabric business. For rayon threads and all their silky synthetic kin are made by first digesting vegetable material (cellulose) with acid into a gluey mass more or less like the stuff secreted by a spider's or a caterpillar's silk gland, and then squirting it out through microscopic holes and letting it harden into fine fibers which are then twisted into thread or yarn.

The old classic legend has it that the goddess Athene, being challenged to a contest in weaving by a mere mortal woman named Arachne, turned her presumptuous rival into a spider. Athene was credited by the Greeks with having taught the daughters of men how to spin and weave. But it would seem that after long ages Arachne has had her revenge: she has taught mankind a secret that not even Athene knew.

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STANDARDS

Bureau of Standards Urges Use of Informing Labels

IN ACCEPTING commercial standards projects the U. S. Bureau of Standards will give priority to those in which producers are willing to label their products guaranteeing compliance with standards. This move, just announced by Director Lyman J. Briggs, is taken to give maximum service to the consumer in over-the-counter trade.

In a letter addressed to those interested in simplified practice and commercial standards, the Director announced that it has been decided to continue this type of work at the Bureau of Standards, in cooperation with the American Standards Association and other organizations and groups.

Some months ago, it was announced by the Secretary of Commerce that certain of these activities would be transferred to the American Standards Association, but this plan is now modified.

"The work has an added importance at this time because of the need for reference to standards of dimensions and quality in the NRA codes for fair competition," Dr. Briggs said.

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There are 225 languages spoken in India.

First Glances at New Books

Additional Reviews
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Zoology

HANDBOOK OF FROGS AND TOADS—Anna Allen Wright and Albert Hazen Wright—*Comstock Pub. Co.*, xi+231 p., \$2.50. This is a book for which thousands of biology teachers in high schools and colleges all over the country have been waiting. It gets together into one place all present available taxonomic and biological information about the Salientia, keys them out, describes them fully, and backs up description with beautifully definite photographic illustrations. The specified range is the whole of the United States and Canada, but excursions are made into the tropics with descriptions of such interesting species as the giant *Bufo marinus*. The book is announced as volume 1 of a new series: Handbooks of American Natural History. If succeeding volumes hold up to the standard set here, they will be valuable indeed.

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Nature Study

NATURE CHATS: A YEAR OUT-OF-DOORS—John Harvey Furbay—*Science Press*, xv+255 p., \$1.75. This book is just what its title implies: chatty, discursive essays on all manner of out-of-door things, arranged season by season and week by week. It is well adapted for school use with more mature students, or it can be used to advantage and with pleasure by the solitary reader. Useful supplements tell how to collect and preserve biological specimens, suggest study projects, etc.

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Medicine

THE PREGNANT WOMAN—Porter Brown—*Eugenics Pub. Co.*, 174 p., \$2. The author of this book, a physician, discusses the subject clearly, simply and thoroughly. Physiology and anatomy, diagnosis and general care during pregnancy and childbirth, sex education and the foolishness of old superstitions regarding pregnancy are all included.

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Biochemistry

THE LYOPHILIC COLLOIDS (THEIR THEORY AND PRACTICE)—Martin H. Fischer and Marian O. Hooker—*Charles C. Thomas*, 246 p., \$4.50. This is a technical discussion of the authors' theory, their fifteen-year research on the subject, and some applications to problems of applied chemistry and of biology and medicine.

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Geography

POLAND PAST AND PRESENT—Stefan Karski—*Putnam*, 160 p., \$2. An informative book, telling in plain fashion facts about a country perhaps less widely known than most European lands. Among the topics covered are the history of Poland, its government, finances, literature, arts and sciences, agrarian reform, social legislation, religion, and education.

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Archaeology—Ethnology

THE HISTORIC TRAIL OF THE AMERICAN INDIANS—Thomas P. Christensen—*Laurance Press Co., Cedar Rapids, Ia.*, 193 p., cloth \$2, paper 65c. A very successful effort to pack into small space essential facts about the Indian. The author stresses the historic angle and carries his survey forward from conditions as they were in pre-Columbian times to the conflicts with white men, and finally to the Indian of today. Both North and South American Indians are included, and a wide range of information is covered.

Science News Letter, February 10, 1934

Physics—Chemistry

MOLECULAR HYDROGEN AND ITS SPECTRUM—Owen Willans Richardson—*Yale*, 342 p., \$3. The hydrogen molecule H_2 is the simplest of all molecules and it was one of the first structures found to be inexplicable on the old quantum mechanics. The author, whose name occupies a firm position in the development of modern physics, and who is Yarrow Research Professor of the Royal Society and upon the faculty of King's College, London, treats the spectrum of the hydrogen molecule exhaustively in this compilation of the Silliman lectures delivered at Yale. Incidentally, the hydrogen molecule should not be confused with double weight hydrogen (heavy hydrogen or deuterium).

Science News Letter, February 10, 1934

Psychology

CHILDREN'S FEARS, DREAMS, WISHES, DAYDREAMS, LIKES, DISLIKES, PLEASANT AND UNPLEASANT MEMORIES—Arthur T. Jersild, Frances V. Markey, and Catherine L. Jersild—*Teachers College, Columbia Univ.*, 172 p., \$1.75. A study of 400 children aged 5 to 12 conducted by means of intimate personal conversation with each child alone. A rare view of the child mind.

Science News Letter, February 10, 1934