GEOLOGY

100,000-Year-Old Carcasses Explain Black Sea Poisoning

CARCASSES of beasts that died a hundred thousand years ago or more still choke the bottom of a large part of the Black Sea, and still poison the water there with the noisome products of their decay.

This explanation of the Black Sea's 200,000 square miles of "poison water" was offered by Prof. Reginald A. Daly of Harvard University, who delivered the Silliman lectures at Yale University.

During the last great Ice Age, Prof. Daly explained, so much water was locked up in the great glacial sheets that the sea level was materially reduced. The Black Sea was thus filled with fresh water, and the overflow river of this enormous lake cut the valleys now represented by the Bosphorus and Dardanelles straits. When the general sea level rose again, the salt Mediterranean water entered the fresh water basin and killed its fresh-water animals. The decay of their carcasses poisoned the Black Sea water, from the bottom at the depth of 110 fathoms or 200 meters up to the 90 fathom or 150 meter level, Prof. Daly stated.

"Through that great thickness, a half million square kilometers of water remain poisoned to this day."

"The Glacial lowering of general sea level laid bare wide belts of the continental shelves, now bounded by the 40 fathom line," Dr. Daly said. "Those strips of new land were several hundreds of thousands of miles in total length and up to 100 or more miles in width. Across the temporary lands the rivers were extended and there cut channels in the shelf sediments.

"An illustration is that of the North Sea area, where the floor of that shallow sea emerged. The Dogger Bank became dry, and it remained dry long enough to win covering peat bogs, fragments of which have been dredged up by fishermen from depths of 40 meters. Elsewhere on this new land forests grew. Fishes now swim over the tree trunks, drowned by the last upswing of ocean level. Recently tusks of mammoths have been dredged up from the bottom of the North Sea. Across the temporary land, the Rhine River was lengthened by about 200 miles, and it gained the drainage of the Thames River.

"Another important result of the lowering of the sea level was the conversion of wide but relatively shallow straits into dry land, with the formation of land bridges between continent and continent, and between continent and island. Thus, for many thousands of years land animals could walk, migrate between Borneo and Sumatra; between Tasmania and Australia; between Ceylon and India; between Asia and America, at Bering Strait; and between many a West Indian island and its neighbor."

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According to tests made on a level road in Iowa, an automobile must exert 36 horsepower to travel 45 miles an hour against the wind, whereas traveling with the wind only 15 horsepower was needed, and when no wind was blowing it took 24 horsepower to maintain the same speed.

GENERAL SCIENCE

Research Can Point Way To Better, Less Costly Navy

THREE HUNDRED and eighty million dollars.

That is what the government of the United States is going to spend, to bring the Navy up to the limits permitted by the treaties of Washington and London. This huge expansion of our armament afloat, advocates of the Navy bill tell us, is not intended as an aggressive gesture. Great Britain, they point out, has already built to near the maximum which we are privileged to equal if we desire; Japan has already built the last fighting ton of her quota, and her statesmen are impatiently demanding full tonnage parity so that they may build more. The new five-year naval plan is intended only to help us attain, belatedly, our own full and acknowledged rights.

Acceding to this thesis for the sake of saving argument, is it still necessary to look forward to such a terrific drain on the treasury? Can not some way be found to make our navy equal to the best in the world, able to meet any demand unexpected war may impose upon it, and still save some part of that $380,000,000 for use in less controverted and more immediately beneficial public works, such as schools and hospitals, better homes for the poor, roads, river improvements and farm experiment stations? Can't we manage a better bargain in warships somehow?

We can, and by the same method we manage better bargains in buying for the works of peace. We can do it by spending a fraction of a per cent. of that money for scientific research, applied directly on problems connected with the construction and operation of those same ships of war.

Battleships, cruisers, submarines, fighting planes, are all highly complex jobs in engineering, in applied physics and chemistry. Money can be saved on every one of them, from the day its keel is laid until it is outmoded and cut up into junk with oxyacetylene torches, by continuous and progressive research on better steels and other construction metals, on electrical equipment, on steam engineering and propulsion machinery, on explosives and projectiles,

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

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."

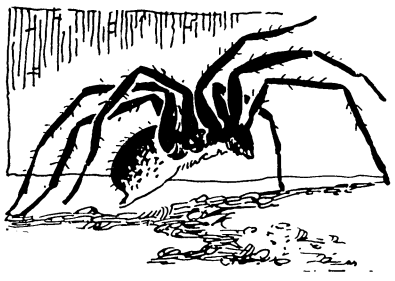
The editor of *The Journal of the American Medical Association* points out that "the laws of practically every state and city forbid the existence of cross-connections in plumbing which permit sewage or contaminated water supplies to mix with supplies of water for domestic uses."

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

NATURE RAMBLINGS by Frank Thone

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 spider-web 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