including water, then to put the patient to bed and feed him by the rectum for the first few days. After this, gradually give him food by the mouth and then give iron, and, only after a number of days when the patient has regained a good proportion of hemoglobin and of his strength, to allow him to eat ordinary food. He, like the essayist, advocated operative treatment in cicatricial obstruction of the pylorus. His own opinion was that early operation offers the best hope of relief. He also thought that early operation might prevent the occurrence of carcinoma.

DR. G. FUETTERER—The feeding is a very important part of the treatment. The plan he adopted is one that can be carried out by a trained nurse or any intelligent person of the household. He begins at 7 a. m. with an enema of a pint of warm water; if retained, it quenches thirst, and if not retained, acts as a cleansing douche. Then at 8, 12, 4, 8, and at midnight, he gives a nutritive enema, consisting of a dram of somatose, one egg, and a pint of milk, to which is added a pinch of salt. The patient is instructed to retain the enema and is assisted by the nurse. These injections are continued for 6, 10, or 15 days, or until the nausea and vomiting have all disappeared; then they can be cut down gradually, as feeding by the mouth is resumed. Occasionally an enema of warm water is given to relieve the thirst. For the relief of pain, he used, as Dr. Shattuck had recommended, small doses of morphin given hypodermically, which also accomplishes a good purpose in overcoming the annoying thirst, and quieting the movements of the stomach.

GASTRIC HYPERESTHESIA AND ITS MANAGEMENT.*

CHARLES G. STOCKTON, M.D.
BUFFALO, N. Y.

The term gastric hyperesthesia has been applied to painful or distressing sensations arising in the functioning stomach, not so intense as gastralgia, but of enough severity to cause more or less discomfort to the patient. If we analyze the causes of these distressing sensations, it will be found that they depend upon various pathologic conditions. Unquestionably the term "hyperesthesia" is often improperly used. The truest use of the term is when it is applied to sensory states analogous to cutaneous hyperesthesia, so often seen in the neurotic. There is a comparatively large class of cases to which I have gradually come to apply this term. It is important that this class of cases should be distinctly understood, as the conspicuous sensory symptoms so much attract the attention of patients and physicians that there is often established a course of treatment for indigestion that really does not exist. The patients of whom I speak present symptoms that resemble those of hyperchlorhydria, and yet the conditions are not identical. Nevertheless the symptomatology is sufficiently alike to render it impossible to make a diagnosis without examining the gastric chemistry. There is commonly distress after eating, often occurring earlier than in hyperchlorhydria, also eructations of gas, and sometimes water-brash. There is often tenderness over the epigastrium, and a sensation of vague distress after meals that leads the patient to eat sparingly, hence there is loss of flesh and strength.

The examination of the stomach contents of these cases reveals the fact that the standard of hydrochloric acid is not above the normal; indeed, it is often below that seen in active individuals in good health, and still it is apparently the hydrochloric acid and the activity of the gastric digestion that causes the distress of the

patient. This is shown to be true by the relief of the patient attending the use of remedies that lessen the gastric acidity and slow the digestion, and similar, though less marked benefit, follows the selection of a diet of easily digested food. If these statements be critically examined it will be seen that the claim is virtually made that people without hyperchlorhydria have symptoms of that condition. This, in fact, is very nearly a correct statement of the case.

The systematic examination of the stomach contents of many cases during the past fifteen years has led me to the conclusion that there is no fixed standard of activity of gastric digestion and of the amount of free hydrochloric acid that is present in presumably healthy people. It depends for the most part upon the general strength and activity of an individual at a given time. It has long been known that the acidity of the gastric contents of the dog is so high that it would be unbearable in the stomach of man, and so, hardy workers in the north woods have gastric secretions that enable them to easily digest foods that are for most people indigestible—and this they do by means of a gastric secretion that is very active and highly acid. I have seen such individuals free from all stomach symptoms, with free hydrochloric acid ranging from .15 to .25, and a total acidity of over 100. Such gastric chemistry would prove to be very uncomfortable to the average student or brain worker. He is more comfortable with free hydrochloric acid not above .10, and this moderate strength of free hydrochloric acid and the proportionate lowered gastric activity will be found too active—the free hydrochloric acid in too great proportion for comfort—in the stomachs of delicate females whose nervous systems are hypersensitive, and whose organisms are not properly developed by outdoor life and physical exercise. Such people are often made comfortable by lowering the gastric acidity to a point indicated by .05, and occasionally we find patients showing manifestations of hyperesthesia who are uncomfortable so long as there is a trace of free acid in the stomach and whose symptoms can be relieved when free acid is present, by the administration of alkalies and antacids, and by diluting the stomach contents with fluids. On the other hand, if one, guided by the indications of gastric chemistry alone, regards these cases as instances of hypochlorhydria, and attempts relief by giving hydrochloric acid and drugs of a stimulating character, the symptoms are at once aggravated.

It has seemed to me that the question of hyperchlorhydria must not be looked at too definitely. It is arbitrary and unphysiological to make a standard and say that above this is hyperchlorhydria, and another standard and say that below that is hypochlorhydria, without introducing the personal factor of the patient. What is hyperchlorhydria in one person would be hypochlorhydria for another. It is possible in most cases of hyperesthesia to increase gradually the tolerance of the stomach for free hydrochloric acid and for a higher gastric activity in general, merely by improving the general health of the patient; that is to say, increasing his energy, his muscular and nervous activity. It is none the less necessary to resort to examinations of the stomach contents, and this should be done sufficiently often to make one familiar with the gastric secretion; then, by diet and treatment, the gastric activity should be kept at the highest point compatible with comfortable digestion, and yet within the limit of gastric tolerance. In this way can the stomach be developed, while the courage and resisting power of the patient are growing.

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In order to succeed in understanding these cases one must exclude inflammatory conditions, ulcer, erosions, food stagnation, and other conditions that might give rise to the symptoms. Gastropexia can not be excluded, as that is a frequent cause of hyperesthesia. After having made the exclusions possible, it will be found that a large number of cases that present symptoms that closely resemble hyperchlorhydria can be explained by looking at them from the standpoint here taken, and managing their diet and drugs accordingly.

As a diet it is best to select, in the beginning, one that is very bland; for instance, milk or some milk preparation. To this should be added, first, the digestible farinaceous foods, then eggs; finally, meat juice at certain meals, and later scraped meat, meat powder, and next tender steak or chop, to which may be added some of the more easily digested vegetables. Thus, the diet may be gradually increased from step to step, always being careful not to go beyond the point of toleration. When found that the allowance has been too liberal (or in case it is found necessary even with a very restricted diet), and the stomach reacts unpleasantly, it is advisable in order to relieve symptoms to give after meals antacids as soon as evidences of irritation arise. Mixtures containing sodium bicarbonate, magnesium carbonate and the bismuth and strontium salts are commonly employed. The patient who may require these remedies regularly when busy as a school teacher, dressmaker, accountant or business man, may find that the digestion is comfortable without remedies, provided a vacation is taken, or a period of rest is arranged for after each meal. When the case is of long standing, it will be found that electricity is of signal service. The continuous current should be employed with gastric electrode, the negative pole in the stomach, and a current of from 5 to 10 milliamperes, of a low voltage, should be used two or three times a week for a period of five minutes. I have sometimes seen great benefit from the faradic current used in the same way. Unquestionably benefit may be had from hydrotherapy, but great care must be taken not to overdo the use of cold water. A very brief, cold spinal douche, the temperature carefully regulated, or the shower bath with the same qualifications, or the Scotch douche, are measures that can hardly be dispensed with when treating this condition as it occurs in the neurasthenic. When met with in the hysterical, great benefit follows the use of the *mistura asafetida* introduced per rectum, in doses of one ounce night and morning. It is necessary, however, to attend to the strength of the gastric chemistry while continuing the other measures.

It may be said that the cases to which I refer are not typical instances of gastric hyperesthesia. In reply I would say that it depends entirely upon one's conception of hyperesthesia. I have come to regard these as making up the largest class of patients to whom the term properly belongs. That the treatment is rational and suited to the condition seems apparent, for the reason that we have to deal with those in whom those distressing sensations develop in the stomach merely from the normal stimulus of food and digestion. Indeed, as has been stated, the symptoms arise when the stimulus is less than normal. It is, therefore, proper to regard these cases as instances of hyperesthesia. I am firmly convinced that there exists a misconception regarding the nature of many individuals thus affected, and that they are treated for diseases of digestion of which they are innocent.

In closing, I wish once more to insist upon the importance of the regular examinations of the stomach contents, in order that one may govern the diet intelligently.

There is such a thing possible as keeping a patient too long upon a very restricted diet, and the stomach instead of gaining in power, loses quite in the same way that the biceps atrophies for the want of use. And yet, if one is too ambitious and overtaxes the stomach in these hyperesthetic cases, there is produced in the patient real suffering, loss of courage and a disinclination to take sufficient food. I regard this as one of the most practical questions relating to the so-called dyspeptic. It is probably the most frequently met with of any of the gastric disturbances. It is a mistake to regard it as a disease of the stomach; it really is a derangement of the organism of which the stomach condition may be taken as an index.

DISCUSSION.

DR. W. W. TOMPKINS, Charleston, W. Va.—In these abnormal gastric conditions, we can not always diagnose between catarrh, ulcer, and carcinoma. He had in mind the case of a patient, who, eleven years ago, had stomach disorder and who was brought to a large medical center where a distinguished specialist had given a written opinion that the patient was suffering from cancer. The patient refused operation, returned home, and is living and well to-day. The speaker had been uncertain in his diagnosis at the time, but had come to the conclusion since then that it was a case of gastric ulcer and not cancer. The diagnosis on the basis of probability would be gastric ulcer in a young female; in persons who are gluttonous at the table, it would be gastric catarrh; but in advanced middle age, it would be gastric cancer. In many cases the diagnosis is uncertain and we are in the dark. One speaker referred to cases cured in two or three weeks; his own experience, however, was that these patients do not get well in a few weeks. He wished to put himself on record as opposed to putting these patients in the hands of the surgeon. He considered it a crime to operate in all cases and the physician who sends his patients to a surgeon for operation is *particeps criminis*. He tried to keep his patients from thinking of an operation. Many cases do not need it and are better without it. The essayist spoke against prepared foods and explains a rather troublesome process to get the beef juice; but the speaker could see no objection to using a good article of commercial beef juice. With regard to the medicinal treatment, iron had been mentioned, but he preferred arsenic in the form of Fowler's solution. He also used deodorized tincture of opium in small doses with advantage.

DR. C. JONSSON, Clinton, Iowa, found it often almost impossible to differentiate between ulcer and carcinoma or neurosis of the stomach, but any of those conditions were accompanied by pain and he considers the pain as an important factor in producing malnutrition of the body in general and deficiency of hemoglobin. He finds it necessary to use an anodyne such as codein, hyoscyamus, or cannabis indica in sufficient doses to relieve the pain. The nutrition of the body will improve as a consequence and the treatment will often produce a cure.

DR. HEINRICH STERN, New York City—The administration of hydrochloric acid for the amelioration of hypochlorhydria and kindred anomalies depending to their greatest extent upon systemic malnutrition, although universally recommended, is certainly an irrational proceeding. The moment the clinician becomes better acquainted with the production of gastric hydrochloric acid, he will cease to prescribe it for gastric insufficiencies and disorders. Hydrochloric acid is by no means a product of the peptic glands as generally supposed. The hydrogen or the chlorine of the hydrochloric acid of the gastric juice must certainly be derived from the blood. The acid as such does not occur in the blood nor in the lymph. The component elements must therefore combine somewhere in the peptic glands. We find in the blood free hydrogen-ions; however, they occur in small quantities only. If the nutriment is absolutely devoid of chlorine, and if the saliva is as much as possible prevented from admixing with the food and from entering into the stomach, no hydrochloric acid can be produced in the peptic glands. This fact convinces that it is the hydro-

gen-ion of the hydrochloric acid which must be derived from the blood. The place where the hydrogen-ions combine with the chlorin-ions to form hydrochloric acid can not be the gland-cell, but must be the glandular wall. The latter is a semi-permeable membrane, which prevents passage of the free chlorin-ions, but permits on the other hand the migration of the hydrogen-ions through the membrane. The production of hydrochloric acid can not ensue without a certain stimulus. The latter is supplied by the presence of free chlorin-ions on the inner surface of the stomach wall. The administration of hydrochloric acid, it is true, may furnish such a stimulus; however, for this purpose, it is at present not prescribed at all.

DR. MARY MCCOY, Duluth—The physicians as a rule pay too little attention to the preparation of the food of patients. It is a matter of vast importance to every physician. If chlorotic patients come for treatment, you can take it for granted that if they are allowed to take improper food and indulge in every wish they will have gastric ulcer. It is therefore of very great importance that physicians should be competent to direct the proper food and its proper preparation. Let us, for illustration, take up the common advice to a patient to use cereals as an article of diet. Most patients only boil a cereal, like oatmeal, for twenty minutes, when it should be cooked at least five hours. There is too much of a tendency on the part of physicians to rely upon the patients or their friends to prepare proper articles of food. Every physician should make a special study of dietetics. The combination of food also has much to do with the causation of gastric ulcer and other stomach disorders.

DR. THOMAS MCCRAE, Baltimore—In the clinic of Dr. Osler a series of cases of gastric disorder had been studied which were of interest in relation to the papers that had just been read. It was found that the diminution of hydrochloric acid in the secretion of the stomach, to almost, or entire anacidity, not only simulated gastric hyperesthesia, but also hyperchlorhydria. Experience had shown that the administration of hydrochloric acid was not helpful, but frequently detrimental, in these cases. The question of diet is a very important one. Treatment by drugs is often not of much use. Pain and increased sensitiveness, however, should be relieved. He recommended the following formula in gastric hyperesthesia: Acid carbolici and tinctura iodi aa m. i, glycerini 3ss; to be taken when required, to relieve pain.

DR. DORA GREENE WILSON, Kansas City—In her experience with gastric ulcer, she had found that there were many cases associated with a catarrhal condition of the stomach. In such cases she had found much benefit from hydrochloric acid given in broken doses, five minims of the dilute acid to be given after each meal, and then five drops more half an hour later. This prevents fermentation and aids digestion. The results are very satisfactory when given in this way.

DR. BOARDMAN REED, Philadelphia—He was much pleased with the confirmation that Dr. Fuetterer had given from his experience of the ill effects of hydrochloric acid when given indiscriminately. There had been no lesson impressed upon him more strongly, by his clinical work, than that great harm can be done by this acid, when its administration is not based upon examination of the stomach contents, especially with persons having a normal amount of it in their gastric juice, and still more with those having an excess. Many cases of gastric disorder have been caused by HCl when prescribed without an examination of the stomach contents. It would be well if the term dyspepsia were to be abolished from our language; it means only "difficult digestion" or distress after eating, and is applied to a number of diseases, requiring widely different treatments. Some of the speakers have said that they did not see how HCl could cause increase of acid secretion from the gastric glands. A little experience with the burette would soon convince them. In cases of deficient secretion the administration of small doses will increase the activity of the glands. In cases of normal secretion, or of excessive secretion, it does much harm by causing irritation. He expressed admiration at the result reported by Dr. Fuetterer. The important observation that he had made as to the rôle which anemia exerts in the

production of gastric ulcer, is novel and deserves attention, and the good effect of beef-juice in bringing about improvement is notable. In conjunction with rest in bed, it is of great value. Gastric hyperesthesia is a very important symptom in gastric disorders and calls for more attention than is ordinarily given to it. We can not lay too much stress upon the amount of hydrochloric acid present in the gastric secretion, in cases of gastric hyperesthesia. Some have an increased while others have a reduced percentage of it and the hyperesthesia is greatly increased by the administration of hydrochloric acid in the former class of cases.

DR. G. FUETTERER, Chicago, approved of the remarks of Dr. Herriek as to the value of rest in combination with the diet. In reply to Dr. Tompkins' statement about commercial meat juice, he said that his objection was that if given in equal quantities the expense would be too great; that it is not as reliable as the fresh preparation and that the comparative results do not give such an increase of hemoglobin as he had obtained from beef juice. As regards surgical interference in narrowing of the pyloric orifice from ulcer, it is no crime, and it is not criminal, to recommend gastro-pylorotomy in some cases of gastric ulcer, but on the contrary, the only humane method of relieving the patient and preventing death by starvation and the development of a carcinoma. The object in giving the beef juice is to increase the hemoglobin, since according to the views expressed in the paper the ulcer is caused by the lack of hemoglobin, and heals when the hemoglobin becomes normal. The suggestion as to the use of morphin is a very valuable one. As regards giving rest to the stomach, it is a question whether or not you do give rest to the stomach by stopping the food. The empty stomach may move as much as the stomach containing food. By giving morphin we can quiet the motion of the stomach as well as relieve the pain, and favor cicatrization.

With regard to Dr. Reed's paper the author had called attention to a very important point and that is that pepsin and hydrochloric acid should not be given indiscriminately, as they often are. He had also made another very important statement, which was that the administration of hydrochloric acid in achlorhydria not only has a transitory effect, but, in the course of time, it really brings about the restoration of the normal proportion of hydrochloric acid in the gastric secretion, which is of the highest importance. Dr. Osborne said it was a common mistake to treat cases of gastric hyperesthesia by restricting the diet, as if they were cases of dyspepsia, which they are not. Referring to Dr. Reed's paper he said that he could not understand how the administration of an acid could bring about an increase of an acid secretion. He thought the hydrochloric acid was useful in improving the general nutrition, and thus enabled the stomach to better perform its work.

DR. C. C. STOCKTON—In regard to Dr. Reed's paper, explain the fact how you may, there is a decided advantage in administering hydrochloric acid in cases where the acid is deficient. As regards Dr. Osborne's statement that the administration of the acid would not stimulate the gastric glands, so much as an alkali given before meals, he had tried the latter many times. While the observation may be true in animals, it was not true in his clinical experience, basing his remarks upon chemical tests and clinical cases; he withdraws the tube as early as possible, so that the presence of the tube will not increase the hydrochloric acid, and he found that the result was negative and that the alkali did not increase the acid secretion. The improvement of digestion after giving the HCl may be in part due to the effect upon the entire organism. He did not think that the mere administration of small doses of HCl would increase the gastric secretion, but its administration would give the stomach increased power to act. In regard to operative measures, he wanted to confirm the statement that it is wrong to allow a patient with decided obstruction from stricture at the pylorus to go without the relief to be obtained from operation. The statement with regard to morphin, that it is likely to lead to the formation of a habit, is a just criticism. He thought that hunger could be overcome by the use of cocaine, which, if properly used, would accomplish the same purpose with less harm. The fact remains that small doses of ano-

dynes abolish stomach movement and pain. He had been much pleased by the remarks made by Dr. McCoy who said that the physician should devote more attention to the preparation of food. He had no doubt that many of the gastric conditions that we are called upon to treat are caused by abominable cooking. Even in the preparation of bread, we see a great many failures in the homes of our patients. It is surprising that our mortality is not greater when we reflect upon the unintelligent preparation of food all around us. As to the remark of Dr. McCrae, he would state that his own experience with gastric hyperesthesia was that pain and hyperesthesia have accompanied deficient secretion of HCl; the pain is not always increased by taking food, it comes on paroxysmally and is a distinct neurosis. Although it is accompanied by this disturbance or absence of secretion, he believed that the most intractable cases of gastralgia are those in which the gastric secretion is perfectly *nil*; but these cases are not due to atrophy of the gastric tubules, because he had seen some in which the secretions were afterwards restored. Another speaker referred to the use of hydrochloric acid after taking food in order to prevent fermentation. It is a common mistake to attribute the symptoms of pain or distress to fermentation in the stomach. Most of the prescriptions for indigestion are based upon the idea that the disorder is caused by fermentation; but his own observation had led him to conclude that it was due to disturbed innervation, or motility, and resulting disturbance of secretion. Most of these cases are based upon some disturbance of the nervous system, and they may be treated with hydrochloric acid without benefit until that condition is removed. Distension of the stomach that is complained of, is more often a sensation of distension rather than actual distension. He asked that in cases of supposed fermentation an examination of the stomach contents be made to find out if organic acids are present or not.

STATE SUPERVISION OF MARRIAGE.*

W. H. HEATH, M.D.

OF THE DEPARTMENT OF HEALTH.
BUFFALO, N. Y.

No time need be occupied before this audience in demonstrating that marriage is the foundation and keystone of family and state integrity, or that it is the most fundamental institution of society. Nor that the family is the natural and historic basis of it, being the origin of order, law, morality, education and justice.

Neither need time be taken to show that indiscriminate union is associated with the gravest consequences, the influence of which, either directly or indirectly, is associated with the most gigantic evils, in fact with almost every offense against society and the state. It loosens the family ties, tends to immorality, and diminishes mutual and parental responsibility.

From data in the premises, exact knowledge, we are in a position now to assign to heredity its proper importance, and to coincidentally formulate some plan or procedure having for its object such practical supervision of the whole question as will minimize and ultimately eradicate the possibility of evil influence through it. There can be no question of the right as to the necessity of the state to exercise its jurisdiction in this field as in others affecting the public welfare. To preserve itself it must be strong, and its strength depends upon its future citizens and their characteristics. Heredity, the imprint of sexual union upon its product, is one of nature's fundamental, universal, immutable laws. As you breed, so shall you reap, or beget. How important, therefore, and really how imperative is it that there be

scrutiny and supervision, or attention given in some way over those who propose to send forth others into the world; this must be done to prevent not only the individual degenerate, but to protect society and the state from his possibilities.

As a matter of fact, the state, to a limited degree, already asserts this right and authority, though chiefly as to certain degrees of consanguinity, by no means the most important feature. It should go further and extend this to moral, economic and other factors, with established or proven unfavorable possibilities. The state having this right in the premises, it would appear that now is the auspicious time to inaugurate a change. Never before were the people more in the spirit of advance. The influence of the great discoveries and innovations in commerce, art and science have been educational in no small degree, and have prepared the public for many changes which an era would not have been considered. The struggle for life is growing keener, survival of the fittest more and more in evidence, the standard in everything made higher, and coincidentally with and as a result of this there is an enormous augmentation of the submerged mass. Any change, therefore, that would diminish the number bound to sink, the number who by endowment can not cope with life that confronts them to-day and that will improve with environment, is indicated. It can not, therefore, be doubted that supervision to any degree that will make the masses stronger where weak, better where in fault, will, as soon as demonstrated, command the attention it deserves.

The problem, however, is one of the greatest difficulty, dealing as it does with a custom or procedure as old as man himself. Into the problem enter both sexes, under complex conditions, prompted by the greatest emotions and the strongest passions, and that, too, at a time of life when these factors are at their highest and when reason and judgment are yet unripe.

As a step toward reform it is proposed that no marriage be performed, be legal, or the offspring thereof be legal, if the marriage be performed without license; that marriage by license be mandatory by law upon all persons entering into the matter, the contracting parties, the officiating person and the witnesses. This license should be issued by the proper authority or official, only after certain conditions have been complied with and certain data furnished (analogous in some ways to the procedure adopted in issuing a burial permit in properly organized health departments). Such license should be issued upon certain data, contained in three certificates, viz:

A. *Certificate of Health and Heredity.*—This should be furnished by the family physician, or in the absence of such, by any reputable physician. It should contain certain data covering the family history, such as: 1, age and cause of death of immediately preceding ancestors; 2, the existence of predisposition to insanity, tuberculosis, cancer or other transmissible diseases; 3, of any preceding illness bearing upon present or future health.

B. *Certificate, Either Special, Qualifying or Educational.*—This certificate should be issued upon, and represent attendance—with or without final examination—upon a short, practical common-sense course of free lectures; these to be given preferably at night, delivered under the auspices of the municipality, town or village, at some convenient place such as the high school, academy, court room, church lecture room, etc., by a suitably qualified person—matron for the females, master for males. These courses should be adapted to each sex, and

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