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ORIGINAL ARTICLES.

DIET IN ITS RELATION TO THE TREATMENT AND PREVENTION OF DISEASE.

Read before the Section of Physiology and Dietetics at the Forty-third Annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY AUGUSTUS P. CLARKE, A.M., M.D.,
OF CAMBRIDGE, MASS.

The study of dietetics from the earliest ages among people of different nations that have cultivated the art of medicine has often been an important subject for consideration. Thus, in the Hippocratic Treatises mention is made of diet in health as well as in disease. In the treatment of certain fractures the ancients had different grades of diet, as the full, the ordinary, and the low. The diet was sometimes restricted; food that was of a laxative character was not unfrequently employed. Abstinence from flesh and from wine was often enjoined; in such cases a more nourishing diet was gradually resumed. The aphorisms of Hippocrates embody many regulations respecting diet. A slender and restricted diet in chronic disease was regarded by Hippocrates as always dangerous. In the more acute diseases an attenuating diet was used. From the writings of the ancients it is evident that they attained to a high degree of knowledge as regards the influence which food exercises in health and in disease. Such knowledge obtained was a natural sequence of the manner of their living. As those nations advanced in the upward scale of civilization the arts multiplied, commerce extended and wealth so increased that the pleasures in living became numerous and far-reaching. The accounts of the excesses indulged in at the table even when placed in comparison with some of the more modern customs seem almost incredible. The praise which Cicero bestowed on his host for the thoughtfulness in providing him an emetic to be taken before the feast was served, has become proverbial. Luxurious tables during the ascendancy of Rome were not limited to the confines of that mighty capital, but were often abundant in the more distant parts of the empire. During a recent visit to the excavations made at Pompeii and at Herculaneum I became interested, not only in many articles and utensils taken from the ruins, but also in the evidence of comforts and luxuries which wealth afforded to many of the inhabitants of those cities, which were buried by the eruption of Vesuvius. M. Monnier¹ has given a good account of one of the suppers, taken from a bill of fare found at Pompeii. This bill of fare found in the ruins was well preserved. The menu was taken from the house of

Paratus, not an emperor but a citizen, who of course, indulged in only a mere modest repast.

First Course.—Sea urchins, raw oysters at discretion, pelorides or palourdes (a sort of shell fish now found on the coast of Poitou, in France). Thorny shelled oysters, larks, a hen pullet with asparagus, stewed oysters and mussels, white and black sea-tulips.

Second Course.—Spondulæ, a variety of oysters; sweet water mussels; sea nettles, becaficoes; cutlets of kid and boar's meat; chicken pie; becaficoes again, but differently prepared, with an asparagus sauce; murex and purple fish. The latter were but different kinds of shell-fish.

Third Course.—The teats of a sow *au naturel*, they were cut as soon as the animal had littered; wild boar's head (this was the main dish); sow's teats in a ragout; the breasts and necks of roast ducks; fricassee wild duck; roast hare, a great delicacy; roasted Phrygian chickens; starch cream; cakes from Vicenza.

The deglutition of all these was assisted by frequent draughts of wine made in the vineyards planted on the slopes overhanging the walls of Pompeii. This wine was often of a light grade, was of fair quality and if sterilized could be kept for many years. Illness from over-indulgence or from errors in diet was not unknown to the Pompeians. From what has been discovered in the ruins at the house of the surgeon, and also in the ruins at the shop of the apothecary it becomes evident that this ancient people often sought for relief from maladies and from functional disturbances induced by disregard of those fundamental principles which, had they been observed would have led to much higher degree of health. Temperature of food which has been served is an important subject for consideration. Food when heated to a high degree may at first act as a stimulant but will nevertheless cause an undue contraction of the arterioles. This condition of the capillary circulation will cause a diminution of the flow of the fluids necessary for digestion, will lead to gastric anæmia and to the occurrence of certain forms of dyspepsia. My own professional experience, however, justifies me in making an urgent plea for regular ingestion of warm food, which not only conserves the resources of the stomach, but also overcomes the tendency to the indulgence in those stronger stimulants, the use of which so often results in physical as well as moral degradation. Dyspepsia and indigestion before the occurrence of marked organic lesion can almost invariably be cured by a rigid adherence to a regulated diet. All foods should be thoroughly masticated. Fermentable articles should in great measure be avoided. In this list may be included certain starches, sugars and sometimes fats. It is often, however, observed that many kinds of food which are seemingly ill-adapted to a

¹ "The Wonders of Pompeii," by M. Marc Monnier, p. 161.

dyspeptic may be wholly innocuous when taken singly and in moderation. Thin soups and allied articles have in my practice been the best adapted for a cure; raw oysters are often beneficial, though I believe the nutritive properties of this class of food have been overrated.

The lighter grades of meats, such as mutton, lamb, game, venison, and poultry are to be preferred to the meat furnished by the butcher. Eggs, when poached or boiled, are to be recommended. Eggs beaten or whipped up with water or with wine are not as good on account of the danger of the admixture of atmospheric air. Farinaceous articles, including stale bread, tapioca, sago, corn bread, rice, hominy, macaroni, crackers of different grades, cream and butter are also to be recommended. Certain fruits and vegetables are often required by the dyspeptic. In this list may be introduced apples, when baked, grapes, oranges, peas, spinach, asparagus, celery, lettuce, string beans, and peas, occasionally dandelions and chicory. In cases in which the patients are of a plethoric habit, cold water may be drunk half hour before each meal. In those cases in which the persons are of nervous temperament or are anæmic, water of the temperature of 110° F. to 120° F., should be taken in preference. The dyspeptic should scrupulously avoid partaking largely of articles of food that have been hardened in the preparation of cooking, or of articles that are rich or have been so highly seasoned, or have been prepared in such a manner as to render them difficult of digestion. Such articles should be avoided, not only on account of their giving rise to immediate disturbances, but also on account of their leading to an inflammatory condition of the mucous and glandular tissues, and to debility and atrophy of the structures entering into the organs essential to production of the digestive process. Closely connected with the consideration of food adapted for gastric disturbances is the consideration of food for renal affections. In the treatment of uric acid diathesis, notice must be taken relative to the habits and occupation of the patient. In a case in which the patient is habitually engaged in literary pursuits food containing some of the protein elements will often be indicated. An azotized aliment to a limited extent must be allowed. Food consisting largely of the farinaceous element will suffice for the invalid who is able to take prolonged and regular exercise, such as mountain climbing, riding on horseback, gardening and farming, and manual labor generally. Certain forms of carbo-hydrates, however, such as wine, fermented liquors, and perhaps most of the alcoholic preparations, should be excluded in a large number of cases which occur in the different kinds of renal disease. In cases of excess of urates, or in lithic diathesis, a diet abounding in alkaline salts must be employed. For in such cases there will be found in the blood insoluble uric acid the presence of which can be safely overcome only by the proper administration of food. In cases of chronic nephritis, in which the urine voided is excessive in quantity and is more or less albuminous, milk usually agrees well and should be freely taken. Water which has been sterilized should also be taken in liberal quantities. Most of the articles of diet mentioned as suitable for cases of dyspepsia will often be found beneficial in the management of the diet for this form of renal disease. In the treatment of obesity a diet composed largely of animal food has

often been recommended. My own professional experience leads me to oppose such a method of procedure. In a case in which the food is limited to a meat diet there is apt to occur an excess of urea. In the case of G., aged 48 years, and whose weight was three hundred and fifteen pounds, an attempt to effect reduction of weight by diet, consisting in great measure of rare beef, roast mutton, boiled ham and stewed veal, each taken on different days, was undertaken by direction of his physician. After a year's experience on this routine course, the patient applied to me for treatment of an attack of gravel. He had begun to pass from the bladder small calculi of uric acid. Under my treatment the use of all kinds of animal food was immediately discontinued; a plain, vegetable diet with milk and gluten, eggs, fish, with some fruits, and sterilized water were prescribed. The patient gradually improved. The sediment of the urine disappeared. There were fortunately no gastric disturbances. Within one year the weight had materially diminished; the morbid craving which had been engendered for animal food was completely overcome. The patient regarded himself as in sound condition; he was able to take long walks daily without becoming fatigued.

In this connection I cannot refrain from remarking that the substitution of animal diet exclusively for a mixed diet or for one composed in great measure of the lighter fruits, vegetables, together with a small amount of eggs, milk, fish, and other articles whose waste products are easy of elimination, for persons suffering from excessive obesity is according to my experience, a most pernicious method of procedure. This leads to the consideration of diet for those who suffer habitually from the rheumatic diathesis. In the management of such cases one should not lose sight of the important relation subsisting between the ingesta and the egesta of the human organism. In many cases of troublesome rheumatic symptoms the digestive function is apparently well performed. In such cases the patient over-eats because he feels weak; not because he has not taken an adequate amount of nourishment, but because there has been a failure on the part of the eliminative organs in excreting the surplus material which has been taken into the stomach, been carried into the circulation and finally has been deposited among the tissues and organs of the body. In the treatment of this class of cases a radical change in diet has often to be made. All articles of food that have a special tendency toward the elaboration of the biliary principles and also of the urea should be wholly excluded for a long time from the diet list.

That form of renal disease occurring in the female when pregnant should always demand our greatest solicitude. The food allowed to be taken by such a patient should always be light and easy of digestion. In the treatment of this class of cases I have invariably found that all butcher's meat should be interdicted. In the case of Mrs. S., who in her first confinement had convulsions precipitated by renal complication, food composed largely of animal diet had been prescribed up to the very hour of the onset of labor. I was not called to this case until labor had begun. The convulsions were fortunately overcome; she was kept afterwards on milk and farinaceous articles to which eggs and fresh fish were frequently added. In her second pregnancy renal trouble was of the mildest type; labor was accom-

plished without the occurrence of eclampsia. During the third pregnancy she was not under my care. The directions which I had heretofore enjoined regarding the diet were not carried out; the convulsions appearing in that third labor evidently in consequence of the re-occurrence of the renal complication, I was assured were the immediate cause of death. In my own practice I have notes and reports of several other cases in which renal disease brought on or hastened by pregnancy, was practically cured or overcome by the strict intervention of light but nourishing diet from which animal food of every description had been excluded.

Although our knowledge regarding the original cause of the appearance of cancer is as yet meagre still some evidence by clinical experience has been offered that this disease is not wholly uninfluenced in its origin and course by diet. My first impressions that cancerous affections would be influenced by diet were received from my late Professor, Dr. Henry I. Bowditch, who mentioned to me the case of an eminent physician. It seems that a cancerous growth appeared on the face of the physician. This led him to consult prominent surgeons in regard to the advisability of its removal. A decision against the safety of a resort to surgical measures prompted the sufferer to consider more carefully the influence the particular articles he had been accustomed to use in the diet list for his own use. His diet had always been a most generous one; he therefore began to suspect that it had exerted material influence in the causation of his disease. Suffice it to say, that the change from full diet to one that was radically different but opposite in its character, exercised a most important influence in affecting a retrograde action of the disease. Though evidence has been afforded that cancer in some of its various manifestations is contagious, it is also important to observe that its occurrence so common in the uterine tissue after the menopause and for sometime afterward indicates that the structures of that organ are favorable soils for its development. The adaptation of the uterine tissues at this particular period further indicates that these favoring conditions are dependent on accidental circumstances.

When the tissue is in a normal state the regular recurring catamenia no doubt do attenuate and finally discharge any germs that gain entrance into those parts. After the cessation of the catamenial flow, the uterine cervix or body undergoes in histological structure such important changes that the tissues become to a certain extent culture chambers in which disease germs gaining admission may develop. The proneness of these tissues to disease is more particularly enhanced when the nutritive forces determined to the genital tract are no longer expended through the agency of the menstrual molimen, but are retained and as it were stored and unemployed. These tissues for a while at least, become obnoxious to the growth of germs, bacilli, or to certain bacteria. By lessening the currents of nutritive force distributed to the tissues of the organism we modify, or starve those embraced within the area of the uterine zone, and render them less prone to the invasion of bacterial and of adventitious elements. In three cases of uterine cancer treated almost from their inception, principally, by careful management of the diet I am satisfied that the disease was practically extinguished. In a fourth case to which I was called,

had I had the good fortune to commence earlier or at least had been able to carry out more regularly and systematically the management of the diet that was indicated, I feel confident a successful issue would have been accomplished or an important modification in the results of the invaded tissues would have been effected. The facts observed in the above cases are of course, too few for establishing any general conclusions, though they suggest the importance of further observation. In the treatment of phthical cases, though oysters, eggs, fish, cream, butter and many of the milder fats are beneficial, I have nevertheless found in my own practice, that a diet composed largely of animal food is the one best adapted for staying the progress of the disease or in the earlier stages for hastening the cure. In some phthical cases in which the digestive organs were in healthy condition I have advised the ingestion, of large quantities of beef, mutton, fish, fowl or game. In some cases I have recommended the almost daily use of venison; in this aliment I include the flesh of the cariboo. In some cases wonderful results have been accomplished. By this method of treatment in one case occurring in a man aged thirty-two years, I was able to check the disease and to do much toward effecting cicatrization of the lung tissue, even after the occurrence of repeated attacks of profuse hæmorrhage and after a large cavity had formed in the superior lobe of the left lung. At the time I commenced the treatment the patient was in very feeble condition; he was expected to live only a very short time. By means of the treatment persistently carried out he survived for fifteen years. The patient died at the age of forty-six years, of double pneumonia which lasted but a few days; the fatal attack was brought on by a prolonged exposure during the season of influenza in the month of January, 1889. Autopsy revealed an extreme atrophy and contraction of the upper lobe of the left lung; much of the lung tissue of that portion had disappeared. The left bronchus was dilated; there was still the remains of a cavity into which small pockets opened. The lower portion of the left lung was fibrous and contained but few air vesicles. The cavities opening into the bronchial tube were lined by a secreting membrane. Some fluid was found in each of these cavities. The left lung had been in great measure rendered useless. The right lung was enlarged. All the lower portion was heavily congested, presenting the early stage of acute pneumonia. On the right side above there was only a limited portion which was pervious to air. This condition of the lungs during the last hours of life was the cause of the extremely rapid respiration, which varied from forty to eighty per minute. Both lungs were densely adherent. The heart was enlarged and dilated. The cardiac valves were, however, normal. The kidneys were healthy; the liver was enlarged, but otherwise healthy; the spleen was normal, so also were the intestines and stomach. The patient had from time to time expectorated large quantities of catarrhal and purulent exudation. Before the fatal attack the patient had been gradually improving. The sputa which I examined according to the method of Professor Koch, of Berlin, revealed but few characteristic bacilli tuberculosis. The otherwise good condition in which the patient had been kept by the rich and nourishing food prescribed, finally overcame essentially the influence of the bacilli, or at least prevented them in

large measure from gaining entrance into the system. In this connection I should say that the patient's condition was not left wholly to the influence of dietetic treatment; his urgent symptoms often demanded prompt administration of the most effectual remedial agents. I am confident, however, that the great success in his case would not have been achieved unless the special attention had been paid to the consideration of dietetic measures. In prescribing a diet, consisting so largely and generously of flesh, much study and consideration should be given in determining in any case the soundness, capability and endurance of those organs which are concerned in digestion and in elimination. The condition of the kidneys above all should from time to time be inquired into. The autopsy in the case here reported shows that the kidneys though heavily worked remained sound until the last.

The enlargement of the liver, which in this particular case acted as a diverticulum was rather the result of a conservative process than as a pathological one. The enlargement of the heart was by no means found to be a serious complication; it occurred doubtless in consequence of the excessive work which that organ was called upon to perform in propelling the blood through the affected pulmonary tissue; this increased action of the heart was fast accommodating itself to the new order of things. Judging from the whole history of the case from its inception until its close it is evident that the most liberal and nourishing diet which had been advised and which the patient was so well able to bear, would, had he not suffered from the accidental exposure, have resulted in a restoration to health or would have prolonged his life to many more years of usefulness and enjoyment. As it did result the patient had been enabled during the years while under my care to achieve by honorable mercantile pursuits a substantial fortune for the maintenance of his family. The dietetic treatment best adapted for phthisical cases can accurately be determined only by a careful consideration of each of the several factors present in any individual case.

In some cases milk is a most useful article of diet; sometimes it may be taken cold, and even in large quantities. Some patients, however, are unable to take milk in this way; such patients may take milk if given in small quantities when given at the temperature 100° F. or at a temperature somewhat above that point. Peptonized milk can often be taken with advantage; eggs, fish, fowl will sometimes prove to be most nourishing articles for the phthisical patient. In cases in which there is but little tendency to diarrhoea, I have found green vegetables of much service. In the treatment of phthisical cases, in which the greatest success however, is to be expected my experience proves that articles of diet largely nitrogenous in character must be ingested. In carrying out the treatment for this latter class the carbohydrates embracing oleaginous and fatty substances may to a certain extent be added; at intervals more or less remote those articles formerly classed as feculaceous in their immediate principles may not unadvantageously be employed.

A HARD STATE TO PRACTICE IN.—The Alabama State Medical Examining Board rejects 41.16 per cent. of candidates who apply for license.

EPITHELIA.

Read by Title in the Section of Physiology and Dietetics, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY EPHRAIM CUTTER, M.D., LL.D.,
OF NEW YORK.

These are morphological elements of mucous, synovial and serous membranes, and take their name from epi, upon, and tithemi, to place, and mean placed upon.

They are cells with protoplasmic contents. There are three kinds as to shapes: 1. Pavement. 2. Cylinder. 3. Ciliate.

Their seats are as follows:

Pavement or Tessellated Epithelia.—Besides the above named seats they are found upon the skin, hair follicles, nails and toe matrices, on the membranes of the aqueous protoplasmic humor, the choroid, the capsule of the lens, the retina, the conjunctiva of the ball of the eye, the cavity of the tympanum, the lower half of the pharynx, the oesophagus, the endocardium, some veins, the capillaries, all glands and ducts, the vagina and female urethra, the bladder, uterus, kidneys, pelvis and tubules.

In the arteries and many veins they are spindle-shaped.

Cylinder Epithelia.—In mucous membranes, in Lieberkuhn's follicles, all the ducts of the glands of the alimentary canal, in the lachrymal and the mammary glands, the male urethra, the vas deferens, the vesicular seminales, the prostatic ducts, the Cowper's and uterine glands.

Ciliated Epithelia Seats.—The larynx, trachea, bronchi, nares, pharynx above the level of the base of the nasal bones, the antra, the frontal sinuses, the inner surface of the membrana tympani, the Eustachian tubes, the uterus, the Fallopian tubes, the lachrymal sacs, nasal duct, palpebral conjunctiva—or that which is on the under surface of the eyelids and ependyma (Micrographic Dictionary). This list is complete enough for our purpose. Never does a human being wash hands or body, defecate, urinate, vomit, expectorate, sweat, bleed, conjugate or rub the body surface, unless there is a separation of multitudes of epithelia from that body. Hence we may infer that epithelia have a prodigious part to play in the physiology of the human body.

Shapes.—These have been indicated already, but besides the pavement, cylinder and ciliated cells, there are the caudate, spindle-shaped, hexagonal, oblong, lozenge-shaped. The situation varies the shape. For example, in the liver they are found hexagonal.

Contents.—Independent of their products, clear and structureless protoplasm, that first plastic material which is the basis of all the organized tissues and products in the human body. Protoplasm is a field on the confines between man and God the Creator. Man cannot tell why one cell secretes bile, another milk, another wax, another fat, another pigmentine, any more than he can tell why gold is yellow or silver white, or air is blue.

Those who believe in God explain these differences of protoplasm, metals or air, by referring them to the will of God. Those who say they are so by nature mean the same thing, as the word "nature" implies something born from "God" as a source of birth. Those evolutionists who deny God, I believe, have not explained the reason why epithelial proto-