SCIENCE NEWS

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THE AMERICAN COLLEGE OF SURGEONS

A PLEA to save the practice of surgery from becoming too much of a product of the machine age was voiced by Dr. C. Jeff Miller, of New Orleans, in his presidential address before the first general session of the annual clinical congress of the American College of Surgeons meeting in Philadelphia on October 12. The virus of standardization, characteristic of present-day American civilization, has infected American medicine, he said. Hospitals, medical schools, laboratory methods and medical and surgical treatments have been standardized and in many respects the patients are better off as a result. But there is a limit to standardization. Medicine and surgery have now reached this limit. Hand in hand with accurate diagnosis and scientific treatment should go sympathy and kindliness and pitifulness on the part of the physician, which will awaken faith, hope and trust on the part of the patient. "No amount of scientific efficiency can take the place of kindliness and pitifulness when the darker hours come on and we enrich ourselves by giving of them freely."

THE same thought was emphasized by Professor George Grey Turner, of Newcastle-upon-Tyne, England, in his John B. Murphy oration later in the evening. Routine, standardized operations he deplored. One should suit the surgical procedure to the patient. This depends on a thorough knowledge of the structure of the human body and of the changes brought about by disease. The surgeon should not depend entirely on routine, but should be guided in his methods by the conditions he finds as he operates on each patient. He paid high tribute to the famous American surgeon in whose honor a surgical oration is given each year at the annual congress of the American College of Surgeons. While improvements in methods have been achieved since Murphy's original contributions, his teachings should still guide modern surgeons. Appendicitis, for instance, is still a serious condition which might often be more successfully treated if physicians remembered Murphy's dictum, "Get in fast and get out faster." Professor Turner said that the first part of this saying was not meant to license indiscriminate operations, but to insure early diagnosis. The last part was to impress surgeons that a thorough cleaning and swabbing of the abdomen then customary was not necessary. Professor Turner also reported some encouraging results of operative treatment of cancer.

APPLICANTS for jobs in the hazardous occupations should be given examinations showing their temperaments and adaptability as well as their physical condition, according to Dr. George W. Swift, of Seattle, Washington. Persons of what physicians call psychopathic constitutions, meaning those whose nervous, mental and personality make-ups are abnormal or unstable, should not be given work in dangerous occupations, because the slightest injuries to such people are apt to result in claims for complete and total disability. Dr. Swift discussed particularly the types of head injuries seen in the practice of industrial surgery. One third of them fall into the group of minor injuries, he said. In another third the patients will have perfectly obvious permanent disabilities. The remaining third is composed of patients who after a period of time do not adjust themselves to their condition. These cause the greatest difficulty in compensation work. The task of determining which of these patients still have physical disability due to their injury and which are unable to adjust because of nervous or mental instability is extremely difficult. Dr. Swift advised the study of all brain injuries by ventriculography. By this method air is injected into the brain cavities and X-ray studies are made. The presence of brain tumors may be detected by this means. Such a study will enable physicians to give the injury better treatment from the beginning and thus prevent many actual physical disabilities.

"CANCER is to-day a greater menace, a more formidable scourge, than any other malady threatening our national life, with the exceptions of crime and the drink habit," according to Dr. Howard A. Kelly, of Baltimore. "With all our efforts, experimentations and investigations, we are as yet far removed from any worth-while knowledge of the ultimate cause or causes of this dread enemy. We do, however, know a few helpful things about it. First, we know it is not contagious. Second, like every other ill in life it is most successfully treated in its earliest stages when it is a purely local affair. Finally, we know certain preventive measures which can be taken. The golden rule of prevention is to look upon every persistent sore or lump in the skin, breast, mouth or any accessible part of the body as potentially serious until a competent doctor or surgeon declares otherwise." Any unusual condition should be investigated at once. Delay is dangerous. "The sad habit of watching lumps or lesions until their nature becomes obvious and both doctor and patient are at length persuaded that something ought to be done is responsible for the loss of many precious lives."

A MATHEMATICAL study of the tensile strength of wounds, their ability to resist strain or rupture, was reported by Dr. John D. Ellis, of Chicago. The study was part of a comparison of the healing of surgical and electrosurgical wounds. Cuts were made with a knife or scalpel, and specimens of the wounds, a small fraction of an inch each, were pulled apart and their tensile strength recorded in grams, or fractions of pounds. Less than two thirds, or 60 per cent., of the wounds made by electrosurgery healed by what surgeons call primary intention, as compared with 97½ per cent. of the wounds made by the scalpel. Furthermore, the electrosurgical wounds did not develop the tensile strength of the scalpel wounds for 21 days.

ELECTROSURGERY has its greatest usefulness in the removal of malignant diseases or cancer, Dr. Oscar E. Nadeau, of Chicago, said at the same session, which was a symposium on electrosurgery. In his clinic at the Augustana Hospital, the electrosurgical knife has been used more for removing cancer of the breast than for any other operation. Because of the sparks from the electrosurgical needle or knife, ethylene gas or other explosive anesthetics can not be used. Successful use of this method in operations for goiter was reported by Dr. Martin B. Tinker, of Ithaca, N. Y.

THE application of electrosurgery to surgery of the brain and nervous system makes the third great advance that has been made in the field of neuro-surgery, according to Dr. Ernest Sachs, of St. Louis. By its means, brain tumors that were formerly considered inoperable can now be dealt with and other types of brain tumors can be removed more safely than before. The technic of the method takes time to learn, and Dr. Sachs prophesied that more and more will be accomplished with it in the future as surgeons become increasingly familiar with it and learn to realize its possibilities.

A MIMEOGRAPHED list of directions for ten exercises designed to teach walking is part of the treatment for broken bones of the leg as described by Dr. John S. Coulter, of Chicago, at the conference on traumatic surgery. When both bones of the leg are broken, there is a long period of inaction which impairs the power of muscle coordination. After the leg has been in a cast for three weeks or so, the patient needs to be taught how to walk again, and should be given exercises before being allowed to put his full weight on the injured leg. The walking lessons need entail no extra expense to the patient, and he can teach himself with the aid of the mimeographed instruction sheet. In this type of case, physical therapy is not only a valuable aid but an essential one. Dr. Coulter also told surgeons how heat, light, water, massage and exercise should be used to help in restoring function of the leg.

THE rapid increase in the number of fractures or broken bones during recent years is due to the increase in the use of automobiles, Dr. Samuel R. Cunningham, of Oklahoma City, said. "Thirty years ago in a city of 200,000 population we did not see as many fractures from all causes as we see now in a city of similar size resulting directly or indirectly from motor cars." Surgeons need to direct more attention to learning how to treat fractures satisfactorily, he added. The treatment of diphtheria or appendicitis has become fairly well standardized, but the treatment of simple or complicated fractures is not generally so well understood.

THE hospitals of the country have been seriously affected by the increasing number of motor vehicle accidents, according to Emil Frankel, director of research of the New Jersey department of institutions and agencies at Trenton, N. J. General hospitals of the United States had during 1929 between 200,000 and 250,000 in patients who had been victims of highway accidents. The cost of their hospital maintenance was between $15,000,000 and $16,000,000. The hospitals lost between $5,000,000 and $6,000,000 from patients of this kind not paying their bills. Eventually the community must pay for the patients who do not and who thus become charity cases. In one hospital, 251 patients were brought in from 114 highway accidents. The number of such accidents is increasing everywhere as the number of motor car owners and motor bus users increases.

ROTATION OF THE PLANETS

WITH the discovery by Dr. J. H. Moore, Lick Observatory astronomer, that the planet Neptune turns once on its axis in about 16 hours, there remain only two of the larger members of the solar system for which the day is still unknown. Venus, which becomes brighter than any of the other planets and which has been so conspicuous in the western evening twilight in recent months, is one. The other is the newly discovered Pluto, which represents the main contribution of 1930 to the history of astronomy, and which can only be discerned with the aid of a large observatory telescope.

It was the spectroscope, which analyzes the light of a star to tell what it is made of and how it is moving, that revealed to Dr. Moore the secret of Neptune's rotation. The light from the planets is reflected sunlight. Therefore, the spectrum shows the dark lines crossing it that are characteristic of the spectrum of sunlight, the lines being caused by vapors of certain elements absorbing certain colors in the sun's light as it passes through the outer layer of that body.

If light from a star or planet that is approaching the earth is analyzed through the spectroscope, it is found that the lines are slightly displaced, towards the violet end of the colored spectrum. If the star is receding, on the other hand, they are shifted to the red end. This is because the waves are squeezed together and made shorter in the first case, while in the latter instance they are spread out and made longer. It is the length of the wave that determines color of light, so light from a rapidly approaching source is bluer and from a rapidly receding source redder than one that is standing still.

Dr. Moore photographed the spectrum of the light from Neptune along a line crossing the planet's disc from east to west. The spectrum photographs showed the lines tilted, rather than displaced in their entirety to one end or the other. This indicates, of course, that one side of the planet is approaching the earth and the other side receding, in other words, that it is rotating. As the side of the lines made of light from the eastern edge tilted to the violet, it showed that the eastern side of the planet is approaching us. That is, the planet turns from west to east, like the earth, and all the known planets except Uranus.

The faster the planet turned, the greater would be the tilt, so from a determination of the angles of the lines, Dr. Moore was able to measure the period of rotation,

or "day" of Neptune. This came out as 15.8 hours, though he admits that there is a possible error in this figure of as much as an hour, either too fast or too slow.

Dr. Moore also has measured the day of Uranus. In 1911 Drs. Percival Lowell and V. M. Slipher, at the Lowell Observatory in Arizona, found by a similar spectroscopic method that Uranus rotates once in 10¾ hours, and that the planet turns from east to west, unlike all the other members of the solar system. Dr. Moore has confirmed the direction of the planet's rotation, but gets slightly different values for the rotation with different sets of spectrum photographs. One set, made with a smaller spectrograph, gives values like those of Lowell's, but another set, made with a more powerful instrument, gives about 11.5 hours. The latter photographs, however, are not fully exposed, and were difficult to measure. Dr. Moore said that the discrepancy is probably due to the small images of the planets, as a result of which such determinations are at best only approximations.

For the other planets, Mercury has a day of 88 of our days, the same as its rotation period around the sun, so that it always keeps the same face towards the sun. The period of Venus is uncertain, because it seems to be constantly covered with clouds that keep astronomers from ever seeing its surface, even though it comes closer and is sometimes brighter than any other planet. Spectroscopic observations show that it is very slow, probably more than 20 days, but as measurable heat is radiated from the dark side of the planet, it probably does not keep the same side to the sun. Therefore, its day is probably between 20 days and 225 days, its period of rotation around the sun. Mars, next of the planets to the earth, turns once in 24 hours and 37 minutes, only a little longer than the earth. Jupiter, largest of the planets, also has the fastest rotation period, for its day is only 9 hours and 55 minutes in length. Saturn, second largest planet, is almost as fast, with 10 hours and 14 minutes. Pluto's rotation period is not known, and, since it is so faint and its disc so minute, it is doubtful whether its period can be measured by methods in use to-day.

ITEMS

THIRTY new Pueblo sites have been unearthed in southeastern Arizona by Professor Carl O. Sauer, of the department of geography of the University of California. The villages were all situated on the gentle slopes at the base of the mountains where the summer floods could be best utilized for farming. There has clearly been very little change in climatic conditions during the intervening centuries. The complete defenselessness of the location indicates that the Chiricahua Pueblos date back to a more peaceful period than do the walled towns of New Mexico. The houses were for the most part built with their floors two or three feet below the level of the ground, anticipating the pit houses of a later period.

JAPAN would unite with the United States and any other country to protect the various species of whales for a number of years in order that the mammals might be studied and given a chance to multiply. Japan complains about the continued diminished whale products in her country, according to representatives of fish exporting firms at Seattle, Washington, who sell whale tails and canned whale meat in the Orient. In Japan the gray whale has disappeared. There has been a noticeable decrease year after year of right, fin-back and hump-back mammals found in the sea adjacent to the island empire. Japanese whalers have been forced to take long voyages into the Arctic and far south into the Antarctic to seek supplies for their industries.

THE bats which live and hibernate in one end of Carlsbad Caverns, estimated at three million in numbers, have not been giving their usual spectacular flights recently. Two reasons are advanced for this. One is that the extremely dry weather of the past season has caused a scarcity of night-flying insects, the other is that they have been disturbed by work going on in a nearby guano mine. Occasionally, however, they stream forth in great numbers, their flight from the cave opening lasting for several hours. An interesting feature of the bat exodus is that although they always fly south when they emerge from the cavern, they invariably return next morning from the north.

THE greatest recession ever recorded for the Nisqually Glacier, in Mount Rainier National Park, occurred during the past year when it retreated 118 feet. Records of the rate of recession of the Nisqually Glacier have been kept for 73 years. Last year it moved only 52 feet. The previous record recession was 106 feet, in 1921. Each of the 28 glaciers making up Mount Rainier's great single-peak glacier system is known to be retreating each year, due to the heat of the sun and to lack of sufficient snowfall to replenish the melted ice. The Nisqually, however, is the only one that has been measured annually and records kept. Two other glaciers, the Emmons and Carbon, were measured this year and records of these will be kept in the future.

WITH an average of 798 pounds of fertilizer used on every acre of crop land during 1929, Florida leads the United States in the use of fertilizer, according to R. O. E. Davis, research chemist of the U. S. Bureau of Chemistry and Soils, speaking to members of the American Chemical Society. Next to Florida is New Jersey with 417 pounds per acre. On the whole, the states of the Atlantic seaboard use it much more extensively than those inland, though a great increase in its use has come since 1913 in the Pacific Coast states, and there is also a tendency to increased use in the West North Central states. Cotton uses on an average 108 pounds per acre, though 31 per cent. of all the fertilizer used is on this crop. On citrus fruits the rate is 1,163 pounds. Five principal crops consume about 82 per cent. of the fertilizer, though less than 25 per cent. of the acreage devoted to them is fertilized.