EVENTS

At a meeting of the Yale Medical Society on January 21, PROFESSOR WALTER B. CANNON of Harvard University spoke on “The Explanation of a Mysterious Emotional Increase in the Heart Beat”.

The experiments upon which the lecture was based were performed on cats. The nerve connections of the heart were first severed, and later the adrenals, thyroid glands, parathyroids, and pituitary were removed. After the removal of each set of glands the cat was stimulated and in each instance an increase in heart rate was observed. The liver was then denervated, and all of the sympathetic connections were severed, except those to smooth muscle in the lower thoracic region. Stimulation still resulted in acceleration of the heart. When, however, the fibers to smooth muscle were severed, stimulation brought no response. Tying off the vessels to this region likewise prevented a response to excitation, but when the vessels were released, acceleration of the heart occurred. The administration of ergotamine increased the response.

From this experimental evidence Dr. Cannon deduced that a hormone was given off by the smooth muscle wherever sympathetic fibers end, and when an animal is excited this adrenaline-like substance is liberated. The administration of ergotamine prevents the smooth muscle from using the hormone. Since the heart has a high degree of tolerance for ergotamine it is unaffected by it and receives more hormone from the smooth muscle and is accelerated. Without the use of ergotamine the heart rate is increased by the hormone, but to a lesser degree. Dr. Cannon calls this new hormone “sympathin” and believes that it acts slowly because of the indirect vascular connection with the heart.

F. W. B.

At a meeting of the Yale Medical Society on February 11, the following papers were presented:

PRESENCE OF VITAMIN A IN THE RETINA

ARTHUR M. YUDKIN, M. D., AND ARTHUR H. SMITH, PH. D.

The fat was carefully cut away from the eyeball (hog), the eyeball cut in two, and the retinal tissue removed. This was desiccated, ground up, and again desiccated, after which it was preserved in bottles containing carbon dioxide.

Rats were fed diets deficient in vitamin A, and, when they began to show ocular symptoms, retinal tissue was added to the diet. An immediate increase in weight was seen, with a return to normal. The retinal tissue was found to contain four times the vitamin A present in butter-fat.

In other experiments rats were fed deficient diets until ocular symptoms appeared, and with varying amounts of retinal tissue added to the diet it was found that the growth curves showed the recovery to be roughly proportional to the amount
added. A return to normal was effected by the addition of 50 mg. Choroidal tissue, prepared in the same manner as the retinal tissue, was shown to contain no vitamin A.

Chemical analysis of the retinal tissue showed that 20.3 per cent could be extracted with ether, the material thus obtained being derived from the external coat of the retina and containing most of the vitamin A. It gave the arsenic trichloride test for vitamin A.

L. W. D.

AGE SUSCEPTIBILITY TO RHEUMATIC FEVER

John R. Paul, M.D.

Rheumatic fever has been described as a disease of adolescence and early adult life. When compiling statistics on this subject it is very important to note the time of the first attack. The greatest incidence is seen to be between 10 and 15 years, and the curve of the number of cases, plotted against age, shows a sharp peak at this point.

In a careful study of 14 families, comprising 99 people, the curve for susceptibility was seen to reach its highest point at 8 to 12 years, and then decline. The material for these data comes from people heavily exposed and represents people of an urban, rather than a rural community. The difference between the two was shown by statistics from the University of Minnesota where 60 per cent of the students who had rheumatic fever in a dormitory were students of the Agricultural College, although these students from the rural districts made up but 10 per cent of the student body.

L. W. D.

SIGNIFICANCE OF ANHYDREMLIA IN BURNS

Frank P. Underhill, Ph.D.

During the war a study on the effects of war gases, which are lung irritants, was made, and it was found that pulmonary edema caused by their inhalation resulted in such an extensive concentration and thickening of the blood that the heart could not propel it through the capillaries. The result is tissue asphyxiation, fall in temperature, and death. A superficial burn is a similar condition. In 1921 a fire in a New Haven theatre afforded a number of cases for study in the New Haven Hospital. The condition of the blood in these cases was seen to be the same as in those with war gas poisoning.

In experimental animals which have no functioning sweat glands, the blisters raised by burns are subcutaneous instead of being between the dermis and epidermis as in man. The fluid collects in finger-shaped pockets making determinations of volume and composition an easy matter. When a rabbit is burned, 20 to 30 per cent of the total blood volume is poured out into the
tissues in the form of a fluid having very nearly the same composition as does blood plasma when one-sixth of the body surface is burned. Surgically a burn is considered fatal when one-third of the body surface is burned, and this would be accompanied by a loss of 70 per cent of the blood volume.

It is interesting to note that dyes which do not normally pass through the capillary wall do so in burns, showing that there is an increased outward permeability. Also, when phenolsulphonephthalein is injected into a blister, only 10 per cent can be recovered in 24 hours, showing that the permeability in the opposite direction is decreased. A lethal or double lethal dose of strychnine produces no effects at all when injected into a blister. These facts make one wonder how death resulting from burns could be due to the absorption of a toxin.

L. W. D.

ELECTROLYTE CHANGES ACCOMPANYING PLASMAPHERESIS IN DOGS

Daniel C. Darrow, M.D., Edward Hopper, M.D., and M. Katherine Cary, B.A.

When the interstitial fluids are tested after plasmapheresis, it is found that the bicarbonates show no change and the chloride increases as the serum protein is decreased. Upon further study and correction for the water concentration, it was found that the ratio of base in the interstitial fluids to calculated plasma protein changes according to the laws of Donnan's equilibrium. It was also seen that as the serum protein increases the calcium in the ascitic fluids increases in a straight line, when represented graphically.

L. W. D.

Under the auspices of the Yale Chapter of Sigma Xi, on Wednesday, January 21, Professor H. C. Bingham gave a lecture entitled "Some Observations on the Behavior of Mountain Gorillas in a Native Habitat".

In 1929 an expedition sent out by Yale University and the Carnegie Institute of Washington traveled across Africa from the east coast to Lake Kivu in the Belgian Congo at the foot of the mountain range where gorillas were studied by Carl Akeley shortly before.

Gorillas were found in areas of deep vegetation which made trailing and photography difficult. Studies made of their nests which were built out of leaves and shrubs flattened on the ground or in the trees gave clues as to the numbers in the tribe and some of their habits. Whenever approached the gorillas became angry and beat on tree trunks or on their breasts with their fists. These mountain gorillas had markings of grey on their backs and were huge animals with long arms and thick chests. They advanced over the country slowly, never spending two nights in the same nest. One large gorilla charged a native bearer and had to be shot. This gave Professor Bingham an opportunity to study the skeleton and surface markings of this species.

L. W. D.
At a meeting of the New Haven Section of the American Chemical Society on January 13, Professor L. B. Mendel presented “Some Relations of Diet to Fat Deposition in the Body”. The text of this lecture has appeared in full in this journal, Vol. 3, pp. 107-37. L. W. D.

On January 22 and 23 two lectures were given by Professor Jules Duesberg, Rector of the University of Liège.

The first lecture dealt with “The Cause of Unequal Cytodieresis”. Four theories have been advanced to explain why cells sometimes divide into daughter cells, one of which is much larger than the other. One theory is that the size of the spindles in the mitotic figure is the determining factor. Dr. Duesberg showed dividing cells with spindles one-fifteenth the diameter of the cells and others with spindles almost as long as the cell, and in each case the division was unequal. He also demonstrated two cases of cells which had spindles of exactly the same size in the maturation division and cleavage division, but in each case the maturation division was unequal and the cleavage division equal.

A second theory states that the position of the spindle in the cell may decide whether the division will be equal or unequal. Slides were shown picturing an unequal division resulting from a concentrically-placed spindle, thereby disproving this theory.

The unequal size of asters has been mentioned as a cause, but this theory has been discarded because asters of equal size may result in cells of unequal size.

That the condition of the cytoplasm is the cause is shown by the fact that when all the cell granules gather around one pole, that pole becomes the large blastomere. Also in frog eggs, when the cleavage is perpendicular to the axis of the egg, the cells at the vegetal pole are larger than those at the animal pole. If the eggs are centrifuged to change the position of the poles, the reverse is true of the size of the daughter cells.

In the second lecture consideration was given to “Cytological Observations on the Centrifuged Egg of Ciona”.

Experiments were described which bear out the more general facts stated in the first lecture. In subjecting the eggs to centrifugation, tubes of such small calibre were used that the mollusk eggs fitted snugly, forming a single column. Before centrifuging the exact time between fertilization of the egg and the time when the sperm nucleus met the egg nucleus in the cells was found to be 15 minutes; the time for the resulting spindle to reach the telophase was 45 minutes; and the time for cleavage into the two blastomeres was one hour after fertilization.

A number of eggs were centrifuged for 15 minutes. It was found that because of the centrifugal force the sperm was not able to meet the egg nucleus, but traveled an irregular course and missed the egg entirely. Eggs that were centrifuged for 45 minutes usually formed a spindle and divided, but they did not always succeed in doing so, and the time required was increased by the centrifuging. When the eggs were centrifuged so that the plane of cleavage would not divide the yolk, because it had been forced to the cell wall in an abnormal part of the cell, the daughter cell which received the yolk was always much larger
than the other blastomere. In the following division the larger cell divided into
two large ones and the smaller cell divided into two small ones. L. W. D.

The meeting of the New Haven Medical Association held on January
21, was devoted to an address by the retiring president, Dr. THOMAS H.
RUSSELL, who spoke on “Early Medical Education in the United States and
Doctor Nathan Smith”.

L. W. D.

At the meeting of the New Haven Medical Association held on Feb-
uary 4, the paper of the evening—“Infant Feeding”—was presented by
DR. FREDERICK F. TISDALL, Professor of Pediatrics at the University of
Toronto.

In planning a diet provision must be made for (1) fat and carbohydrate to
supply energy; (2) protein for repair and the growth of body cells; (3) minerals,
of which calcium, the chief source of which is milk, liver, and vegetables; iron,
found in egg yolk, most vegetables, and some fruits; and iodine are most es-
sential; and (4) vitamins. The average diet contains an excess of carbohydrate
which, in most instances, is purified, with a lack of minerals and vitamins.
Purification of the carbohydrate results in a removal of the portions which contain
the greatest amount of both minerals and vitamins. In order to supply this want
an especially prepared cereal mixture containing the essential ingredients has been
used at the University Hospital at Toronto, with results which have been quite
remarkable.

Experimental rats in which a vitamin A deficiency was evident clinically by
the xerophthalmia, and because of upper respiratory tract infections, were
restored to normal health and growth by feeding with this cereal mixture. This
mixture was also found to restore laboratory animals to normal health in cases
where the disturbance was due to a deficiency in vitamin B, C, or D. In connec-
tion with vitamin D, Dr. Tisdall spoke of the effect of sunlight on the activation
of the ergosterol. A study of the prevalence of rickets in winter and in summer,
and when the body is exposed to sunlight the year round, showed that only when
the sun reaches a height of 35° above the horizon are the rays effective in pre-
venting rickets.

He spoke at length of vitamin B deficiency causing lack of growth and ap-
petite in children, and in this connection he divided 25 children into two groups,
the first received the standard hospital diet plus four ounces of fat-cereal mixture
containing wheat-germ and yeast. At the end of ten weeks he found that the
average growth had been 4.9 pounds. In the other group to which no cereal
mixture had been given the gain in weight was only 1.8 pounds. He then re-
versed the groups and found a corresponding change in weight gains.

The effect of vitamin D in influencing resistance to disease was emphasized.
When animals with a deficiency of vitamin D were fed a typhoid-like organism
nearly all succumbed. When vitamin D was given, the mortality was much
lower. His work emphasized the clinical importance of an adequate diet and he
stressed the use of milk, wheat, eggs, vegetables, and fruit. J. J. DuM.