

Fish Can Drown

➤ **RESPIRATION IN** fish is basically the same as it is in land animals, a matter of getting oxygen into contact with the blood corpuscles which will in turn get into contact with the body tissues that need it.

There are several ways in which fish can die for lack of oxygen. One is sheer mechanical interference with their normal mode of respiration, the ceaseless business of gulping water in through the mouth and expelling it through the gill-slits.

If a fish has a stick thrust through mouth and gills and is then dragged at abnormal speed through the water (as small boys often do), it will die, and it will die of drowning, that is, suffocation, because it can not "breathe" naturally.

A more wholesale extermination of fish through de-oxygenation of water takes place sometimes in summer, when fish that have been landlocked in a pond or lagoon find the water getting too warm and at the same time swarming with fast-multiplying small forms of animal and plant life.

Fish ordinarily do not live in a green stagnant pool because green water is poisonous. It is because the myriads of lesser organisms living there snatch up every available molecule of oxygen for themselves, so that there is none left to pass through the gill walls and enrich the fishes' blood.

This kind of minor tragedy of the water is relatively small-scale and unimportant, as compared with what the fish are often up against in rivers and lakes polluted by the outpourings of factories.

Sometimes these polluting agents are chemicals that directly poison the fish; much more often, however, they are things that the swarming bacterial life of inland waters can use for food. They do feed greedily, using up oxygen in the process, until again the turbid water will not support fish respiration.

In considerable areas in the tropics, small lakes and sluggish rivers go nearly dry in the hot season, and have so little oxygen in their water at all times that ordinary fish cannot live in them.

Principal inhabitants in such waters are lung-fishes, strange creatures that have given up the use of gills entirely and depend on air sucked into their swimbladders, which function as primitive lungs. When things get really bad these fish sink to the bottom, ball themselves up into mud cocoons and sleep the summer through as toads and turtles sleep through our winter.

Science News Letter, June 28, 1952

MEDICINE

Blood-Brain Barrier Lack

➤ **BABIES AND** young children are more likely than grown-ups to have convulsions because they lack a blood-brain barrier.

Evidence that this lack may be one factor responsible for the increased liability of infants and children to convulsive disorders comes from research by Dr. Alfred Froehlich of the May Institute for Medical Research of the Jewish Hospital Association, Cincinnati.

The blood-brain barrier apparently develops in the course of growing up.

Dr. Froehlich's experiments were made on rats. Up to 10 days of age, he found, rats got convulsions when the red dye, acid fuchsin, was injected under the skin. Older rats were not affected unless the dye was injected into their brains.

Bile injected into the bellies of young rats gave them fits but, again, older rats were not affected unless the bile was injected into the brain. Bile pigment, or coloring, can permeate the nervous system of

young rats from the blood but not that of older rats.

Theophylline, a chemical from tea which is also made synthetically, made grown-up rats get convulsions from injections of the red dye under the skin. This tea chemical is known to increase the permeability of isolated blood vessels and to increase the ability of many tissues to take up dyes.

Overdoses of vitamin D, Dr. Froehlich found, made young rats less susceptible to convulsions from the red dye and from bile. Theophylline countered this effect. But he does not suggest increasing the vitamin D given children in any attempt to reduce their susceptibility to convulsions. The doses needed to do this in the rats were so big that growth of the young animals was slowed, they became almost bald and their skin showed damage.

His report appears in the *JOURNAL OF THE MOUNT SINAI HOSPITAL* (May-June).

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GENERAL SCIENCE

Best Job Outlook for Chemists in Next Decade

➤ **HIGH SCHOOL** graduates are being urged to prepare for careers in chemistry or chemical engineering when they enter college in the fall.

The outlook for jobs in these fields during the next five to ten years is the best it ever has been, Charles S. Munson, chairman of the board of the Manufacturing Chemists Association, Inc., has reported.

He pointed to an increasing shortage in the number of chemists and chemical engineers who are available to the chemical industry. Also a factor, he said, is the fast growth of the industry over the past few years, a growth which will continue.

"In view of U. S. dependence on science for both military security and civilian living standards," Mr. Munson said, "the present and probable future shortage of trained chemists and other technologists has become a matter of real concern to the country at large."

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INVENTION

Patent Improved Alloys For Electrical Rectifiers

➤ **IMPROVED ALLOYS** of germanium, particularly for use in rectifiers of electricity, have been invented by Dr. Karl Lark-Horovitz and Randall M. Whaley, La Fayette, Ind., and assigned to the Purdue Research Foundation. Dr. Lark-Horovitz is head of the physics department at Purdue.

These alloys are all of the so-called N-type semi-conductors. They are made of germanium combined with such materials as copper, silver, magnesium, calcium, zinc, strontium, cadmium, barium, titanium, tin, lead, nitrogen, vanadium, columbium, tantalum, bismuth, chromium, uranium, cobalt, nickel or palladium. Patent number is 2,600,997.

Science News Letter, June 28, 1952



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