

American Digestion and Indigestion.

Bonnie Frances Adams.

Graduating Thesis

A Introduction

- 1 Dyspepsia result of past as well as present abuse
- 2 Dyspepsia the foundation to other diseases

B Discussion

- 1 Physiology of stomach-including secretions
- 2 Conditions of healthful digestion

Deviations - to what due

Dietetic errors

1 How to eat

a Food in mouth

1 Mechanical action

2 Chemical action

b Hasty eating - why condemned

1 Insufficient saliva

2 Coarse particles irritate

3 Gastric juice cannot penetrate

2 When to eat

a Drinking at meal time

1 Beverage at body temperature

2 Beverage hot

3 Beverage cold

b When to drink

- c Frequency of eating
- d Irregularity of eating -
puceing.
- e Eating when stomach
can not digest

3 What to eat.

C Conclusion

1 Dyspepsia

- a Effect
- b Treatment
- c Cure.

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The centuries of abuse that the human stomach has had to endure are telling more and more, as each succeeding generation is born with all the weakness consequent to the abnormal conditions of its ancestors and grows up under conditions even more unnatural than those which undermined the health of its forefathers; until now the organs which at first bore the burden that was thrust upon them without faltering, and struggled to defend man against the evils that inevitably come to avenging natures broken laws, worn out, too weak to battle yet living, struggle feebly on. The guards once down disease claims man its victim.

The physician of today finds a harvest ripe before him, a harvest that if he be thoughtful he must deplore.

'Tis not one nation alone that suffers from this great evil. In every civilized land, can be found the results of an unhealthy digestive system in various forms of disease. Because American illness can be traced more directly to its source, and because Americans, by their fast living, aggravate the disease, perhaps it is, that we are called a nation of dyspeptics. Without entering into the question of whether other nations are not as much so we must admit

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that we are a dyspeptic people.

The most advanced physicians and scientists have traced one disease after another back to an impaired digestive system. "Brights disease, pulmonary consumption, jaundice, many affections of the liver, malarial disease, organic disease of the spine and brain, insanity, all, in a majority of cases have indigestion as their source" says Dr. Kellog.

In order to properly consider the subject of indigestion, it is necessary to have some idea of the physiological nature of the organ which it affects. In view of this fact, the following brief description of the stomach has been inserted.

The stomach only of all the various organs concerned in digestion has been taken because, being the principal seat of digestion is quite naturally the principal seat of indigestion and our remarks will be confined to indigestion in the stomach.

The stomach is the portion of the alimentary canal between the oesophagus and small intestine. At this place, the canal is dilated to form a hollow pear shaped organ, capable of holding from one to two quarts. The walls of the stomach consist of three layers. The

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muscular layers being composed of fibers, transverse, longitudinal, and oblique, these muscles during the process of digestion very slightly contract and expand giving it characteristic gentle churning motion.

The mucus layers of which the lining consists is found to contain a multitude of microscopic openings - the mouths of minute tubes lined with living cells - capable of producing the gastric juice.

The gastric juice is the digestive fluid of the stomach, and is also the most important of all the digestive juices.

The composition and nature of this fluid varies from day to day, and with the habits of the stomach. It can be made to vary through a wide range to meet the requirements forced upon it. This fact is often ignored by persons dieting for dyspepsia. It is not always wise to give dyspeptics food that is easiest digested - to do so weakens the stomach and makes it less and less capable of doing its proper work. There is a certain amount of work that a normal healthy stomach can do, and it should be required to do this amount regularly and well.

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The gastric juice is intensely acid. The principal acid being hydrochloric - probably an organic acid - though it also contains lactic acid.

Besides its digestive power, the gastric is a perfect antiseptic, not only capable of keeping the stomach and the food that enters it in an aseptic condition for any reasonable length of time required for digestion, but is also capable of arresting putrefaction that is eaten in a stage of decay and of rendering it harmless. It is said that "A healthy stomach is proof against any germ that lives" - but healthy stomachs are the exception.

Just one other detail in the mechanical construction of the stomach to make clear some remarks that follow. The stomach is guarded at either end by a circular muscle. The one at the lower end, the pylorus, tightly closes the opening during digestion, and resists the passage of improperly prepared food.

Dr. Kellogg gives the following conditions on which the healthful digestion depends: -

- 1 "The secretion of gastric juice in proper quantity and good quality."
- 2 "The prompt absorption of the digested food substances"
- 3 "Normal muscular activity of the stomach,

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by which the organ is emptied of its content in due season, or after the end of two or three hours after each meal."

4 The maintenance of an aseptie condition of the stomach or in other words, a condition in which the stomach is free from microbes or germs."

He comments: - "Dyspepsia may result from a variation in any direction from these conditions."

Deviations from these conditions can generally be traced to error in diet, and will consider very briefly a few of these causes under the subject diet, or how when and what to eat.

The food entering the digestive tract is first introduced into the mouth, where it is acted upon mechanically by the teeth. The crush it and divide it into small particles. While this is being done it is moistened and softened by the saliva.

Besides this mechanical action there is also chemical action. The ptyalin of the saliva acting upon the cooked starch in the food converts it into grape sugar. The general condemnation of hasty eating as a cause of indigestion is because the starch is not kept in the mouth long enough for the starch to be converted. The saliva being

alkaline it was formerly supposed that its action stopped soon after it mixed with the acid gastric juice. Recent investigations, however, have shown that the ptyalin acts even better in a neutral solution than in an alkaline solution, and acts somewhat in a slightly acid one, also that the work of the saliva is not only to convert starch, but that its presence in the stomach stimulates the flow of gastric juice.

Hasty chewing and the use of moist foods that do not stimulate the flow of saliva is of even more serious and far reaching consequence than was supposed.

But that is not the only fault of hasty eating. The coarse particles may act as an irritant to the stomach, and more than this, it is almost impossible for the gastric juice to penetrate these chunks, so they remain too long in the stomach and are at last only poorly digested.

In connection with, and almost inseparable from hasty eating, is drinking at meal time. This practice is defended by those who have the habit, but study will show that it is hurtful.

In the first place, a beverage is generally used to enable one to swallow half chewed food which could not be swallowed without it. Nature, if left alone, would

not allow food to pass from the mouth in an improper condition, but by using "slops" we prevent Nature from doing her duty. This difficulty might be avoided if one would be careful to drink only when the mouth is empty; but then, in most cases, the desire to drink would be gone.

The presence of dry food stimulates the salivary glands to greater activity than moist foods. With moist food, an insufficient amount of saliva is secreted and even that is so diluted as to be quite ineffectual by the introduction of more water. This last is also true of the gastric juice, it is so diluted that it does its work improperly. It is possible by the extensive use of moist foods and soups to bring about the same results; but as some moisture is needed in the organs, this is not likely to occur.

When great quantities of water are introduced into the stomach during the meal, the absorbing power of the digestive organs are too greatly taxed just when most needed to absorb the food.

So far we have considered the bad effects of water at the body temperature. If the beverage is taken hot it tends to relax and weaken the stomach. Sometimes it is observed that action entirely ceases for a while till the stomach revives.

If it is cold, it lowers the temperature below the

degree of activity and digestion waits. One glass of well water introduced into the stomach of Alex St. Martin lowered the stomach temperature to 70° ; and it was not raised to the normal for one half hour. In either case, whether the water is hot or cold, the food remains in the stomach too long, and fermentation or even in cases putrefaction begins before it can be gotten out.

The body requires pure water, but it should not be taken nearer than one half hour before a meal, nor more than a few sips after till digestion is completed in the stomach. The craving for water is often due to the use of spices. If so, rather than try to quench an abnormal thirst the spices should not be used.

The modern frequency with which meals are with which is a common source of dyspepsia. It is due to the losing sight of the real purpose of taking food. It is taken to gratify the palate rather than to satisfy the physical needs. Six hours at least, should be allowed after taking food before taking any more. This will allow from one to two hours rest. When food is taken into the stomach before that previously taken has passed out, the partially digested food will remain with that last taken.

For it to remain there moist and warm so

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long, will almost insure fermentation, and quite possibly putrefactive change may take place.

Now if still more food is introduced, fermentation already begun goes on rapidly. If the habit is kept up the stomach is never empty of a fermenting, decaying mass of food, and necessarily the nourishment gotten from such food is not great, and sooner or later the tissue of the stomach becomes diseased.

The habit of "piecing" between meals, often practiced by children, owes its ill results partly to this, but more, perhaps, to the irregularity of taking the food. The stomach tends to form habits if it is allowed, and if it is fed only at regular times, it works more perfectly than if called into action at any time. Children may need to have food oftener than every six or seven hours, but it should be given at regular intervals. The two meal a day system is excellent, and ought to be practiced by people of sedentary habits, at least.

Closely allied with eating too frequently is over-eating. Most people do not know how little it takes to keep the body in a healthy condition, if the food taken is of proper kind and properly digested.

As much food should be taken as the body requires, and the stomach can digest. Because one can

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digest a great deal, that is no excuse for it to be eaten, if the body does not require it.

It is the case sometimes that the stomach can not digest all the food that the body really requires. In that case, eat no more than is digested, the undigested portion will do positive harm. This principle should be applied in case one wishes to exert extra nervous or mental energy.

Undoubtedly the body needs more food under these circumstances, but it cannot take care of the necessary amount. Better reduce the amount till the strain is over. On returning to the normal diet, the stomach will be sound and able to do even more than the usual amount and the loss can be easily made up, and there be none of the ill effects of indigestion.

Of what to eat little can be said in a short paper. Some one has expressed the thought - "Tell me what ye eat and I'll tell ye what ye are" - and this is being more and more to be true. One of the first things now-a-days in any true reformatory is the establishment of a hygienic diet. The effect is really marked, though no doubt the greatest effect would only be reached after several generations.

A dyspepsia is not generally a fatal disease of itself many live in its depressing gloom

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without a thought of its possible cure, or not even knowing what it is. If they do anything it is to try some quack remedy or senseless advice of an ignorant friend.

An intelligent physician can do much to aid a person to recover, but the patient can do vastly more for himself; for he alone controls his surroundings and habits of life. In general do not take medicine.

In some cases, physicians may order; the ignorant ones always will; but even then it is very often because they think it useless to try to get the patient to live natural, healthful lives, and they find it easier to give some soothing medicine than to fight prejudice and habit.

Find out the cause of your trouble and remove it. If a physician once understands that you sincerely want to know how to live a healthful life, and you are intelligent, he will tell you how you are breaking laws of health and not "drug you to death".

It will take generations of hygienic living to correct the wrongs done to the body through perverted appetite and unnatural living but it will be done. The tide has turned in that direction. The physicians of today are teaching hygiene and not medicine for the majority of ills.