EINHORN (Max)

DIETETICS

IN

DISEASES OF THE STOMACH

BY

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PHYSICIAN TO THE GERMAN DISPENSARY, AND INSTRUCTOR IN CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL, NEW YORK

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DIETETICS IN DISEASES OF THE STOMACH.[1]

DIETETICS, or the doctrine of nourishment, has taken an important part in the treatment of the sick ever since the time of Hippocrates; but although the dietetics of the diseases accompanied by fever have not changed much in the principal points, new rules and principles regarding nutrition in chronic diseases have been introduced of late. This has reference especially to diseases of the stomach, that branch of internal medicine which in the last two decades has shown so much unlooked-for progress. As the therapeusis of diseases of the stomach has to deal with dietetics principally, I thought it would be of interest to discuss this subject before you. It may be expedient to divide this subject into three parts:

1. General rules of dietetics in diseases of the stomach.
2. Dietetics in acute diseases of the stomach.
3. Dietetics in chronic diseases of the stomach.

1. **General Rules of Dietetics in Diseases of the Stomach.**—Within the past two years important facts have been discovered which are of the greatest value in the treatment of diseases of the stomach, and the influence of which can be perceived like a red thread through the whole chapter of dietetics. It has been shown by von Noorden [2] and others that emaciation in chronic diseases of the stomach is caused in the largest majority of cases—if, perhaps, not in all—not by specific poisons circulating in the organism, but by a smaller amount of

[1] Read before the Medical Society of the County of New York, May 22, 1893.

[2] Von Noorden: Berliner Klinik, Heft. 55.

food being taken. On the other hand, one might expect, judging from the universal law existing in the plant and animal kingdom of vicariousness or replacement in case of inability of the work of one organ by another similar one, that in grave disturbances of the digestive functions of the stomach, the intestines would do the work instead. This has been experimentally, as well as clinically, proven in the most infallible way. Several authors (Leube, Ewald, von Noorden) have observed that in the cases of atrophy of the mucous membrane of the stomach, in which, as you all know, the gastric secretion has entirely ceased, the patients can maintain their usual weight. From my paper on achylia gastrica[1] it is clearly seen that the patients can do very well without gastric secretion; under a proper regimen they can even gain in weight, and live long without any discomfort whatever. That means that even after the loss of the entire chemical action of the stomach, the gut is completely able to replace the function of the stomach.

These two facts, 1, that the emaciation in chronic diseases of the stomach is caused by too small a quantity of food; 2, that even in grave lesions of the gastric functions the gut appears to perform vicariously the digestive work in a complete way, are of vital importance for the doctrine of dietetics. For it is seen at a glance that the main object of nutrition of the sick consists in giving them sufficient quantities of food. Before proceeding it is necessary to briefly review the normal physiological nutrition of man. We perceive quickly that there is a great variety in the food of healthy persons with regard to the quantity as well as to the different food substances. Nevertheless, they all contain the three groups of foodstuffs: Albumin, carbohydrates, and fats. Thus, for instance, vegetarians live and thrive principally on vegetables; the Esquimos, on the other hand, almost exclusively on animal diet. The golden path, however, lies intermediate, and all authors (Voit, Pettenkofer, Hoffmann,

[1] Max Einhorn, MEDICAL RECORD, 1892.

Forster, and Gruber) recommend a combination of animal and vegetable food. R. Virchow, likewise, is of the same opinion, and expresses himself regarding this question as follows: "Although the Kirghez and the Esquimos show us that health and life can exist through many generations on an exclusively nitrogenous diet—other tribes (Hindoos) live principally on non-nitrogenous food—still history shows us that the highest attainments of the human race have emanated from nations who have lived and live on mixed diet." A mixed diet, taken partly from the vegetable and partly from the animal kingdom, is the most suitable form of nourishment. We obtain the greatest amount of carbohydrates from the vegetable kingdom, while a great deal of the albumin is derived from animal food. The relation between animal and plant albumin, according to Munk and Ufflemann,[1] should not be less than three to seven. As regards the quantity of food, according to the same authors, an adult doing a medium amount of work requires daily one hundred and eighteen grammes albumin, fifty-six grammes fat, and five hundred grammes carbohydrates.

Food only in small portions serves the purpose of reconstructing tissue waste; in its largest part, however, it is used for generating the heat requisite for the maintenance of life. For that reason it is customary to speak of the necessary amount of heat-units during twenty-four hours instead of the quantity of food. By "heat unit" is meant, as is well known, that quantity of heat which is required to raise the temperature of one gramme of water one degree Celsius. "Great heat-unit" means the amount of heat required for warming one thousand grammes of water one degree Celsius. Each kind of food is ultimately oxidized in the body to its end-products, and is in greatest part exhaled in the form of carbonic acid; the more carbon atoms food-stuff contains the more heat-units it will generate. In speaking of the heat value of

[1] Munk and Ufflemann: Die Ernährung des gesunden und kranken Menschen. Wien, 1887.

food, the great heat units are used, the term "great," however, being omitted. Thus one gramme of albumin generates 4.1, one gramme of fat 9.3, and one gramme of carbohydrate, 4.1 heat-units. If we know the quantity of nourishment taken, the amount of the introduced heat units is easily determined by multiplying the different food-stuffs by the above given figures. The daily amount of heat generated by the body, or necessary for the maintenance of the same, has been approximately estimated at 2,500 heat-units.[1] The heat value of the food taken by an average working person amounts, according to von Noorden,[2] to about forty heat-units when working, and when resting to about thirty four heat-units per kilo a day. According to K. Vierordt [3] an adult takes in form of food a daily average of 120 gm. albumin, 90 gm. fat, 330 gm. carbohydrate (the relation of the nitrogenous food-stuffs to the non-nitrogenous being 1 to 4), and 2,818 gm. of water. The above-mentioned figures differ from those given by F. Hirschfeld.[4] This author demands 80 gm. of albumin as the lowest amount contained in a sufficient diet. Victuals are composed mostly of all the three food groups (albumin, carbohydrate, fat) and water, and contain in minute amounts the inorganic salts found in the body.

I give here a small table (see opposite page) showing the percentage of the three food groups ordinarily contained in most every day victuals.

In order to have a correct idea of my own about the quantity of nourishment taken daily, I have weighed and recorded for two successive days all the nourishment and drinks taken by my wife and myself. The record showed that I had taken during the first test day 63.8 of albumin, 47.3 of fat, and 168.8 of carbohydrate; the total number of heat units was 1,402.3. During the second test-day

[1] Koenig: Die Menschlichen Nahrungs- und Genussmittel. Berlin, 1883, p. 53.

[2] Von Noorden: Berliner Klinik, Heft. 55.

[3] K. Vierordt: Grundriss der Physiologie des Menschen, 1887, 3. Auflage, pp. 288, 289.

[4] F. Hirschfeld: Berliner klin. Wochenschr., 1893, No. 14.

Composition of the most Common Food Substances.[1]

	Albumin.	Fat.	Carbohydrate.
	Per cent.	Per cent.	Per cent.
Cow's milk	4.0 to 4.3	3.0 to 3.8	3.7
Butter	½	90.0	½
Milk soup with wheat flour	5.0	3.25	15.0
Whey (sweet)	0.5	0.3	3.6
Buttermilk	3.0	1.3	3.0
Kumyss (of cow's milk)	3.35	2.07	0.7 lactic acid 1.9 alcohol 0.8 carbonic acid
Cheese (cream)	25.0	30.0	3.0
Cheese	33 0	9.0	5.0
Beef (lean)	18.0	2.0	1.0
Veal	15.5	1.0	..
Sweetbread	22.0	0.4	..
Poultry	22.0	1.0	..
Game	23.0	1.0	..
Meat broth (ordinary)	0 4	0.6	..
Meat juice (pressed)	6.0 to 7.0	0.5	..
Beef-tea	0 5	0.5	..
Leube's solution	9.0 to 11.0 albumin + 1.79 to 6.5 pepton		
Oysters	4.95	0.37	..
Egg	12½	12.0	½
Sago	0.5	traces	86.5
Malt extract	8.0 to 10 0	..	55.0
Barley soup	1.5	1.0	11.0
Rice pap with milk	8 8	3.5	28.6
Wheat flour	8½	1¾	73.0
Rye flour	10.0	2.0	69.0
Wheaten bread	6.0	¾	52.0
Rye bread	4½	1.0	46.0
Roll	6.82	0.77	43.72
Zwieback	9.5	1.0	75.0
Cauliflower	2.0 to 5.0	0.4	4.0
Asparagus	2.0	0.3	2.5
Rice	5½	1½	76.0
Beans	19½	2.0	52.0
Peas	19½	2.0	54.0
Potatoes	1½	..	20.0
Oatmeal	12.5	5.26	66.77
Barley-meal	8.31	0.81	75.19
Pulverized meat	64.5	5.24	2.28
Pike	18½	½	¾
Salt herring	19½	17.0	½
Caviare	28.04	16.26	7.82
Spinach	3 49	0.58	4.44
Coffee	3.12	5.18	..
Tea	12.38	..	..
Pickles	1.02	0.09	0.95
Meat broth	0.4	0.6	.
Beer	0.5	5.25	0.3
Porter	0.7	6.0	0.3

[1] Taken from Koenig, loc. cit., and principally from Munk and Uffelmann, loc. cit.

the corresponding figures were somewhat higher; the quantity of albumin was 79.39, fat 54.3, carbohydrate 263.9; the total of heat-units equalled 1,912.5.

The average figure of heat-units per day is $\frac{1402+1912.5}{2}$ = 1,657.4. As my weight is 52 kilos., the amount of heat introduced into the system per kilo. and per day is $\frac{1657.4}{52}$ = 32.2.

My wife partook during the first test-day 103.19 of albumin, 44.99 of fat, and 204.64 of carbohydrate. The total of heat-units was 1,660.5. On the succeeding day the figures were as follows: 64.03 of albumin, 31.14 of fat, 174.92 of carbohydrate. The total of heat units was 1,269.29. The average figure of heat units per day is $\frac{1660.50+1269.29}{2}$ = 1,464.89.

As my wife weighs 55 kilos. the amount of heat-units per kilo and per day is therefore $\frac{1464.89}{55}$ = 26.63.

My wife, as well as myself, hold our weight, live regularly, and the food taken is not subjected to very great differences; therefore, the figures mentioned may be considered as our average figures. These figures, however, are far smaller than the average given by all authors. This shows what great differences there are in the quantity of food taken by people in their normal condition in order to make up the daily loss. The one maintains his balance at a rate of 26 heat-units per kilo. a day; the other may lose in weight at 30 heat-units per kilo. a day. The scale is the best guide as to whether a certain amount of food is sufficient or not. It shows quickly and with certainty whether the organism maintains its balance or not.

After this lengthy dissertation on the diet in health, let us return to the sick.

As people with disturbances of the stomach have to replace for their existence no smaller losses than under physiological conditions, they will therefore need: 1. Just as large amounts. 2. The same kinds of food-stuffs as described for the normal state. The only difference possible

will have reference to the selection of the various articles of diet and to their form and special preparation.

Thus the question arises, What qualities should the food of stomach patients possess?

In the treatment of a diseased organ one can often make use of two methods. One consists in sparing the diseased organ and giving it perfect rest, the other consists in strengthening the same by methodical adaptation for more work and practice. Both principles are in fact realized in the treatment of diseases of the stomach. The first method is ordinarily applied in acute diseases and only very seldom (and then only for a short time) in chronic affections of the stomach. In these latter the second principle, as a rule, is used. The stomach can be spared, firstly, by not introducing into it any food whatever (greatest degree of saving or rest). Secondly, by administering food substances which, during their stay in the stomach do not impose much work upon this organ, and do not greatly irritate it. Here the main object will be to give the patient easily digestible food. In turning from the saving principle to that of strengthening the organ by methodical adaptation for work, it will be quite natural to change the diet, not suddenly, but gradually, into such as requires more work on the part of the stomach for its digestion. It is therefore absolutely necessary to have an exact table of the digestibility of different foods. In prescribing or changing a diet we shall have to act according to it. Such a scale has been arranged by different authors. The main sign of digestibility was gauged by the rapidity with which the various food-stuffs passed out of the stomach into the intestines. Beaumont in many trials on his patient with the gastric fistula determined the length of time the different victuals remained in the stomach and constructed a scale according to the figures obtained. On the same principle, but more reliable and of greater value, is the scale constructed by Leube, according to the results obtained by emptying the stomach by means of a tube, after different kinds of food had

been taken. We think it advisable and useful here to give Leube's scale:

1. *Diet.*—Bouillon, Leube-Rosenthal's meat solution, milk, soft raw eggs, zweiback, English cakes (biscuits containing no sugar), water, natural acidulous waters (Apollinaris, Kronthaler, Seltzer, etc.).

2. *Diet.*—Boiled calf's brain, boiled calf's sweetbread, boiled chicken (young without the skin), boiled pigeon, boiled calves' feet, tapioca pap boiled in milk, beaten white of egg.

3. *Diet.*—Raw beef (chopped very fine), raw ham (chopped very fine), beefsteak (superficially fried in freshest butter), finely scraped tenderloin of beef, mashed potatoes, white bread (stale), coffee with milk, tea with milk.

4. *Diet.*—Fried chicken, fried squab, roast venison, guinea-hen, roast beef (cold), roast veal (leg, saddle), boiled pike, maccaroni, rice pap, finely chopped spinach, asparagus, stewed apples.

These tables, however, have not as yet, on the one hand, been fully verified on healthy individuals, or found always alike (giving the same results); on the other hand, such experiments only show what food remains in the stomach the shortest time. This would perhaps give reason for presuming what food may be easily digested as far as the stomach is concerned, but not what is easier digested as a whole, *i.e.*, made use of for the economy of the body with the smallest amount of work. The digestibility of food substances depends firstly upon their shape and quality; secondly, upon their percentage of convertible material.

"Corpora non agunt nisi fluida," is an old, well-known axiom. Following this law one could arrange the following scale of digestibility, which is constructed according to the different physical conditions of the food:

1. In the first place, food in liquid form: *a*, Liquid at ordinary temperature—milk, meat juice, beef-tea, bouillon, peptone or sarcopeptone dissolved in water, bread-

water,[1] strained barley, oatmeal, rice-water, strained oyster-soup, egg albumin-water; *b*, liquid at the body temperature—jellies, fruit-jelly, calf's-foot jelly, ice-cream, water-ice.

2. Pulpy form: The food is mechanically converted into very minute particles and well mixed in liquid—pap soups (barley, oatmeal, farina, rice, sago); egg in bouillon; Leube's meat solution, pulverized meat, pulverized crackers in milk, water or bouillon; buttermilk; kumyss; cream; butter.

3. Food which by slight trituration in fluids separates into minute particles: White bread in milk or water; the tips of well boiled asparagus; carrots; mashed potatoes, baked potatoes; the yolk of hard-boiled eggs; oysters (raw).

4. Solid food: White bread, rye bread; meat, hard-boiled eggs, fish, cheese.

5. Substances not easily digested: Meat with tough fibre; lobster; sausages and Swiss cheese on account of their solidity; all substances containing much cellulose, principally when eaten raw; cold slaw; all salads, cucumbers, pickles, raw fruit, apples, pears, pineapple; fruit which contains much acid, therefore all unripe fruit, strawberries; substances containing much sulphur and forming gases in the intestines: all kinds of cabbage, principally white cabbage; beans.

This theoretically constructed scale of the digestibility of food is, at the same time, in the main points, similar to the one which has long stood the test of empiricism and which I ordinarily apply in my practice.

After these general explanations we return to our special subject.

Dietetics in Acute Diseases of the Stomach.—The principle of rest here occupies the first place. In acute gastric catarrh one gives, during the first two or three

[1] Bread-water. Stale bread is cut into slices and put in water at temperature of room for from two to three hours, then the water is strained.

days, in which, as a rule, there is a total loss of appetite, only very little nourishment in liquid form, containing principally amylacea, barley or oatmeal soup, bouillon, weak tea, water. As a rule, one must not force a patient to take food during the first or even during the second day of sickness. The anorexia in these conditions is a wise arrangement made by nature in order to give the stomach rest. If there is thirst, beverages may be taken in small quantites, and must be neither very cold nor very warm. As soon as the appetite reappears one may give some toasted bread or zweiback, milk, soft boiled eggs or oysters, permitting after a while small quantities of bread and meat, and then passing slowly to the ordinary diet.

Ulcer of the Stomach.—During the rest cure of von Ziemssen-Leube give liquid diet, consisting principally of milk, for two or three weeks. As is well known, Cruveilhier[1] first recommended milk for the purpose, and even now there are some physicians who limit themselves to milk alone. As a rule, however, it is appropriate to allow, besides milk, milk in combination with barley, oatmeal, or rice-water. In addition to this, the different peptone preparations are here in place. I administer Rudisch's sarcopeptone, manufactured in this country, on account of its being palatable and highly nourishing. (The Rudisch's sarcopeptone contains forty per cent. of nitrogenous substances, including twenty per cent. of peptones.)

One may give most appropriately every three hours one to two cupfuls of milk with or without the addition of the above-named decoctions (four times daily) and sarco peptone (twice daily). The patient must not drink these fluids, but eat them with a spoon. In case of hemorrhage of the stomach during the first three or four days, it is not permitted to give any food whatever by the mouth; instead, the patient must be fed by the rectum. Ewald has proven that the large intestine has the ability of digesting and absorbing albuminates even without special

[1] Anatomie Pathol. 1829–35.

previous preparation; therefore the following may be given as a nutritive enema.

1. Three to five eggs are mixed with 150 c.c. of sugar-water (30.0 of grape-sugar dissolved in 150 c.c. of water), a small quantity of common table-salt is added, and the whole mixture well beaten; one may add also a small quantity of starch solution or mucilage.

2. One-half pint of milk + 2 eggs + 50 gr. of grape sugar.

3. One-half tablespoonful of Rudisch's sarcopeptone dissolved in a cupful of water.

The food enemata have to be given three or four times daily. It is necessary that the fluid should be at the temperature of the blood, and that it should be injected by means of a fountain syringe and a soft rubber rectal tube. Each time before giving a nourishing enema a cleansing enema of 250 c.c. of lukewarm water has to be administered, in order thoroughly to cleanse the large intestine and make it more fit for absorption. In case of thirst the patient is allowed to take small pieces of ice into the mouth from time to time. Three days after the disappearance of blood one slowly and cautiously begins the liquid diet.

Dietetics in Chronic Affections of the Stomach.—Whereas, in acute diseases of the stomach, we paid most attention to giving rest to the organ—for here even an insufficient nutrition and the loss of several pounds of bodily weight is not of much importance, as the quickly recuperating organism replaces the losses caused during the sickness by taking increased quantities of food—in the chronic affections it is of utmost and vital importance to see that sufficient quantities of food are taken.

The greatest number of stomach patients consulting the physician, after the disease has been progressing quite a while, have lost more or less weight. The principal reason for this lies in the fact that the body has received too small a quantity of nourishment in order to replace the waste.

The ordinarily insufficient appetite, the early appearance of a feeling of satiation, the pain often appearing after meals, and less frequently vomiting, are the principal factors of subnutrition.

At this point it becomes necessary to divide the patients with stomach troubles into two large classes:

1. Into such with organic lesions of the stomach. 2. Into such with functional disturbances.

The first class comprises, *a*, the malignant diseases of the stomach itself or its orifices (carcinoma ventriculi, cardiæ, pylori); *b*, cicatricial strictures of the cardia or pylorus; *c*, absence of secretory work of the stomach: achylia gastrica.

In this whole first class, with the only exception of group *c*, which lies, so to speak, between the first and second class, we are unable to accomplish much either by treatment or dietetics. In existing strictures of the cardia or pylorus one will be obliged to seek surgical aid. Even in cancer of the stomach-wall the resection of the affected part is advisable whenever the operation is possible. I cannot abstain from calling attention at this place to the splendid results of the recent stomach surgery, which of late has been frequently practised in our own country (F. Lange, N. Senn, R. Abbe, Willy Meyer, McBurney, Weir, and others). In carcinomatous strictures a new passage can be established, either for bringing food into the stomach, by a gastric fistula, or for allowing it to pass into the intestines, by gastro-enterostomy. In this way one succeeds at least in temporarily giving these unfortunate ones relief and in ameliorating their nutritive condition. In the cicatricial strictures one is entitled to promise to the patients, nowadays, perfect recovery by undergoing operative treatment. (At the stricture of the cardia a methodical dilatation of same with bougies may sometimes also suffice.) The pyloro-plastic (of Heincke-Mikulicz) and the cardiotomy or cardio-fissure (Abbe) belong to the most beautiful and blessful operations which have ever been

practised. After the operation the patients are enabled to eat everything, and to live without any trouble whatever, *i.e.*, they are perfectly cured.

Before the operations, or if such are unfeasible, one will administer light, very slightly irritating nourishment, and always endeavor to make the patient partake of a larger quantity of food. If there is obstinate and constant vomiting, it is necessary to employ nutritive enemata.

Group *c*, achylia gastrica, will be advantageously discussed in regard to diet under Class 2.

The second class of functional disturbances includes the largest number of all dyspeptics. Here stands uppermost chronic gastric catarrh, atony of the stomach, dilatation of the stomach, gastroptosis, superacidity, with or without hypersecretion, nervous gastralgia, nervous dyspepsia, and as an intermediary between the first and second class, achylia gastrica.

It appears advisable to discuss first the whole class, and thereafter to give special rules for the different groups. Liquid food or partly predigested substances (as all peptone preparations) are not in place here. By making the stomach work too little, the weakened condition of this organ is retained and aggravated in time. We must always bear in mind the principle of strengthening the organ by means of appropriate work.

Delafield[1] is said to express himself in his lectures in the following way regarding the dietetics of the dyspeptic:

When a dyspeptic patient asks you the question, "What shall I eat?" reply, "Eat what you like." If he asks, "How much shall I eat?" say to him, "Eat as much as your appetite demands." If he still asks, "When shall I eat?" answer, "Eat when you are hungry."

Although I do not favor strict and severe dietetic rules,

[1] Cited from Kellog: Methods of Precision in Disorders of Digestion, 1893, p. 4.

nevertheless I deem the above-mentioned remarks as going too far. Unlike the normal healthy condition, in which instinct shows us the right measure to eat, neither too little nor too much, stomach patients very often have lost the feeling of self-regulation, and as a rule partake of too small quantities of food. (Only in a few cases of boulimia there may be an increased desire for food, and in connection with it the quantity of food taken may sometimes be too large.) It is therefore necessary to instruct the patients to eat more, or to give them exact figures of the quantity of food required. As this varies with every individual it is most practicable to let the patient weigh himself once a week and to see whether he keeps his weight. If the patient does not lose any it is the best sign that he takes sufficient nourishment. Besides, we must remind patients to lead a regular life, to eat slowly (how many, especially in our country, sin against this natural law), and to chew well and triturate the food. One must avoid either extremely cold or extremely warm food. Too copious and too complicated meals must be strongly forbidden.

I have made it a rule not to forbid anything, except what is, according to my conviction, obnoxious in the given case. In this way the patients have a great variety in their food and run less risk of subnutrition. Likewise we need not change the number of meals nor the hours appointed unless there should be special indications for such a proceeding.

Among the laity, as well as often among medical men, there are prejudices against certain forms of food. Thus, for instance, until recently one forbade all kinds of fat, even butter, in all dyspeptic conditions. Fat, however, belongs to the group of food-stuffs which has the largest number of heat units, and besides, is not bulky as a nourishment (butter). Undecomposed fat passes the stomach without molesting the same, and is digested in the small intestines. There is, therefore, no reason for forbidding butter, which should, on the contrary, be highly

recommended. Fearing fermentative processes the partaking of bread and other food rich in carbohydrates is very often greatly limited, or even totally forbidden. Although it is true that the carbohydrates easily undergo fermentative processes, those cases, however, in which considerable fermentations exist in the stomach are quite rare, and as a rule are found only where there is considerable stagnation of food in the stomach. In these cases, to be certain, a diet consisting principally of animal albumin (meat) for a short period is very useful. By means of lavage of the stomach and other appropriate treatment one soon succeeds in checking the fermentative processes, and one can then administer carbohydrates.

An adult, according to Koenig,[1] daily consumes one-third to three-fourths kilo. of bread; fifty to sixty per cent. of the total food substances, and fifty to seventy five per cent. of the carbohydrates are taken in the form of bread. This clearly shows the important part bread takes in diet. Its use is, therefore, as a rule advisable. It is ordinarily said that crust of bread, stale bread, and zwieback are easier to digest, on account of the starch contained in them being largely converted into dextrose. Although I am of the opinion that too fresh bread must be avoided, I, nevertheless, rarely find much difference in the digestibility of the crust or other parts of well-baked fine white bread, judging from experience gained from my own patients.

Articles of luxury (wine, beer, coffee, tea) are, as a rule, permissible. It is, however, necessary to give them in small amounts and in appropriate form. Strong liquors must be avoided, likewise all strong spices.

Appetizers, as a small amount of caviare, sardellen, or anchovies, on a small slice of bread or cracker, taken one quarter of an hour before the meal, are not only allowed but frequently directly commendable.

In reference to the special rules for the different dis-

[1] Koenig: Die Menschlichen Nahrungs- und Genussmittel. Berlin, 1883, p. 430.

eases of the second class, we shall have at times to reduce the quantity of meat taken in all conditions accompanied by a diminished secretion of HCl (gastritis chronica glandularis, atony + subacidity); on the other hand, the quantity of richly carbohydrate vegetable food will be increased. Kumyss, matzoon, milk with cognac (7 to 10 c.c. of cognac to 200 or 250 c.c. of milk) may be taken with crackers either during or between meals.

In all the conditions with superacidity the quantity of albuminous food should be increased; here one may give a great deal of meat (venison included). In superacidity with hypersecretion frequent and small meals containing consistent food are most appropriate. If there is a feeling of hunger between meals, the white part of hard boiled eggs may be taken (as is well known albumin combines with acid and makes it, so to say, inert). The quantity of beverages must be greatly limited; most suitable in this instance are small quantities of vichy water. In dilatation of the stomach and in gastroptosis it is also advisable to give small and frequent meals, and to restrict the quantity of liquids taken. As a rule, milk and beer do not agree well in these cases. Small quantities of wine or imported dark beer or porter may be allowed.

In nervous dyspepsia and gastralgia our main object will be to systematically increase the quantity of food—here milk and its derivatives (kumyss, matzoon, bonny-clabber, buttermilk, cream) taken between meals play a great part (Weir-Mitchell Treatment).

In achylia gastrica it is of utmost importance to give liquid or very well triturated (pulverized) food. For here the chemical action of the stomach has entirely ceased, and vegetable (on account of the albuminous membrane enclosing the starch granules) as well as animal food pass from the the stomach unchanged, and not converted into small particles, into the intestines and irritate them, unless there has long been formed a sufficient adaptation for these conditions. Vegetable food, on ac-

count of its containing chiefly carbohydrates, will be predominant in the diet of this affection. Thus achylia gastrica, in reference to diet, stands midway between the first and second classes. It approximates the first class in so far that it necessitates a liquid or a mechanically minutely triturated or pulverized food, the second class in allowing a richly carbohydrate diet.

Some readers may miss in my paper exact bills of fare for chronic affections of the stomach. They have been omitted, as it is always necessary to individualize, especially in diet. We must guide ourselves more by the patients than by theoretical conclusions. Our main object must be to care for a sufficient nutrition. Only the above-given principal rules on diet must be observed, although at times even they have to be modified. In reference to this point Hippocrates[1] said: "*Dandum aliquid tempori, regioni, ætati et consuetudini.*"

At present, with our more exact knowledge, we have come to appreciate this conclusion to a still greater degree.

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[1] Cited from Munk and Ufflemann, l. c., p. 430.