

BIOCHEMISTRY

Missing Link May Be Pernicious Anemia Factor

➤ A MISSING link in a nutritional chain involved in the manufacture of red blood cells may be an important factor in pernicious anemia.

This is suggested in work by doctors of the University of California at Los Angeles Medical School and the Los Angeles Veterans Administration Center.

In the research a substance known as the B-12 binding factor, which is present in the gastric and duodenal contents of normal subjects, could not be found in the duodenum of persons with pernicious anemia.

Although the exact role of the binding factor is still unknown, it is thought that it may be essential in the absorption and utilization of vitamin B-12. Vitamin B-12 plays an important role in the manufacture of red blood cells, and thus the lack of the binding factor could interfere with this process.

The study also indicated that persons who have had their entire stomachs removed by surgery may not be able to absorb enough B-12 for normal nutrition. The binding factor was not found in duodenal contents of such patients examined in the investigation.

Conducting the research were Drs. Marian E. Swendseid, Herbert Shapiro and James A. Halsted.

Science News Letter, May 9, 1953

ENGINEERING

George Washington Bridge Takes Top Honors

➤ THE GEORGE Washington bridge has been pegged the number-one engineering "wonder" of metropolitan New York.

The Brooklyn bridge and Empire State building captured second and third places, respectively, in a membership poll of the metropolitan section of the American Society of Civil Engineers.

Ranking the "seven wonders" of the area, the engineers listed these other four:

The New York City subway system, the New York water supply system, the Holland Tunnel and the Brooklyn Battery Tunnel.

The United Nations building ranked eighth, Rockefeller Center, ninth and Grand Central Terminal, tenth. The New Jersey Turnpike ran 13th.

At its opening, Oct. 25, 1931, the George Washington bridge was the world's longest suspension bridge. It has a river span of 3,500 feet. San Francisco's Golden Gate bridge, however, outdid the George Washington bridge by 700 feet in 1937.

The engineers cited the beauty of the George Washington bridge. They also pointed out that 27,979,213 vehicles of one sort or another used it during 1952.

The daring of the Brooklyn bridge's designer and builders in pioneering the way

for the many long-span suspension bridges in use today was partly responsible for this "wonder's" second-place rank. The engineers liked the Empire State building for its impressive magnitude.

The "Seven Wonders" of the ancient world were the Pyramids of Egypt, the Hanging Gardens of Babylon, the Phidias Statue of Zeus, the Temple at Ephesus, the Tomb of Mausolus, the Colossus of Rhodes and Pharos lighthouse at Alexandria. All but the Pyramids have been destroyed.

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ECONOMICS

Older People Provide Market for Special Goods

➤ ADD TO the baby market, the newlywed market, the teen-age market, the young business man market and the other consumer groups that are targets for advertising: the oldest market.

In a study of markets and the aging population, the New York Department of Commerce emphasizes that two mature groups, those 45 to 64, and those 65 and over, have special needs.

These "aging" and "elderly" groups place an emphasis on necessities and services rather than durable consumer goods. Medical services are in more demand. They want special housing with an accent on convenience and ease of getting around. Manufacturers were advised in the report to watch for shifts in demand, such as:

Small-scale, multipurpose furniture, food in small packages, dietetic foods, informal clothing stylish to matured wearers, books, periodicals, garden supplies, small-scale home appliances, trailers, smaller and more economical cars, radio and TV, drugs and pharmaceuticals, ophthalmic goods, and photographic equipment.

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PHYSIOLOGY

Hearts Beat Faster At High Altitudes

➤ THE HEART beats faster and pumps more blood through the lungs and out to the tissues at high altitudes. This makes up to some extent for the decreased oxygen in the blood due to the lowered oxygen tension at such altitudes as 19,000 feet and over.

Experiments showing this were reported by Drs. Carl J. Wiggers, Albert Hurliman and Philip W. Hall, III, of Western Reserve University School of Medicine, Cleveland, at the meeting of the National Academy of Sciences in Washington.

Lack of oxygen, it had previously been found, narrows the blood vessels in the lungs. Although this would seem to slow blood flow through the lungs, the Cleveland experiments showed that this was not the case.

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IN SCIENCE

BIOCHEMISTRY

Simple Test for Nerve Gas Insecticides Devised

➤ A SIMPLE test for determining when a person is dangerously exposed to war gases or insecticides of the nerve gas or organic phosphate type has been devised by George Limperos and Katherine E. Ranta of Haskell Laboratory of Industrial Toxicology, Wilmington, Del. Such war gases are those most greatly feared for World War III use.

Only a bit of blood drawn from the fingertip is needed to determine the inhibition of cholinesterase activity in the blood that the war gases and insecticides cause. Overexposure to the chemicals results in nausea, vomiting, diarrhea and headache, and the new rapid screening method is needed to pick up whether such symptoms are due to the chemical agents or some other cause. The presence of the dangerous chemical in the blood is told by a color test, it is reported in *Science* (April 24). The test depends upon the use of an indicator for acidity or pH, brom thymol blue.

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MEDICINE

Blood Surplus in Liver In Sudden Allergy Deaths

➤ TOO MUCH blood trapped in the liver may be partly responsible for sudden death in severe allergy reactions, Drs. Walter S. Burrage and John W. Irwin of Massachusetts General Hospital and Harvard Medical School, Boston, announced at the meeting of the American College of Allergists in Chicago.

This sudden allergic death is also known as anaphylaxis.

The Boston doctors made their discovery in a study of guinea pigs made allergic to egg white protein. They watched the flow of blood through the animals' liver, using special techniques and high powered microscopes.

When a tiny amount of egg white was injected into the already egg-white allergic guinea pigs, tiny blood vessels in the liver went into spasm within seconds afterwards. This prevented blood from flowing out of the liver though for a time blood continued to flow into the liver.

The liver rapidly filled with blood and shortly thereafter allergic spasm of other blood vessels stopped further flow of blood into it.

The large volume of blood trapped by the liver was not available to the rest of the body and within a few minutes the animal died.

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CE FIELDS

SURGERY

Spot Breast Cancer Responding to Surgery

► DOCTORS CAN now tell in advance whether a woman with widespread breast cancer will be helped by removal of the adrenal glands, producers of the arthritis remedy, cortisone.

They can tell this by microscopic examination of the cancer. If it is the kind that forms tiny glands, frequently with a bit of secretion in them, the cancer will respond to removal of the adrenals and the patient will get better, Dr. Charles Huggins of the University of Chicago reported to the National Academy of Sciences meeting in Washington.

The cancers with the tiny glands in them are being stimulated by female hormone from the adrenal glands. Even when the ovaries have been removed or when the woman is past the age when her ovaries are functioning, the adrenals produce enough female hormone to stimulate this particular kind of breast cancer so that it recurs after it has been removed surgically or by X-rays.

Other kinds of breast cancer do not respond to removal of the adrenal glands and ovaries. Patients with this type of cancer will not be helped by the operation.

The cancers that are stopped by removal of the adrenals must, Dr. Huggins pointed out, also be mature enough to respond to withdrawal of the female hormones.

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MEDICINE

Cortisone Treats Prostate Cancer Without Surgery

► DOCTORS HAVE developed a hormone treatment that does for the prostatic cancer patient the same thing as removal of the adrenal glands—but without surgery.

The hormone used is cortisone, famous for the relief it gives some arthritis patients. By giving a steady oversupply of cortisone, doctors are able to “hoodwink” the pituitary gland into making the adrenals stop producing sex hormones whose presence allows some cancers to grow.

Drs. Gerald M. Miller and Frank Hinman, Jr., of the University of California School of Medicine described the technique to the Western section meeting of the American Urological Association in San Francisco.

The technique has been used successfully in 10 patients. Remissions in the prostate cancers average about three months. In three patients who were not helped, surgery was used with success.

The doctors explained that the pituitary produces ACTH, which stimulates the adrenals to produce cortisone and the sex steroid hormones. When the normal adrenals start producing too much cortisone, it signals the pituitary to slow down on the output of ACTH.

The pituitary obeys, and this signaling mechanism keeps the body's hormone supplies in balance, normally.

The doctors figured they could use this mechanism to fool the pituitary. They reasoned that if the body has a steady artificial oversupply of cortisone, signals would be set up to get the pituitary to stop producing ACTH. With no ACTH, the adrenals would become dormant, and stop producing the sex steroids that allow cancer to grow. It worked.

The benefits reported are comparable to those reported by a New York Memorial Hospital group who used surgical removal of the adrenals. The use of this operation for cancer was conceived and first put to trial by Dr. Charles Huggins of Chicago.

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TECHNOLOGY

Plastic Dishes Hardened With Electron Beams

► PLASTIC DISHES, made of polyethylene, and flexible bottles of the same material can be toughened by bombardment with powerful electron beam, Dr. C. G. Suits, General Electric director of research, revealed in New York. They can withstand sterilizing steam.

This curing process allows use of the plastic in containers for packaging drugs and fluids, like blood, that have previously had to be packaged in easily sterilized glass. Dishes that would wilt disastrously under automatic dishwashing retain their shape when electron hardened.

Fifteen seconds exposure, possibly automatically, hardens the plastic by cross-linking the long, chain-like molecules, or polymers as they are called.

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MEDICINE

Blood Cells Test Shows Allergy to Germs

► WHITE BLOOD cells that die and turn red within 17 hours give doctors an easier way to detect allergy to bacteria in a test devised by Dr. Herman Blatt of Cincinnati, and announced at the meeting of the American College of Allergists in Chicago.

When the white blood cells of a patient suspected of having such an allergy are incubated with the offending bacteria, more than 25% of them are killed within 17 hours, as shown by deep red staining of their nuclei. If the person is not allergic to the bacteria under test, most of the white blood cells will survive 17 hours of contact with the bacteria and the neutral red dye will not stain their nuclei.

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TECHNOLOGY

TV Film Scanner Steps Up Telecast Picture Quality

► THE PICTURE quality of movies broadcast to home television sets may be improved in the next year or so by a new gadget called a film scanner.

The device is said to produce a better video picture than present equipment. It can be adapted easily to capture the brilliant hues of Technicolor films when color TV finally gets rolling.

Developed by the Philco Corporation, the scanner junks some of the principles now used. The film runs smoothly through the machine, not in frame-by-frame jerks. A rotating many-sided glass prism fades one frame into the other.

Today's movie projectors use a shutter to interrupt the light while the film is pulled down a notch. This gives a slight flicker or stroboscopic effect to movies. But since the spinning prism does not shut off the light, it creates no flicker.

The machine also uses a “flying spot scanner” to take the picture from the film. The movie first is projected on the face of a picture tube similar to those in home sets. A “flying spot” of electrons scans the screen from inside the tube. This converts the movie into electrical impulses that wind up on home TV screens.

Delegates to the National Association of Radio and Television Broadcasters and the Society of Motion Picture and Television Engineers meeting in Los Angeles saw the film scanner demonstrated. Both black-and-white and color runs were conducted. Philco reported the machine would go into production late in 1953.

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GEOLOGY

Canyons on Atlantic Floor Are Predicted

► FUTURE DISCOVERY of an almost innumerable series of canyons on the floor of the Atlantic was predicted by Dr. William Herbert Hobbs, veteran University of Michigan geologist, before his death last fall.

They were cut in what is now water-covered territory by rivers of water melted from the great Greenland glacier of Pleistocene or Ice Age time. Dr. Hobbs explained in *Science* (April 24) that the glacier that composes Greenland was in those days much larger and surrounded by land left unsubmerged by the withdrawal of water taken out of the seas to make the Ice Age glaciers. There was then a land bridge between Europe and America in which the canyons were cut.

Dr. Hobbs' comments were inspired by the discovery last summer by Drs. Maurice Ewing and Donald Spurr of Columbia University of some such canyons on the Atlantic floor.

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