MEDICINE

Chemicals Substitute for Blood Plasma in Shock

➤ GOOD results in peacetime use of three chemicals developed as blood plasma substitutes during World War II are reported by Dr. John S. Lundy and colleagues of the section on anesthesia of the Mayo Clinic in Rochester, Minn.

The three chemicals are dextran, periston and a solution of gelatin. Dr. Lundy has been using dextran since April, 1946. Up to the first of this year, it has been given to about 1,500 patients for fall in blood pressure, termed mild or marked "shock," during operations or while under an anesthetic. In five or six cases it was considered of life-saving importance, having helped patients who had not benefitted from several transfusions of blood.

Dextran is a Swedish-developed chemical, a by-product of sugar manufacture.

Periston, which the Mayo scientists obtained from British-occupied Germany and from manufacturers in this country, is a solution of polyvinyl pyrrolidone. The periston used during World War II was a 2.5% solution which "did not make much of an impression." Results now being obtained with a 3.5% solution are so much better that it does not seem possible it is the same chemical, the scientists reported at a staff meeting at the clinic.

Science News Letter, October 28, 1950

SAFETY

Automatic Breathing Apparatus Versatile

➤ IMPROVED automatic breathing apparatus, for use in accidents, has been developed in Pittsburgh, Pa., by the Mine Safety Appliances Company. Police and fire departments, ambulance crews, hospitals and industrial-plant safety staff could be equipped with it.

It is intended for use in drownings, electric shocks and all kinds of asphyxiation, and is suitable for use even on newly-born babies.

The name "Pneolator" has been coined for it. Its uses requires only short training.

The device includes a rubber and plastic mouthpiece connected to two valves by four-foot lengths of rubber. One of the valves administers oxygen, from a holding tank, with positive pressure at regular intervals. The other valve lets oxygen flow only when the patient inhales and stops the flow when the patient exhales. The valves are arranged so that they interchange automatically, depending upon whether or not the patient is breathing.

The artificial respiration valve delivers oxygen to the lungs of a victim whose breathing has stopped. It does not suck air from the lungs, however. When the proper amount of oxygen has been admitted into the lungs, the valve shuts off. The elastic walls of the lungs and the flexible muscles of the diaphragm and chest cause exhalation.

Automatic intermittent positive pressure breathing was first developed during World War II at the aero-medical laboratories of the Air Force, Wright Field, Dayton, Ohio. The differential pressure instrument was designed to sustain breathing of injured airmen at high altitudes.

This new artificial respiration apparatus is unlike others in several respects. Principal among these is that the pressure of the oxygen administered by the cycling valve can be varied to meet a wide range of conditions. The valve can be set from a very gentle low pressure up to a little over normal atmospheric pressure.

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AERONAUTICS

Agreement Helps British Sell Airplanes in America

➤ INCREASING sales of British planes in the United States are expected in London as a result of a recent agreement under which American governmental authorities will accept the British Certificate of Airworthiness as equivalent to the certificate issued by the United States.

The result is that no technical obstacles now exist to the import of British aircraft into America. In 1934, the British and the United States governments each agreed to recognize the other's certificate of airworthiness. But by 1945, the Americans had added so many additional qualifications to the English certificate that the agreement became unworkable. The United Kingdom, however, continued to accept the American certificate.

In January 1949, both nations agreed to the international airworthiness requirements of the International Civil Aviation Organization which has representatives of over 50 nations. But the American government maintained its insistance that all aircraft flown within the United States must conform to the American national standards.

Credit for the new agreement belongs to a British delegation, headed by R. E. Hardingham of the Ministry of Civil Aviation, and representatives of the American government headed by D. W. Rentzel, then director of the Civil Aeronautics Administration but now chairman of the Civil Aeronautics Board. The meeting of the two groups was held in the United States during the past summer.

American acceptance of British aircraft certification is good news to the British aviation industry who expect to make more sales in the United States as a result. It is good news to the British government also, because sales to America means dollars, and "dollar markets" rank high in the present British economy.

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IN SCIENC

DENTISTRY

Fluorine Chemical Cuts Caries Prevention Cost

➤ A CUT of almost two-thirds in the cost of efforts to prevent tooth decay by putting fluorine into drinking water may result from a discovery by Dr. F. J. McClure of the National Institute of Dental Research, U. S. Public Health Service, Washington.

Sodium fluoride is the chemical now being added to the water supply in many communities in the hope of cutting down on tooth decay. But another, cheaper fluorine compound, sodium fluosilicate, may be just as effective, Dr. McClure's experiments with growing rats show.

Sodium fluosilicate is not only cheaper but contains more fluorine, so less of it needs to be used, thus cutting the cost still further.

Sodium fluosilicate now costs about four and one-half cents a pound. Sodium fluoride costs about 10 cents a pound. Cost of all chemicals for fluoridation of a million gallons of water using sodium fluoride is about $2.15. Using an equivalent amount of sodium fluosilicate, the cost would be about 76 cents.

Although scientists do not yet know exactly how valuable fluoridation of water supplies may be for preventing tooth decay, preliminary reports from several of 50 cities now testing the method show that tooth decay in children in these cities has been reduced as much as 40% to 50%.

The fluoridation method of trying to prevent tooth decay results from earlier research by Dr. H. Trendley Dean, director of the National Institute for Dental Research.

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NUTRITION

Plumper Thanksgiving Turkeys Due to Hormones

➤ YOUR Thanksgiving turkey may be plumper this year because of synthetic hormones. Scientists at the North Dakota Agricultural Experiment Station in Fargo, N. D., have tried "chemical caponizing" on turkey hens and found it works.

A chemical called diethyl stilbesterol is coming into widespread use among chicken growers to keep young cockerels from developing the muscular attributes of tough old roosters. It has the effect of caponization without surgery, making the meat more tender.

Kermit F. Schlamb and Reece L. Bryant, poultry husbandmen, tried the chemical on turkey breeder hens. They report successful boosting of the birds' weight and marketability.

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E FIELDS

INVENTION

Magnetic Disks Make Tape and Tacks Obsolete

➤ ROUND magnetic disks that hold tight to steel walls have made thumbtacks and scotch tape obsolete in the new General Electric Research Laboratories. When notices are posted or direction signs are installed, they are held up by the small alnico magnets that stick tightly to the steel sheets covering the walls.

Even name plates for offices and laboratories are fastened magnetically. It only takes a flick of the wrist to change a name. If scientists and engineers were hired and fired as speedily as Hollywood writers, the magnetic name plates would save much money and trouble.

Hats and even light raincoats can be hung up anywhere by use of the little magnetic fasteners.

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INVENTION

Natural Color Gum Cleans Teeth, Sweetens Breath

➤ CLEAN teeth and sweet breath are promised with a chewing gum containing dentifrices on which a patent was issued by the government recently.

The idea is not entirely new. Other chewing gums include teeth-cleaning ingredients and breath sweeteners, but they usually are black because of powdered charcoal in them. White gum is said to be the preferred type by constant chewers. This new product has a natural color.

This product contains the usual ingredients of standard chewing gums to which is added about 10% of a finely divided mixture of 90% silica and 10% alumina treated with methyl chlorsilanes. Kenneth K. Kearby, Cranford, N. J., is the inventor. Patent awarded is 2,525,072. It has been assigned to the Standard Oil Development Company.

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NUTRITION

Paraplegic Veterans Now Eating Better

➤ PARAPLEGIC veterans in New Jersey are eating better today than they were a year and a half ago, thanks to regular home visits from a dietitian who has been added to the team of doctors looking after these men under the New Jersey Paraplegic Veterans' Program.

A large number of the patients were suffering from "hidden hunger" when the dietitian, Miss Winifred C. Duffy, first began her work with them, she reported to the American Dietetic Association meeting.

Lack of knowledge of good nutrition, rather than lack of funds, was the reason in many cases. One patient, Miss Duffy reported, was "practically skin and bones and always fatigued." He lived alone and did his own cooking. He needed to be taught much about food values and methods of preparing foods. In a few months, he gained weight and was very appreciative of the services given him by the dietitian.

All the patients believed they had to drink beer, Miss Duffy found. It was explained to them that they should drink at least three quarts of fluids a day, but that they should also eat a good basic diet.

Many ate only one meal a day because they had trouble keeping down to their proper weight. One patient ate only sandwiches. Some were actually undernourished.

Some of their strange ideas about diet, Miss Duffy explained, came probably from the fact that before World War II very little was known about paraplegics and even physicians had much to learn about the best care for them.

In general, the patients were encouraged to eat three meals a day, high in protein and vitamins and low in calories and oxalates. These last two provisions are because of the tendency to put on weight and develop kidney stones through lack of physical activity.

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AERONAUTICS

Omnirange Guides Planes Of U. S. First Airways

➤ SOME 4,380 miles of airways equipped with the new-type radio guidance system known as omnirange are now in operation, the Civil Aeronautics Administration announced recently. The system is finally to blanket the entire United States.

Ground stations equipped with omnirange send out signals in all directions to guide airplane pilots. The radio ranges which it is replacing send signals in only four directions. In addition, omniranges use very high frequency radio signals with which "static" does not interfere. This means pilots will be able to receive clear signals at all times in spite of storms or other interference with radio transmission.

Some 400 omnirange stations will be finally in use to blanket the entire country with the omnirange system. Along the airways now in operation on omnirange beams are 41 stations. The airways connect Kansas City, Denver and Albuquerque. Others connect Omaha, Wichita, Tulsa, Oklahoma City, Fort Worth and El Paso. A total of 271 omniranges have been commissioned by the CAA. But others will be necessary before definite omnirange airways will be available.

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NUTRITION

Old People in Homes for Aged May Not Get Vitamins

➤ GRANDPA and Grandma need their vitamins but it is doubtful whether they get them when they are living in homes or other institutions for the aged.

Only nine of 21 states employ dietitians in homes for the aged to plan meals for the 75,000 or more old people living in these institutions, Mrs. Vera M. Walker, of the Florida State Welfare Board, found in a survey undertaken for the American Dietetic Association.

Where there is no dietitian, food service is the responsibility of almost anyone: a cook, manager, superintendent, matron, operator, proprietor, licensee where the homes are licensed by some state agency, a "woman with cooking experience," or a nurse.

If a special diet is required, as for a diabetic, it is prescribed by a physician. His orders are carried out by a nurse, the operator, the manager, the matron, the cook or the person in charge.

"A large but unknown number of senior citizens" are living in homes for the aged, including boarding homes, nursing homes, county or town farms, convalescent homes, rest homes, infirmaries and other types of institutions, the survey showed.

In the light of our modern knowledge of the great importance of proper food in the care, treatment and rehabilitation of the aged and chronically ill, dietitians, Mrs. Walker declared, will feel "deep concern" that no greater care is taken for provision of adequate and proper food for the residents and staff of institutions for the aged.

She recommended, in her report to the American Dietetic Association meeting in Washington, that wherever possible arrangements be made for regular, planned consulting service by dietitians to operators of homes for the aged.

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GENERAL SCIENCE

Lasker Planned Parenthood Award to Mrs. Sanger

➤ MRS. Margaret Sanger, internationally known leader of birth control movement, and Dr. Bessie L. Moses of Baltimore, obstetrician and medical director of the Bureau for Contraceptive Advice since she founded it in 1927, received the Lasker Foundation Awards in Planned Parenthood for 1950.

They are the first two women to receive these awards which previously have been given to seven men.

The usual $500 cash award has been doubled for Mrs. Sanger because of her "long untiring service in a cause which has become synonymous with her name."

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