SCIENCE NEWS

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SOME PAPERS READ AT THE BOSTON MEETING OF THE AMERICAN COLLEGE OF SURGEONS

THAT beef blood serum and plasma can be made safer for transfusion to human patients by a method of pretreatment with human red blood cells was announced by Dr. Arnold J. Kremen, of the University of Minnesota Medical School, at the meeting of the American College of Surgeons, which opened on November 4. He stated that substances in the beef blood plasma and serum which might cause dangerous clumping or equally dangerous dissolving of the red cells in the patient's blood can be removed by previous absorption on human blood cells. Beef serum treated in this way caused reactions to transfusions in 24.5 per cent. of the patients, compared to reactions in 52 per cent. following transfusions with the untreated beef serum. With untreated beef plasma there were reactions in 66 per cent. of the patients.

DIAGNOSIS of overactivity of the thyroid gland in the neck, commonly thought of as goiter, may be improved by a new test, according to results reported by Dr. Marvin Smith, Dr. Willis H. Jondahl and Dr. Alton Ochsner, of the School of Medicine of Tulane University of Louisiana. The test will be most valuable, it appears, in those patients with overactive thyroid glands who do not show a goiter and whose basal metabolic rate is normal, instead of being higher than normal. In such cases, with only a few symptoms to suggest thyroid gland disease, it is difficult to diagnose the condition accurately and to give proper treatment. The result may be irreparable damage to other organs whose activity is influenced by the thyroid gland. The test, which is based on findings of Dr. T. L. Althausen, of San Francisco, is made by giving the patient a little more than an ounce of galactose dissolved in water. Galactose is a sugar-like substance. The speed with which this chemical appears in the blood and the degree to which it accumulates there shows whether or not the patient has an overactive thyroid gland.

UPSETTING previous ideas of how the body uses iodine, a chemical known to be essential to health, Dr. Asher S. Chapman, of the Mayo Clinic, has discovered that the body can use this element even when the thyroid gland has been removed. Thyroxine, the powerful hormone produced by the thyroid gland, contains iodine and it has generally been thought that the effects of iodine on the body and the body's need for it were determined by this gland. Animals whose thyroid glands had been removed, Dr. Chapman found, lost more weight, utilized their food more poorly, drank more water and had a significantly lower basal metabolic rate when kept on diets very low in iodine than when given adequate amounts of iodine. The body, it appears, from these studies, not only can use iodine when there is no thyroid gland to turn it into thyroxine for stimulating various body processes, but even may make a compound like thyroxine in tissues other than the thyroid gland.

CASES of "sudden death without warning" in patients who have been given barbiturates to put them to sleep for surgical operations may be explained by studies reported by Dr. Henry K. Beecher and Dr. Carl A. Moyer, of the Harvard Medical School and the Massachusetts General Hospital. It was pointed out that the brain center that regulates breathing loses its sensitivity to the stimulus of carbon dioxide when the barbiturates have been given. This results in a dangerous piling up of carbon dioxide in the blood. Considered together with other effects of the barbiturates on the breathing system when the oxygen in the blood varies from normal, this finding presents serious possibilities. Prevention in future of fatal accidents under barbiturate anesthesia may be achieved with these findings as guides.

ONE of the newer plastics, vinyl resin in acetone, painted or sprayed on to a patient's skin before an operation, helps to keep germs out of the wound, according to Dr. Michael DeBakey and Dr. E. J. Giles, of the School of Medicine of Tulane University of Louisiana. Complete sterilization of the skin before the first cut is made, to avoid danger of wound infection, is the aim of every surgeon, but is difficult to achieve. Even with all the usual precautions, a resident flora of germs remain a "constant potential source of infection." Vinyl resin, familiar to most people as a waterproof coating for fabrics and for its use in safety glass in automobiles, when used as a skin covering before operations has the following advantages: Bacteria can not get through it; bacteria are killed by it; it is transparent; it sticks to the skin; it is elastic; it can be easily cut through, and it is not irritating.

DEATHS from acute appendicitis with perforation or rupture of the appendix have been reduced to less than five out of every 100 by the use of sulfathiazole in addition to immediate operation, was reported by Dr. Edward S. Stafford, of the Johns Hopkins University School of Medicine. Immediate operation when the appendix has ruptured reduced the deaths to 10 per cent. of all cases with perforation, which is lower than the average mortality reported from the so-called delayed treatment, Dr. Stafford found from an earlier study of patients operated on at the Johns Hopkins Hospital. During the two years since that study was reported, sulfathiazole has been used in addition to immediate operation. The death rate for this recent series is under 5 per cent.—less than half that of the earlier series.

PATIENTS with broken bones in which the skin and other tissues are also broken open and infected with germs, a common condition in war injuries and automobile accidents, may be saved by sulfanilamide crystals implanted in the wounds, according to Dr. N. Kenneth Jensen, of the University of Minnesota Medical School. In one hundred and twenty-six cases of such injuries, technically termed compound fractures, not a single case of gas gangrene and only four wound infections occurred

when sulfanilamide crystals were placed directly in the wound. Without the sulfanilamide, but with the same treatment otherwise, gas gangrene developed in 7.3 per cent. of cases and other wound infections developed in 27 per cent.

WOUNDS heal poorly after an operation and are likely to break open when the patient has been getting too little vitamin C, the vitamin found in tomatoes, citrus fruits and other fruits and vegetables, was reported by Dr. John B. Hartzell and Dr. William E. Stone, of Wayne University College of Medicine. Healed wounds in guinea pigs that had been deprived of vitamin C had only one fifth the strength, that is, could withstand only one fifth the pull on them, as did wounds in laboratory animals that had been getting a normal amount of this vitamin.

A NEW supplementary instrument to help the surgeon look into the body and actually see an appendix or a bleeding stomach ulcer before he operates was announced by Dr. Joseph E. Hamilton, of the School of Medicine of the University of Louisville. The new instrument is a blunt-tipped rod or "poker" with an insulated electrode. It is used with the peritoneoscope, a periscope-like instrument which can be inserted through the abdominal wall to give the surgeon a view of the internal organs. The poker is used to maneuver the appendix, for example, into plain view if it is hidden behind a loop of intestines or adhesions. The accompanying electrode may be used to divide adhesions or to open benign cysts. New or little exploited applications of the peritoneoscope developed in examination of one hundred and twenty-five patients were reported by Dr. Hamilton.

DR. JOHN MARTIN, of Northwestern University Medical School, stated that when the dominant frontal lobe of the brain is removed, the remaining frontal lobe takes over new functions to such an extent that "a deficit in powers of association is frequently impossible to detect." In eight out of ten such operations the patients not only survived but were able to lead normal, useful lives, having returned, as Dr. Martin put it, "to a position of social and economic integrity." The operation was performed because of tumors of the frontal lobe. The frontal lobe, Dr. Martin said, is one of the few locations in the brain where such a radical operation as complete removal should be done, when feasible, to give the patient maximum benefit, although the operation is by no means a "benign procedure."

POSSIBLE danger from blood transfusions to patients whose lungs are partly out of commission from injury, disease or operation appeared in experiments reported by Dr. John H. Gibbon, Jr., of the University of Pennsylvania Medical School. Animals from which the right middle and all the lower lobes of the lungs had been removed could not survive a blood transfusion of the size well tolerated by normal animals.

SYNTHETIC anti-bleeding vitamin K acts so swiftly that within two hours after giving it patients previously in danger of fatal hemorrhage can be safely operated on, was reported by Dr. Jonathan E. Rhoads, of the Medical School of the University of Pennsylvania. The vitamin stimulates production of prothrombin, the substance necessary for proper clotting of blood that is shed. In certain cases of jaundice, the amount of prothrombin is very low, but the patient needs an operation to relieve the condition. When vitamin K was first discovered, it had to be given by mouth. Effect on the blood-clotting mechanism was slower and sometimes it was impossible to give the vitamin because of persistent vomiting. Since then the synthetic forms of the vitamin which can be given by hypodermic injection have been developed. It is still not possible to prevent cholemic bleeding entirely, Dr. Rhoads said, but fatal hemorrhage has now become a rarity.

SCIENCE CLUBS

SCIENCE SERVICE sends the following information concerning the Science Clubs which it has taken over from the American Institute:

San German, P. R.—"Explorers of the Unknown" is the name of a new science club at the San German High School. Sponsored by J. Nagario de Martin, chemistry teacher, this group puts realism in its projects by collecting money for the purchase of needed classroom material.

Syracuse—The Physical Science Club of Grant Junior High School, sponsored by D. H. Ackerman, held a Science Exhibit on November 4 and 5. The club uses an interesting study plan, with a different committee presenting a program at each meeting.

Chestertown, Md.—The Garnett High School Science Club, sponsored by Olin T. T. Thompson, is experimenting in the growth of plants without soil and is developing exhibits for a Science Fair.

DeLand, Fla.—Members of Kappa Pi Kappa, sponsored by Miss Alice Van Cleef, will hold a fingerprinting campaign for students of DeLand Senior High School. Members, now sporting the new Science Clubs of America pin, have worked out an extensive program that will include lectures, demonstrations, experiments and field trips to industrial organizations.

Pittsburgh—Members of the Biology Club of Peabody High School are making field collections for microscopic work and are building up their file of plants and leaves. Under the sponsorship of Miss Marie Knauz, the club has been able to arrange talks by members of the Audubon Society and the State Game Commission.

Lawrence, Kans.—Building airplanes, making radios and conducting experiments with dyes and bacterial cultures are in the program of the Junior Academy of Science Club at Lawrence Junior High School. Under the sponsorship of Miss Edith Beach, members are working up an exhibit for the yearly state meeting. The club has been in existence since 1930 and is affiliated with the Kansas Junior Academy of Science.

Wellsville, Mo.—Demonstrations in physics, biology and chemistry are being made by members of the Bi-Phy-Chem Club of Wellsville High School, sponsored by Miss Gertha Stark. The club is affiliated with the Missouri Academy of Science.

Scotch Plains, N. J.—The Science Research Club of

Scotch Plains High School, sponsored by H. S. Gutknecht, head of the Science Department, prepared a radio script dramatizing the work of Sir Frederick Banting, recently killed in an air crash. The story of the famous scientist's discovery and isolation of insulin was impressively delivered over the school's public address system.

Hurlock, Md.—The ? Or Why Club, sponsored by Miss Helen Warren, has divided into three groups, one making a model airplane, another working with the microscope and the third developing individual scientific projects.

New York City—The Biology Squad of the DeWitt Clinton High School, under the direction of Miss Dorothy P. Tuthill, is working out advanced research problems in slide-making, hydroponics, genetics experiments with fruit flies, guinea pigs, tropical fish and the preparation of museum mounts such as stained bone and tanned skins.

Oneonta, N. Y.—The Chem Squad of Oneonta Senior High School, sponsored by Mrs. Madeleine Frink Coutant, who is also director of the Oneonta Science Center, is holding monthly movie shows on scientific topics not taught in high schools. In February the Squad will visit a science club in Walton, N. Y., and early in May will feature a Science Congress.

Brooklyn, N. Y.—Members of the A. L. Chemists of Abraham Lincoln High School are developing Science Congress demonstrations in Science Fair exhibits under the sponsorship of N. Roseman. Laboratory demonstrations and experiments are a regular feature of the club's program.

Harrison, N. Y.—Chemistry, biology, physics and astronomy are major interests of the Kohut School Science Club, sponsored by Albert J. Metlicka. The club also works on photography and makes many field trips for nature study.

Bronx, N. Y.—Members of the Morris High School Photography Club, sponsored by Miss Gisella Kauf, teach developing, printing and enlarging to interested students who have not had much experience in this field. Various club members give lectures and demonstrations and produce photographs used in the school newspapers.

Delmar, N. Y.—The Eighth Grade Science Club at Bethlehem Central School, sponsored by Philip B. Moore, is holding classroom demonstrations, assembly programs, laboratory experiments, field trips and scientific movies.

WILDLIFE CONSERVATION AND MANAGEMENT

DESPITE progress made in recent years in the field of wildlife conservation and management, many improvements are still needed in most of the state programs, and no state is entitled to feel that it has approached an ideal wildlife administration, E. Sydney Stephens, chairman of the Missouri Conservation Commission, pointed out in an address before the International Association of Game, Fish and Conservation Commissioners.

In making a survey of wildlife administration in this country, Mr. Stephens circulated a questionnaire among the authorities of all forty-eight states, and obtained forty-three responses. His analysis of these disclosed weaknesses ranging from appointive and regulative setups that permit undue political influence and insecurity of tenure in office, to sad neglect of field research, educational programs and securing of the cooperation of landowners on which future progress in wildlife restoration and administration must depend.

Less than four per cent. of 7,820 conservation employees in forty-three states have technical training to qualify them for their jobs, the speaker said. Nine states have no technically trained employees whatever, and twenty-one states have no provision for scientific research on the problems their game commissions are supposed to solve. Fifteen states carry on no educational programs, and twenty-three states address their educational efforts to adults only, neglecting the schools entirely.

ITEMS

THAT a decline in pneumonia deaths during an influenza epidemic occurred, for the first time on record, during the winter of 1940–1941, is announced by statisticians of the Metropolitan Life Insurance Company. A minimum figure for pneumonia deaths below which a further considerable reduction is unlikely is being approached, is indicated by these studies. Fatal pneumonia cases are now concentrated in young children and comparatively old people. Many of the deaths, about one fourth in the opinion of attending physicians, were due to complicating diseases. Sulfa drug treatment seems to have largely replaced serum treatment. Sulfathiazole was the favorite drug last winter, but sulfadiazine is likely now to be used far more widely. Bacteriological studies to determine the germ responsible for the pneumonia in each case seem to have been largely abandoned in urban centers.

A NEW method of treating cancer of the mouth, pharynx and larynx which appears to be more effective than similar methods now in use is reported by Dr. Max Cutler, of the Chicago Tumor Institute, in the *Journal* of the American Medical Association. The new method is called the "concentration method of radiotherapy." It has been given to some 850 patients at the Chicago Tumor Institute and the Hines Veterans Hospital during the last three and one half years. Certain carcinomas of the mouth, larynx and pharynx which failed to respond to other methods of external irradiation have shown marked regression and in many instances have disappeared completely following treatment with the new method. It is, however, still too soon to know whether or not permanent cures have been achieved. The method consists in giving higher daily doses of x-rays or radium over a shorter total period of treatment than has been customary.

GERMAN authorities, in their anxious search for ways to release able-bodied men for the firing line, have found means for employing blind men to do accurate measuring work on small machine parts and the like. In the Junkers factory, according to *Die Umschau*, devices have been constructed that will announce differences of as little as one twenty-five-thousandths of an inch by means of bell or buzzer signals. These replace gauge dials of the instruments hitherto used.