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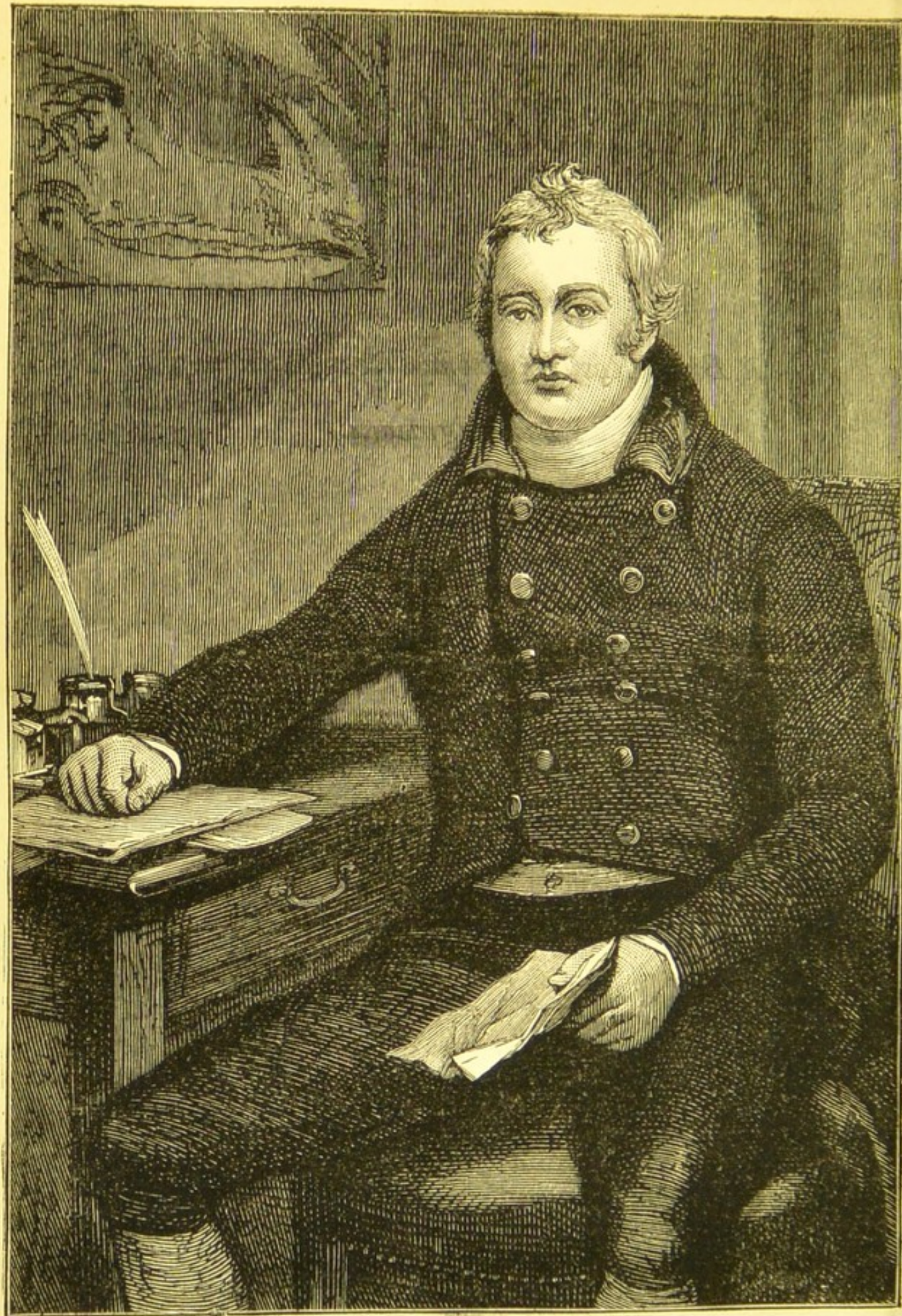
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NOTES ON DIGESTION.

*A Brief Resumé of the latest Pathological
Investigations.*

FROM VARIOUS ENGLISH, AMERICAN, FRENCH AND GERMAN
PHYSIOLOGICAL WRITINGS.

JOHN MORGAN RICHARDS,
46, HOLBORN VIADUCT, LONDON, E.C.

1886.



SIR EVERARD HOME, FIRST PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS.

From the Picture by Sir W. Beechey, R.A.

NOTES ON DIGESTION.

OUR apology for offering this monograph to the profession will be found in the universally expressed demand for a concise treatise upon the subject which shall be thoroughly up to date. Physiology and physiological therapeutics have made wonderful strides. As branches of science they are thoroughly abreast with the onward march of investigation. The experiments and conclusions, the primary theories from which accepted facts have been deduced, are scattered through the miscellaneous medical literature of both hemispheres. To cover the ground with anything like intellectual completeness, the physician must have ample time at his command, with ample means to provide himself with the home and foreign journals, and with sufficient linguistic knowledge to comprehend the results of the German and French laboratories. The conservatism of the past, which relegated to the saliva the only converting power over starch, and believed that the transformation was effected at once without intermediate steps in the process, and the more recent assertion, from men highly placed in the ranks of medical experts, that diastatic action was arrested in the presence of an acid, have given place to other views, based upon such exact inquiry and experiment, that they have been accepted as postulates of thought. It is our purpose to give, in an epitomized form, the salient features of this new departure in digestion. We believe that the labour will be appreciated

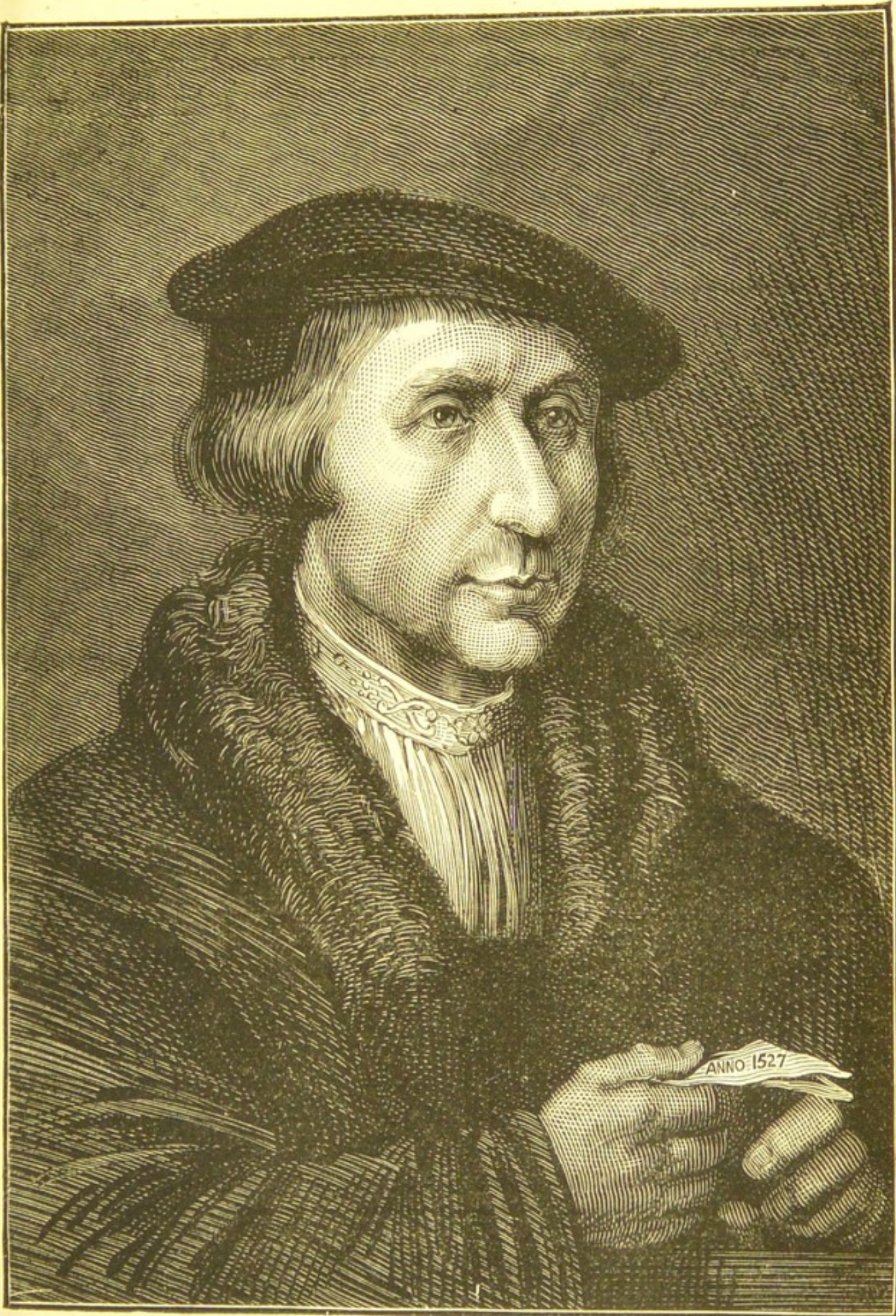
by those who are unable to keep abreast with this one department in physiology, and that it will be kindly received by the majority of general practitioners. If it shall prove of service as a contribution to physiological therapeutics, we shall feel amply compensated for the exertion. The subject seems to divide itself naturally into the following heads :

1. SUBSTANCES USED AS FOOD.
2. SALIVA.
3. GASTRIC JUICE.
4. PANCREATIC JUICE.
5. INTESTINAL JUICES.
6. REMARKS UPON PHYSIOLOGICAL THERAPEUTICS.

The discussion of hydrochloric and lactic acids, and of the action of diastase in slightly acidulated and in alkaline solutions, will be noticed under their appropriate heads.

1. SUBSTANCES USED AS FOOD.

Organic substances used as food may be arranged under three heads : 1. The saccharine group, embracing substances composed of oxygen, hydrogen, and carbon, resembling sugar in composition, and readily convertible into it; such as starch, gum, woody fibre, and the cellulose of plants. 2. The oleaginous group, with a great preponderance of hydrogen and carbon, small proportion of oxygen, and absence of nitrogen, including vegetable oils and animal fats. 3. The albuminous group, containing a large proportion of nitrogen, comprising animal and vegetable substances allied in chemical composition to albumen and animal tissues. The saccharine substances taken as food do not directly form part of any animal tissue, but are decomposed in their passage through the circulation, and are thus employed in some unknown way in nutrition.



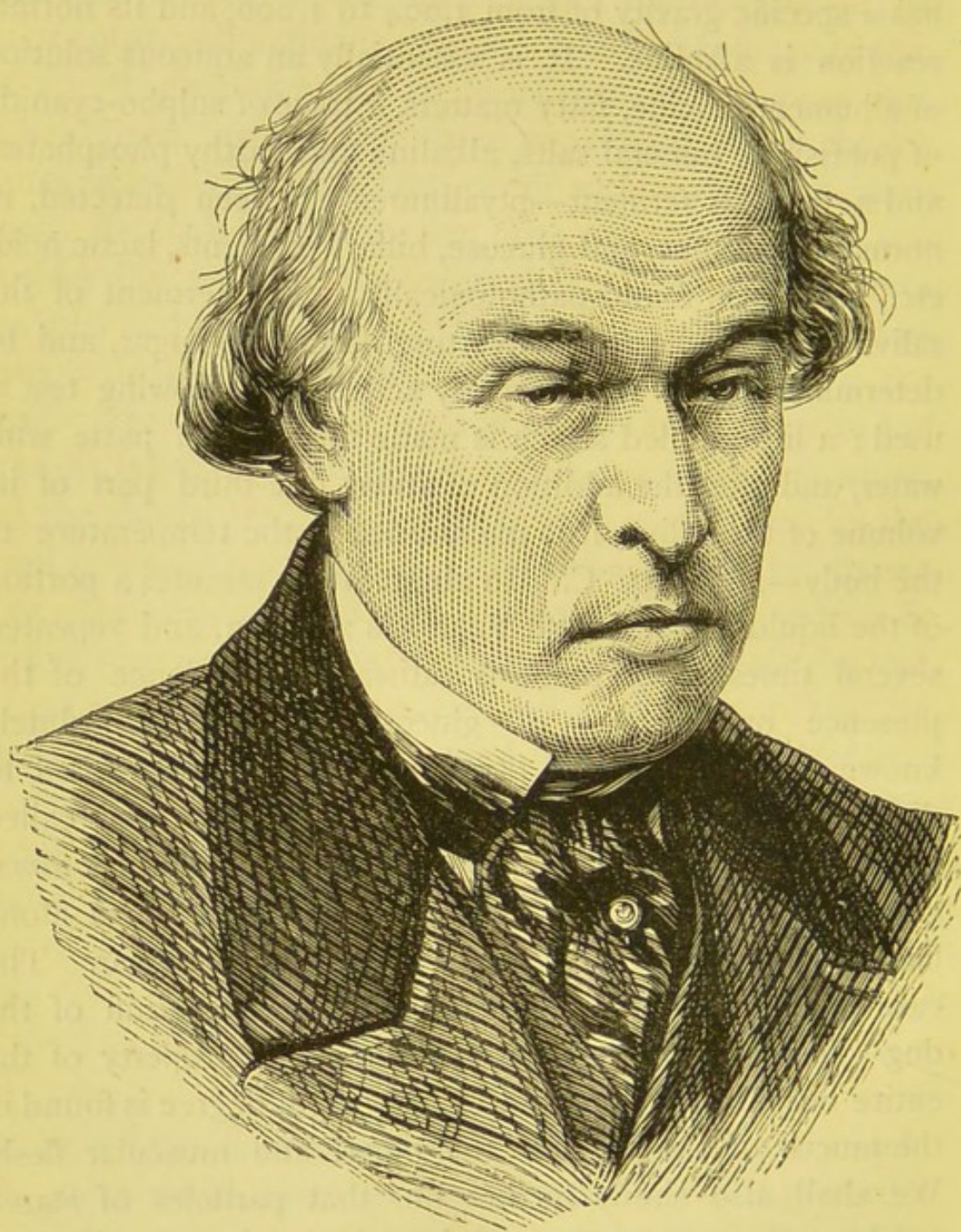
THOMAS LINACRE, M.D., FIRST PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS.
From the Picture at Windsor, by Holbein.

Starch is converted into sugar during digestion, and the sugar thus formed is decomposed and appropriated. The articles of the albuminous group serve not only for nutrition, but for the maintenance of heat by their decomposition. It has been stated that some conversion of saccharine matter into lactic acid may occur within the alimentary canal. But this transformation does not take place to any considerable extent. Lactic acid so produced becomes absorbed and is subsequently mainly disposed of by undergoing oxidation within the system, as happens with the organic acids in general. It is as saccharine matter that the carbo-hydrates, in the ordinary course, reach the circulation, and the saccharine matter thus derived is conveyed by the portal system of vessels to the liver, where it can be shown to be detained and subjected to metamorphosis—which is the first step in its assimilation. The carbo-hydrate element of food is susceptible of undergoing conversion into fat, as shown by Boussinqualt, Pavy, and others ; but in order that this may ensue, it must not be administered without a due accompaniment of the other alimentary principles. Nitrogenous matters in excess may also serve as a source of fat.

2. SALIVA.

Pure submaxillary saliva was first studied by Bernard. It is more viscid than that of the parotid, but is perfectly clear. Its organic matter is not coagulated by heat. He regarded its functions as exclusively connected with gestation. Parotid saliva contains organic matter, sulpho-cyanide of sodium, phosphate of lime, chlorides of potassium and sodium, and carbonate of soda. It is chiefly concerned in mastication and deglutition. Its secretion is rapidly generated by irritation of the fifth pair of nerves, and of the

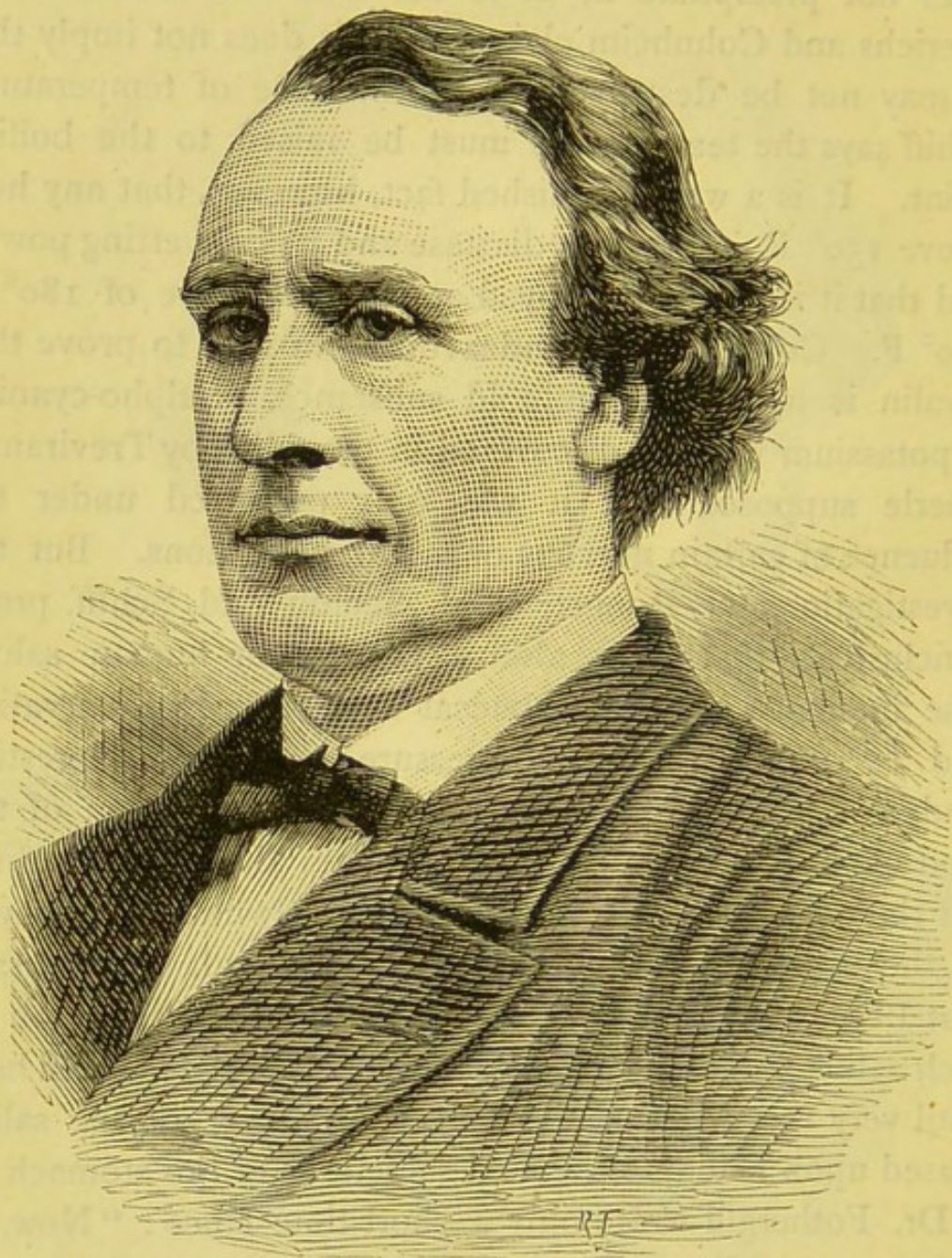
facial. The product of all the glands—the saliva proper—has a specific gravity of from 1.004 to 1.006, and its normal reaction is alkaline. It is essentially an aqueous solution of albumen, mucine, fatty matters, a trace of sulpho-cyanide of potassium, mineral salts, alkaline and earthy phosphates, and a peculiar ferment—ptyalinurea has been detected, in normal conditions, and glucose, biliary pigments, lactic acid, etc., have been found pathologically. The ferment of the saliva has the power of converting starch into sugar, and to determine whether it is properly active, the following test is used: a little boiled starch is made into a thin paste with water, and after the addition of about one-third part of its volume of the saliva, it is maintained at the temperature of the body—about 35° C. In about fifteen minutes a portion of the liquid is tested with Fehling's solution, and repeated several times, until there is satisfactory evidence of the presence or absence of glucose. Little is absolutely known of the activity of ptyalin, but it is closely allied to diastase. It was discovered by Leuchs in 1831, and called by its present name by Berzelius. Mialhe called it *animal diastase*. In the horse and in man the parotid saliva alone has not the power of converting starch into sugar. The case is the same with the sub-maxillary secretion of the dog. This converting power is the joint property of the entire buccal secretion, and in very slight degree is found in the mucus of the bladder, the blood, and muscular flesh. We shall also show, further on, that particles of starch reaching the pancreatic and intestinal juices undigested, may be transformed by these secretions. Bidder claims that the converting property of ptyalin is developed only with the first appearance of teeth. Leeuwenhoek discovered certain *pyoid globules* in ptyalin which had amœboid movements, and closely resembled the white corpuscles. They may be regarded as ferments with saccharizing properties



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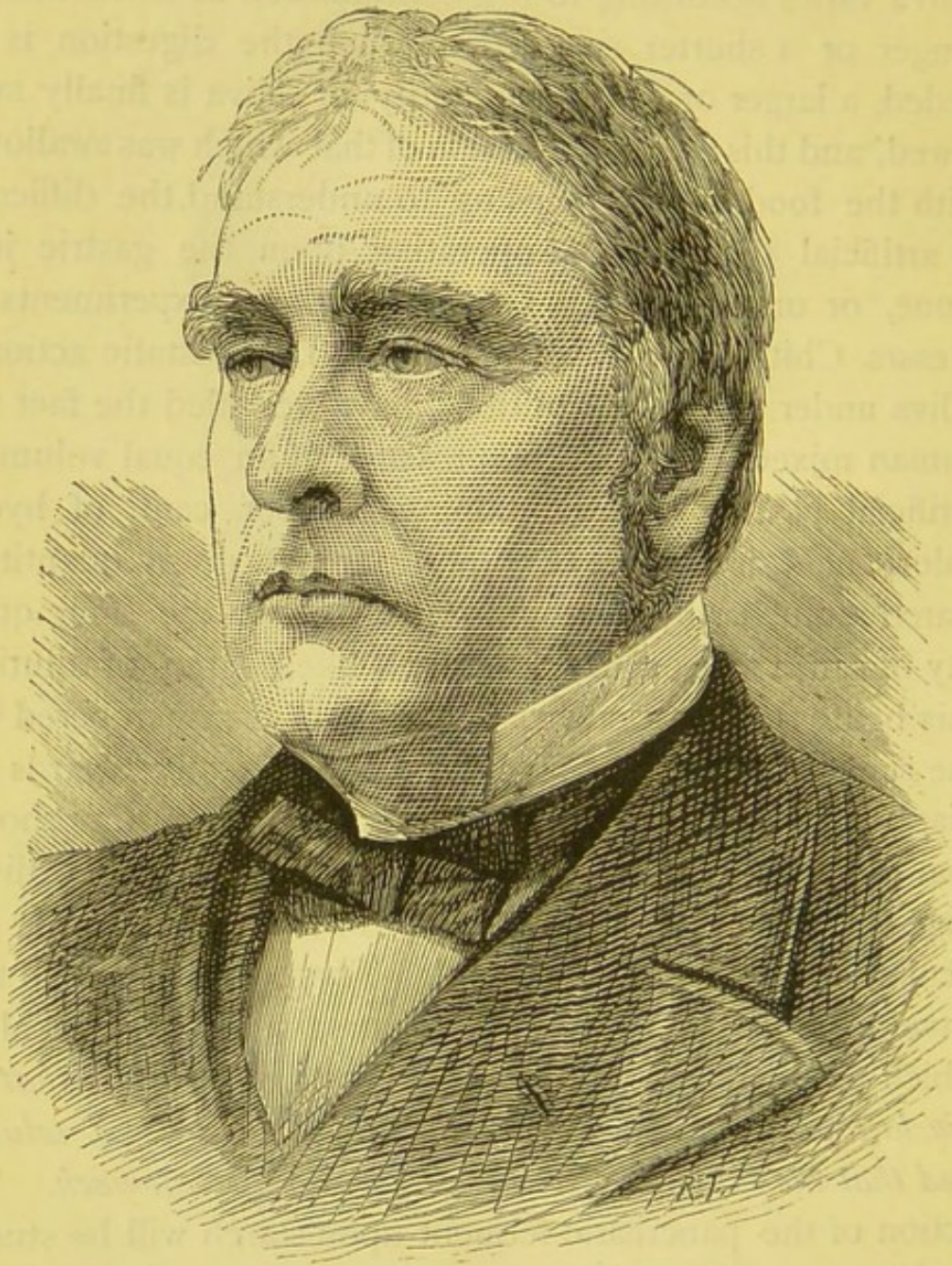
(Ronget has confirmed this view), while a heat of 60° C. does not precipitate it, as is the case with albuminoids. Frerichs and Cohnheim claim that this does not imply that it may not be destroyed by an increase of temperature. Schiff says the temperature must be raised to the boiling point. It is a well-established fact, however, that any heat above 150° F. injures the diastase and its converting power, and that it is totally destroyed at a temperature of 180° to 190° F. Cohnheim has endeavoured in vain to prove that ptyalin is not an albuminoid substance. Sulpho-cyanide of potassium was first discovered in the saliva by Treviranus. Eberle supposed that it was only produced under the influence of certain nervous or moral conditions. But the investigations of Ronget, Aehl, Sectoli and Schiff, prove conclusively that it is always present in human saliva. The influence upon the buccal secretions by innervation and by secondary arterial pressure is a very interesting study. From it we learn that it is not the irritation of the food upon the glands which first causes the flow of saliva, but the peripheral excitation of the nerve which is conveyed to the reflecting centre in the spinal cord. Schiff says that Bernard's assignment of peculiar mechanical action to each saliva is a little too sharply defined. It has been held until very recently that the converting power of the saliva ceased upon reaching the acid secretions of the stomach.

Dr. Fothergill wrote only a short time since : "Now, as it happens, 'diastase,' whether from saliva or barley, it matters not, is inactive in the presence of an acid, and taken into the acid stomach, as directed, is simply inert ; simply thrown away, so far as it is a ferment, and reduced to the level of other food—no longer a digester, but itself to be digested." It is unfortunate that so erroneous an assertion should emanate from such an eminent practitioner. Küss says : "The amylaceous substances are changed into



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dextrine, and saccharized in the stomach by means of the saliva which is swallowed with the food. The quantity of saliva varies according to the continuation of mastication, a longer or a shorter time; thus, when the digestion is impeded, a larger or smaller quantity of saliva is finally swallowed, and this assists the action of that which was swallowed with the food. This helps us to understand the difficulty, in artificial digestion, of operating upon the gastric juice alone, or unmixed with saliva." Recent experiments by Messrs. Chittenden and Griswold on the diastatic action of saliva under various conditions, have revealed the fact that human mixed saliva, in the presence of an equal volume of artificial gastric juice containing .05 per cent. of hydrochloric acid, is capable of forming from a given quantity of starch a much larger amount of sugar than the same quantity of saliva alone can do under a like degree of dilution; this being the more remarkable when it is remembered that the same percentage of acid by itself greatly retards the diastatic action. Messrs. Ely and Chittenden further showed that peptones exercised a decided influence upon salivary digestion, stimulating the ferment to increased action, particularly in the presence of acid. Thoroughly accurate tests have been made frequently within the past year, all of which prove beyond question *of reasonable doubt, that the diastatic action is intensified in a slightly acidulated solution, and that the salivary digestion goes on in the stomach.* The action of the pancreatic ferment upon starch will be studied further on. It is only necessary to state here that its power is even greater than that of ptyalin. These facts become the more apparent from the study of the constituents of an ordinary meal. Can it be possible that the saliva will only act upon the farinaceous principles during the brief time consumed in mastication and deglutition? If ptyalin will act only in an alkaline solution, what becomes of the potato



SIR WILLIAM GULL.

salad, or of other starchy food that is mingled with claret, rhine wine, cider, etc.? What becomes of apple tart, cherry pie, and other pastry that is mixed with an acid? The truth is that the process of digestion of the starch is only commenced in the mouth, and that it requires time for its completion, just as the other digestive principles require a certain period to finish their functions. *This time is furnished the saliva within the stomach.* That this is nature's law, is supported by abundant proof.

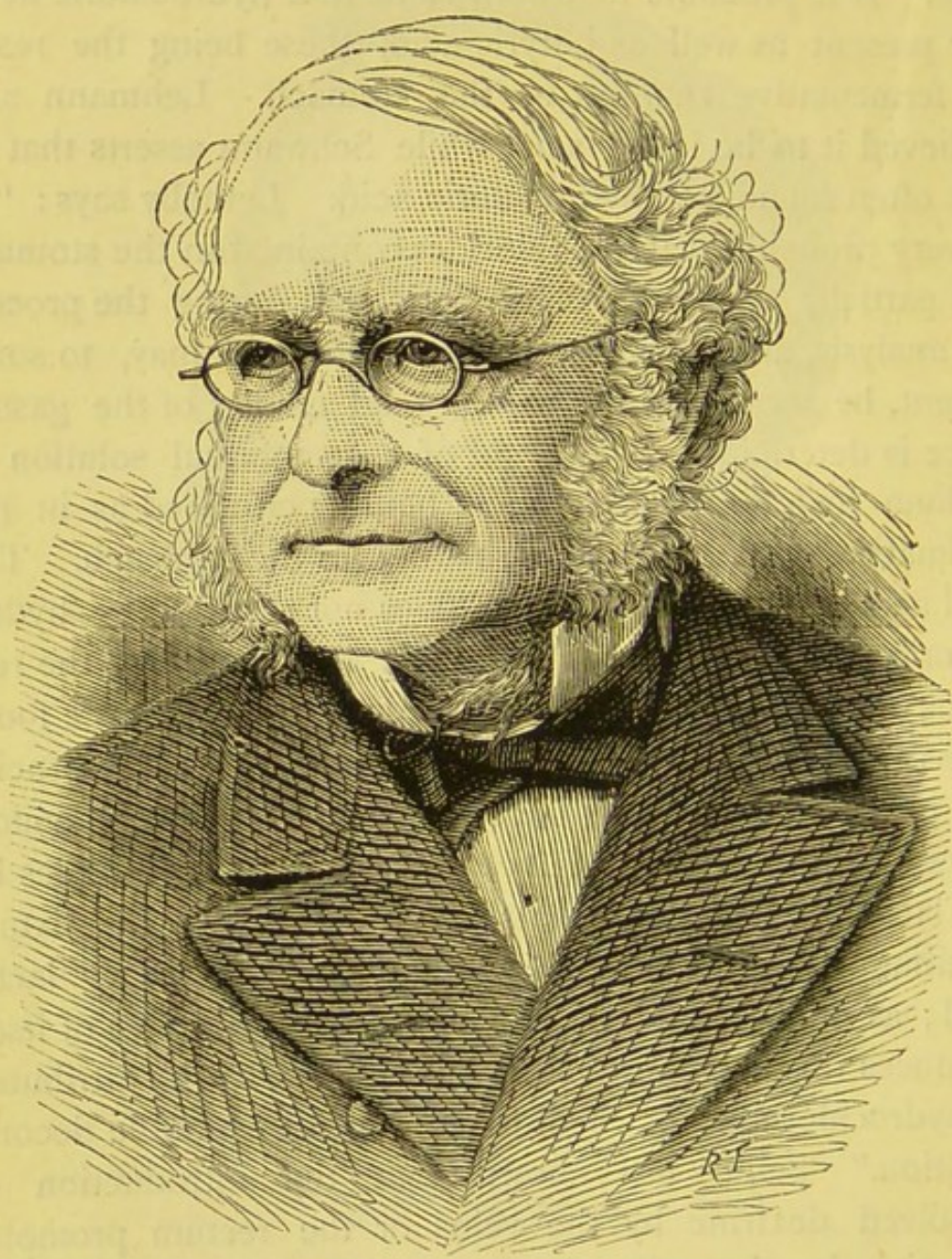
3. THE GASTRIC JUICE.

The normal and characteristic secretion of the stomach is the gastric juice, which is chiefly produced by the glandular *culs-de-sac* of the cardiac region. It contains scarcely four per cent. of solid matter, two-thirds of which consist of organic substances (albuminoids). The salts chiefly found are phosphate of soda and chloride of sodium. Blondlot, of Nancy, was the first to study its properties through a *fistulous* opening, and this plan has since yielded very valuable results in the hands of Cl. Bernard and Schiff. The organic (albuminoid) matter contained in the gastric juice is a sort of ferment called *pepsin* or *gasterase*. It is soluble like ptyalin. Its existence was first discovered by Schwann. Payen obtained it by precipitation from the gastric juice by alcohol. Brucke denies its albuminoid character, just as Cohnheim denied the albuminoid character of ptyalin. It transforms albuminoid substances into *albuminose* or *peptone*, which is an isomeric form of albumen. Now, the presence of an acid is necessary for this transformation, which constitutes the digestive function of the stomach; in the gastric juice, therefore, pepsin is united with an acid in a free state. Prout, Schmidt, Mulder, Brinton, Ronget, Ritter, etc., claim that this is *hydrochloric*



SIR ANDREW CLARKE.

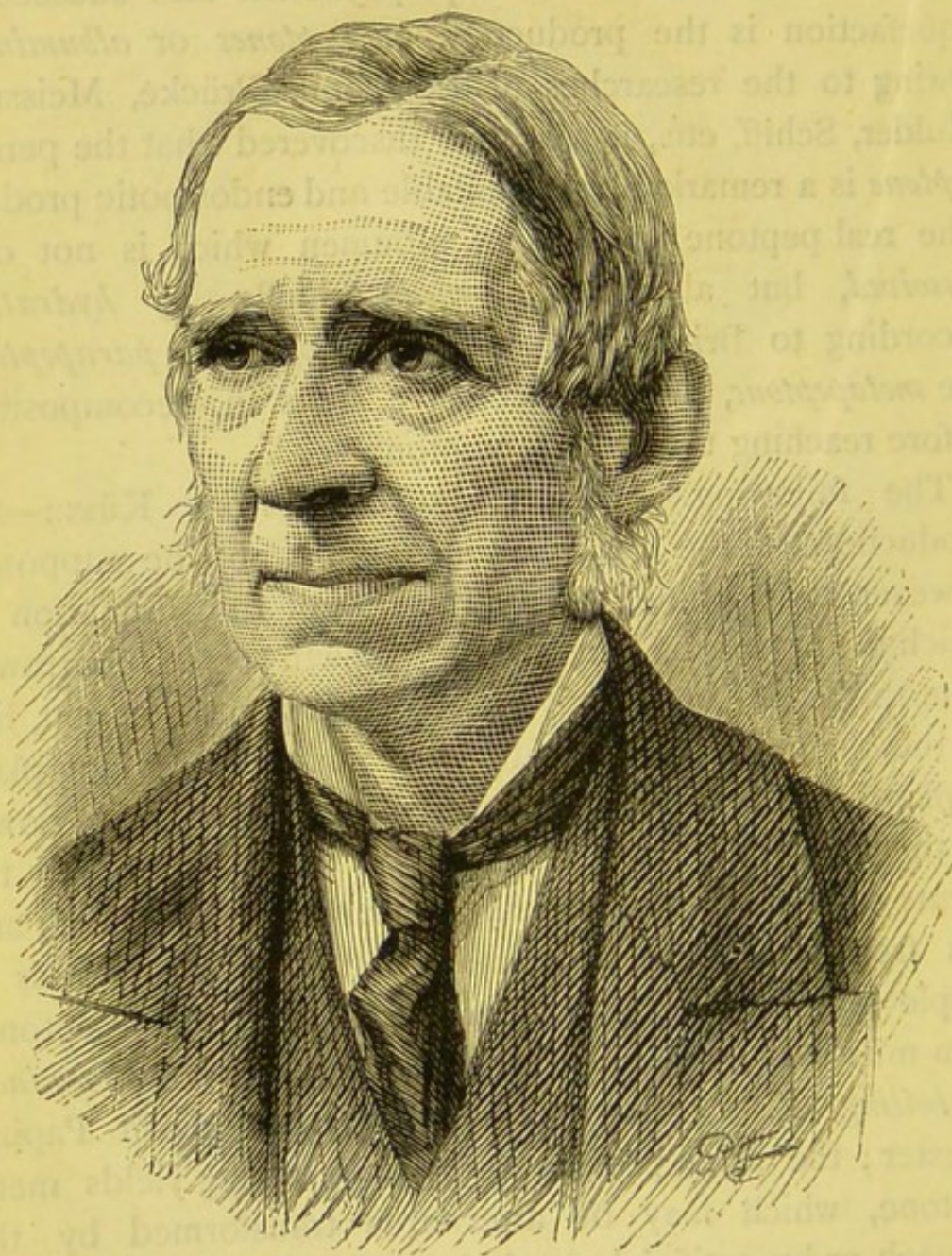
acid; Blondlot believed it to be an *acid phosphate of lime*; while Cl. Bernard and Barres maintain that it is a *lactic acid*. It is probable that both lactic and hydrochloric acids are present as well as butyric acid, these being the result of fermentative changes in the stomach. Lehmann also believed it to be lactic acid, while Schwann asserts that he has often found free hydrochloric acid. Letheby says: "It is very probable that the chlorides contained in the stomach are partially decomposed by lactic acid during the process of analysis, and thus the hydrochloric acid may, to some extent, be accounted for." The total acidity of the gastric juice is determined by the aid of a decinormal solution of sodium hydrate, the operation being performed as in the estimation of the degree of acidity in the stomach. The real acid of stomach digestion does not seem to be hydrochloric, since it has not the same reaction; but the real acids are probably the organic acids set free from the food. Küss writes: "It is quite possible that hydrochloric acid, the presence of which is incontestably proved by chemical reactions, may arise from decomposition of the chlorides by the lactates." Caillot (thesis by Ritter) says: "A mixture of albumen and chloride of sodium is coagulated by lactic acid; as neither chloride of sodium nor lactic acid of itself produces this effect, the coagulation can only be attributed to hydrochloric acid, which is produced by double decomposition." Schiff has shown that the introduction of dissolved dextrine by the veins or the rectum promotes digestion by the stomach, the acidity of the gastric juice being increased. If this fact be true, the acid thus obtained in a larger quantity can only be the lactic acid (Küss). The real gastric juice is secreted under the influence of an albuminoid excitant (muscular flesh, fibrine, white of egg, etc.). According to Lucien, Corvisart and Schiff, these elements furnish an indispensable element in the secretion



SIR T. SPENCER WELLS, BART., M.D.

of pepsin. This is Schiff's theory of *peptogeny*. The *peptogens* are elements which are capable of being changed into pepsin. The final result of *porphyrization* and succeeding liquefaction is the production of *peptones* or *albuminose*. Owing to the researches of Lehmann, Brücke, Meissner, Mulder, Schiff, etc., it has been discovered that the perfect *peptone* is a remarkably assimilable and endosmotic product. The real peptone consists of albumen which is not only *dissolved*, but also *transformed* (chiefly by *hydration*, according to Brinton). The *dyspeptone*, the *para-peptone*, the *meta-peptone*, are the successive steps in decomposition before reaching the definite peptone.

The following extract is borrowed from Küss :—the production of the real peptones must not be supposed, however, to be one of those processes of transformation to which the organism alone, or some growth (pepsin) borrowed from the organism, can give rise. This transformation, like all the chemical transformations which we see taking place in plants and in animals, shows no such monopoly of power as theorists of all ages have agreed in attributing to the agents of life. Peptones may be artificially produced, and this frequently occurs in manufacture. The process is simple and speedy. Meissner obtained perfect peptones from muscular flesh, with casein, legumen, etc. (*albuminose by boiling*, E. Corvisart), by long decoction, in Papin's digester; the same process with white of egg yields meta-peptone, which may be afterwards transformed by the stomach or by artificial gastric juice into genuine peptones. Peptones have also been produced by the action of ozone on the albumen of an egg and on casein (Gorup-Besanez, Schiff), but for this purpose the ozonized air must be made to pass during sixteen to twenty days through a solution of albumen and water; and this process after all, yields only products resembling peptones; if injected into the veins of



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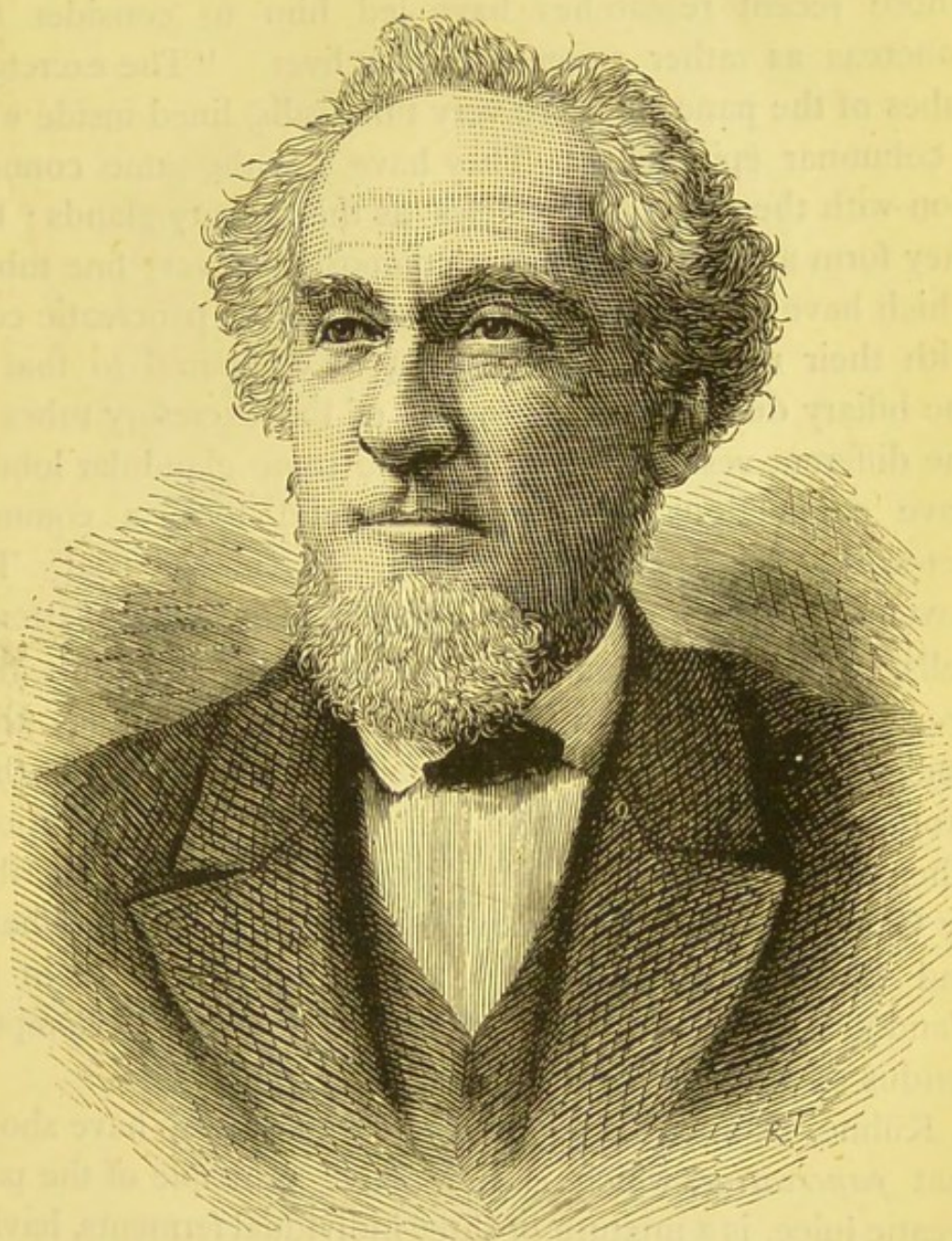
DR. E. H. SIEVEKING, M.D.

an animal, some of them will reappear in the urine (Schiff).

If we study the phenomenon of gastric digestion as a whole, we no longer find in it, element by element, the simple action which we have been examining : we know that the amylaceous substances continue to be transformed into sugar by the action of the saliva. The fats become slightly emulsive under the influence of the motions of the stomach, and by mingling with the porphyriized products of the solid albuminoids ; but this emulsion is extremely unstable, and the drops of fat show a tendency to reunite in large masses, which float on the surface of the liquid. That is to say, the gastric juice dissolves the albuminous envelopes of the fat cells, whilst the temperature (40° C.) at which digestion is carried on renders the solid fats fluid, but no real chemical change occurs. This physical action is intensified by the muscular movements of the stomach during digestion. The different albumens are transformed into different *peptones*, but there are some kinds which for a long time resist the action of the gastric juice : such as the cellular tissue of the muscles ; and some, finally, as the cellulose of plants, which are refractory. The mingling of these different substances with a large quantity of gastric juice forms what has also been called *chyme*. But we see here, too, that *chyme* is not a substance immediately formed, but an extremely complex pulp, and not at all fitted to give an exact idea of the digestive action of the stomach.

4. PANCREATIC JUICE.

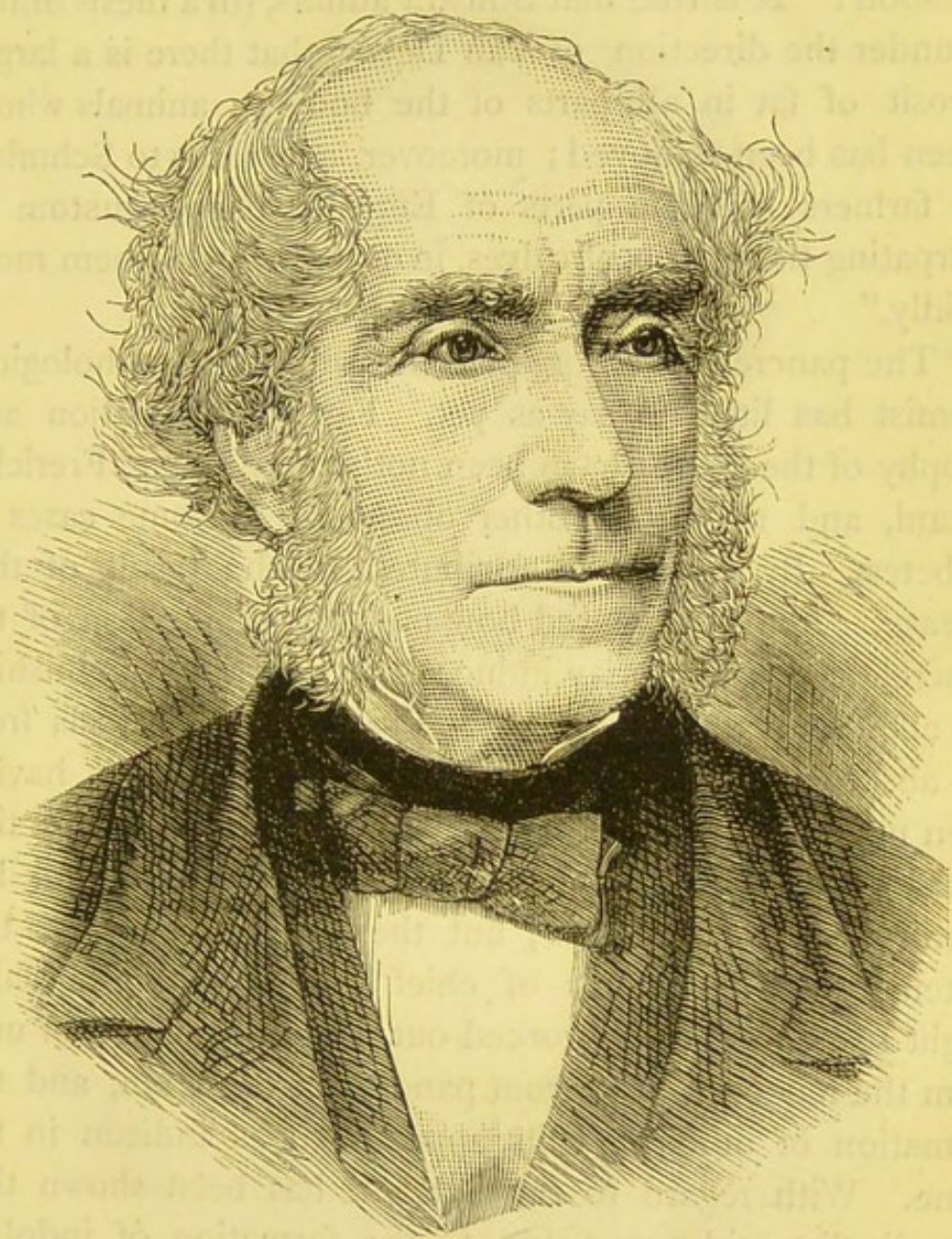
This is also called the *abdominal saliva* ; as the structure of the pancreas resembles that of the salivary glands. It coagulates readily, being rich in albumen. It is alkaline, like all salivas, and when brought in contact with the product of the stomach, impregnated with the gastric juice, it neutralizes the acidity and begins to act in its turn.



MR. EDWARD LUND, F.R.C.S.

The identity of the pancreas and the salivary glands, even in an anatomical point of view, is denied by Giannuzi, whose recent researches have led him to consider the pancreas as rather resembling the liver. "The excretory tubes of the pancreas have very thin walls, lined inside with a columnar epithelium. They have not the same connection with the secretory vesicles as the salivary glands; but they form around them a net composed of very fine tubes, which have no epithelium, and surround the pancreatic cells with their meshes. This net may be compared to that of the biliary ducts. The net-work of the excretory tubes of the different vesicles which form the same glandular lobule, have connections between them, and form a common net-work. The pancreatic vesicles have no coat. The pavement epithelium of the vesicles is formed of flattened cells, having a nucleus and a prolongation. In short, they are very similar to those of the salivary glands; their nucleus, however, is more easily perceived, and their protoplasm is more granular, and contains fatty granulations. The semilunar bodies in the sub-maxillary glands, described by Giannuzi, and since discovered by Kölliker, Heidenheim, and Boll, in the salivary glands, are not found in the glandular vesicles." (See p. 221, Giannuzi, "Comptes-rendus de l'Académie des Sciences.")—[Küss.]

Kühne, Danileski, Hoppe-Seyler and others, have shown that *pancreatine*, which is the active principle of the pancreatic juice, is a mixture of three individual ferments, having each an independent action; the first precipitable by calcined magnesia, acts upon the fats; the second, separated by precipitation from a solution of collodion, is the ferment of the albuminoid substances; while the third, which resembles ptyalin, is precipitated like this latter by concentrated alcohol, and acts upon the amylaceous substances. Vulpian asks: "Is there any increase in the action of the

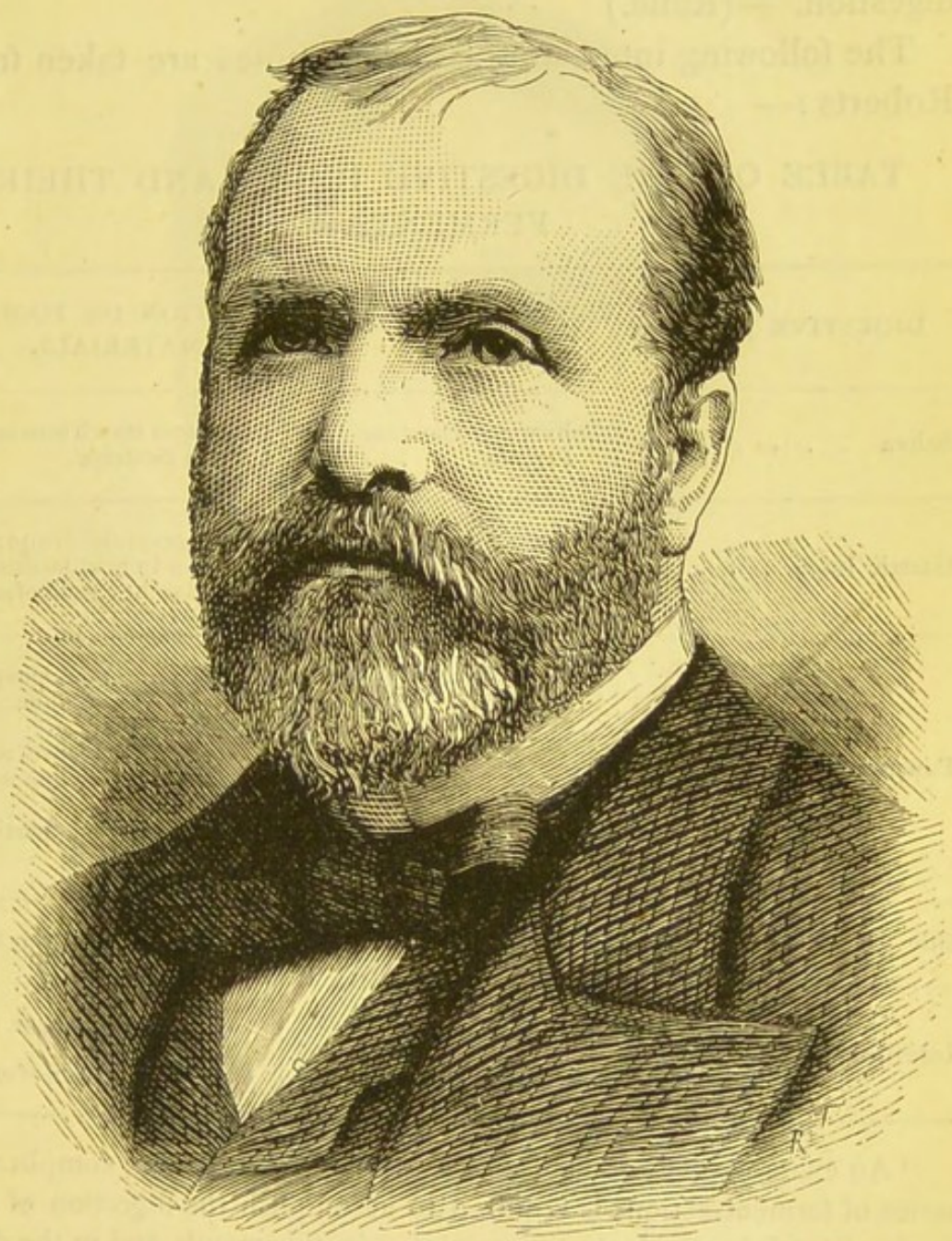


SIR H. A. PITMAN, KT.

Registrar of the Royal College of Physicians.

pancreatic juice on the fatty substances, or are Schiff's results caused solely by the greater activity of the gastric digestion? It is true that Stinstra admits, (in a thesis drawn up under the direction of Van Deen,) that there is a larger deposit of fat in all parts of the body in animals whose spleen has been removed; moreover, according to Schmidt, the farmers in some parts of England have a custom of extirpating the spleen of calves, in order to fatten them more rapidly."

"The pancreas is an organ about which the pathological chemist has little to say as yet. Fatty degeneration and atrophy of the glands have been noticed by Bright, Frerichs, Catani, and numerous other observers, in some cases of diabetes. By some it is attributed as the result of that disease. I have suggested how possibly diminution of the pancreatic secretion may induce glycosuria, by diminishing the alkaline reaction of the blood in the portal vessels from the absorption of the contents of the jejunum not having been neutralized by this secretion. In cases of obstruction of the duct of the pancreas an increase of fatty matter has been noticed in the stools; but there are exceptions to this statement. The matter of chief clinical interest, which ought to be more fully worked out, is the formation of urea from the leucin derived from pancreatic digestion, and the formation of indol, and its appearance as indican in the urine. With regard to the latter, it has been shown that as salicylic acid puts a stop to the formation of indol in albuminoid solutions of pancreatic juice, so the internal administration of the same acid reduces the amount of indican in the urine, which decreases exactly in proportion as the quantity of phenol increases. Indican is also met with in the urine after ligature of the small intestines, and in obstructions and other affections of the intestines in disease. The indigo sometimes deposited in a free state in



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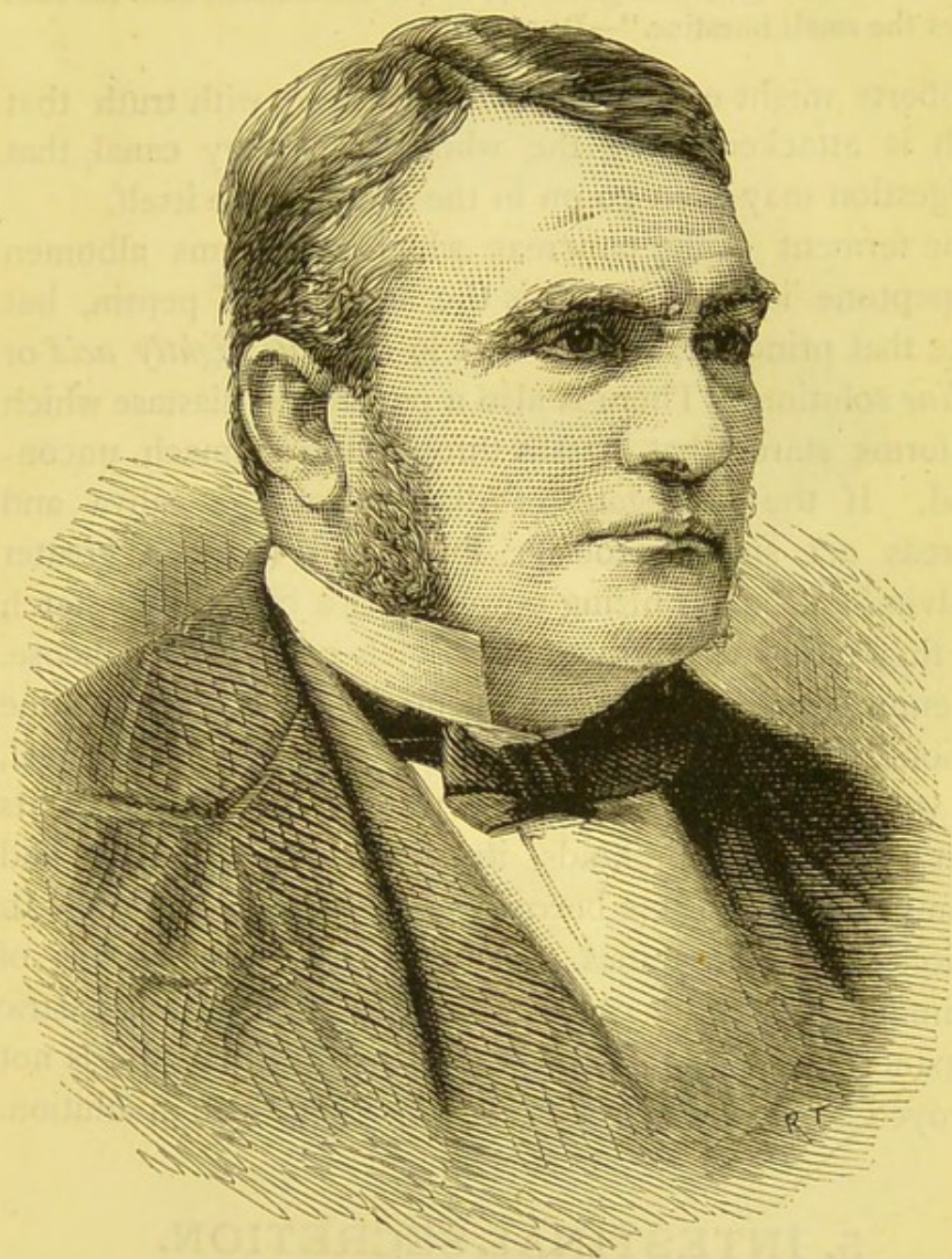
urine, sweat, and urinary calculi, is undoubtedly derived from the indol formed in the intestines by pancreatic digestion."—(Ralfe.)

The following interesting table and notes are taken from Roberts :—

TABLE OF THE DIGESTIVE JUICES AND THEIR FERMENTS.

DIGESTIVE JUICES.	FERMENTS CONTAINED IN THEM.	ACTION ON FOOD MATERIALS.
Saliva	Salivary Diastase or Ptyalin	{ Changes starch into sugar and dextrine.
Gastric Juice {	<i>a.</i> Pepsin <i>d.</i> Curdling Ferment . .	{ Changes proteids into peptones in acid medium. Curdles the casein of milk.
Pancreatic Juice {	<i>a.</i> Trypsin <i>b.</i> Curdling Ferment . . <i>c.</i> Pancreatic Diastase . <i>d.</i> Emulsive Ferment .	{ Changes proteids into peptones in alkaline and neutral media. Curdles the casein of milk. Changes starch into sugar and dextrine. Emulsifies and partially saponifies fats.
Bile	?	Assists in emulsifying fats
Intestinal Juice {	<i>a.</i> Invertin <i>b.</i> ? Curdling Ferment .	{ Changes cane-sugar into invert-sugar. Curdles the casein of milk.

“An examination of the table shows that a long and complicated series of ferment-actions is required to accomplish the digestion of our food. Starch is attacked at two points—in the mouth and in the duodenum—by two ferments, salivary and pancreatic diastase, which are substantially identical. Albuminous matters are also attacked at two points—in the stomach and in the small intestines—but here the two ferments, pepsin and trypsin, are certainly not identical. The ferment, of which the only known characteristic is to curdle milk, is found in the stomach and in the pancreas—and, I think, also in the small intestine. The bile is not known to possess any true ferment-action, but it assists, by its alkaline reaction and by its physical properties, in emulsifying



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Senior Vice-President of the Royal College of Surgeons.

and promoting the absorption of fatty matters. The ferment which transforms cane-sugar, strange to say, is not encountered until the food reaches the small intestine."—ROBERTS.

Roberts might even go further and state with truth that starch is attacked along the whole alimentary canal, that its digestion may even go on in the gastric juice itself.

The ferment of the pancreas which transforms albumen into peptone is *trypsin*. It is the analogue of pepsin, but unlike that principle, it only acts in *neutral, slightly acid or alkaline* solution. There is also a pancreatic diastase which transforms starch that passes through the stomach unconverted. If the aggregate of diastase of the saliva and pancreas act simultaneously, there will result a greater dissolving and dextrinizing power over a quantity of starch than they have the ability to completely convert into glucose. The emulsive ferment acts independently of acid or alkaline solutions. The nature of its actions is probably physiological, and we may infer that as the pancreatic juice loses its power over the albuminoids, its power over the fatty and the amylaceous matters becomes greater than before. In physiological therapeutics the pancreatic ferments are of inestimable service, because even the action of the gastric and pancreatic juice goes on within the intestine, and is not destroyed by the nature of the fluid holding them in solution.

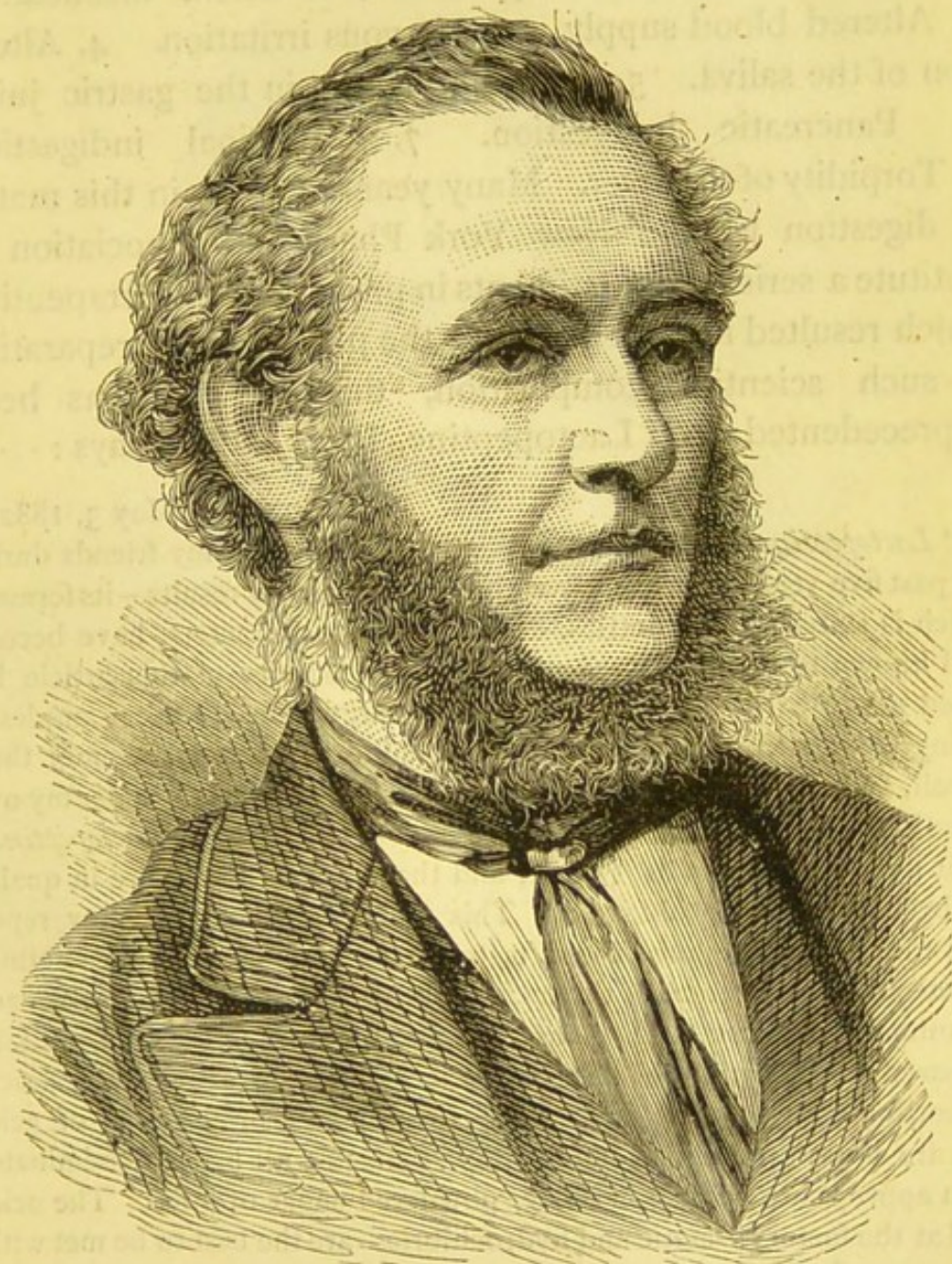
5. INTESTINAL SECRETION.

The fluid secreted by the glands of Lieberkühn constitutes the *enteric juice*. Thiry's method of procuring it is now generally used. Its reaction is alkaline. Bidder and Schmidt says that it combines the activity and digestive power of all the other secretions—starch, fat and albuminous substances being all digested by it. Be this as it may, it is certain that a considerable portion of cellulose, starch,



DR. W. M. ORD, M.D.

globules, and muscular fibre passes through the bowels unchanged. Dr. Lyon Playfair says that 1-12th of the nitrogen of the food, in the case of an adult man with good digestion, passes away with the excreta. In a dry state the fœces of man contain about 6.5 per cent. of nitrogen, and in the fresh state 1.7. In Ranke's experiments, it was ascertained that the nitrogen in the fœces was to that in the urine as 1 to 12.5. Bidder and Schmidt ascertained by experiment that meat and coagulated albumen contained in a muslin bag undergo, on being placed in the empty small intestine in which the bile and pancreatic juice are prevented by a ligature from descending, in from four to six hours' time, a considerable amount of digestion. Nitrogenous matter introduced into the upper part of the small intestine undergoes digestion in a very short time, and hence the *enteric juice* performs a part supplementary to that of the stomach. Pavy says: "Besides its other functions, it serves to complete the digestion of whatever nitrogenous alimentary matter may have escaped the digestive action of the stomach; and it may be remarked that the same result—namely, the production of albuminose or peptone—occurs as when the solution has been effected in the stomach." The insoluble starches of food are converted by the saliva, the pancreatic and intestinal juices, into soluble and diffusible sugars; the various proteids are rendered capable of absorption into the blood by the gastric and pancreatic juices, and perhaps, also the *succus entericus*, being changed into peptones. The fats are prepared for absorption by the bile and pancreatic juice, by being in part reduced to a sufficiently minute state of subdivision (emulsion) to permit of their passage through the tissue interstices, and partly by being chemically altered into soaps.—(Quain.)



MR. HENRY POWER, M.B.

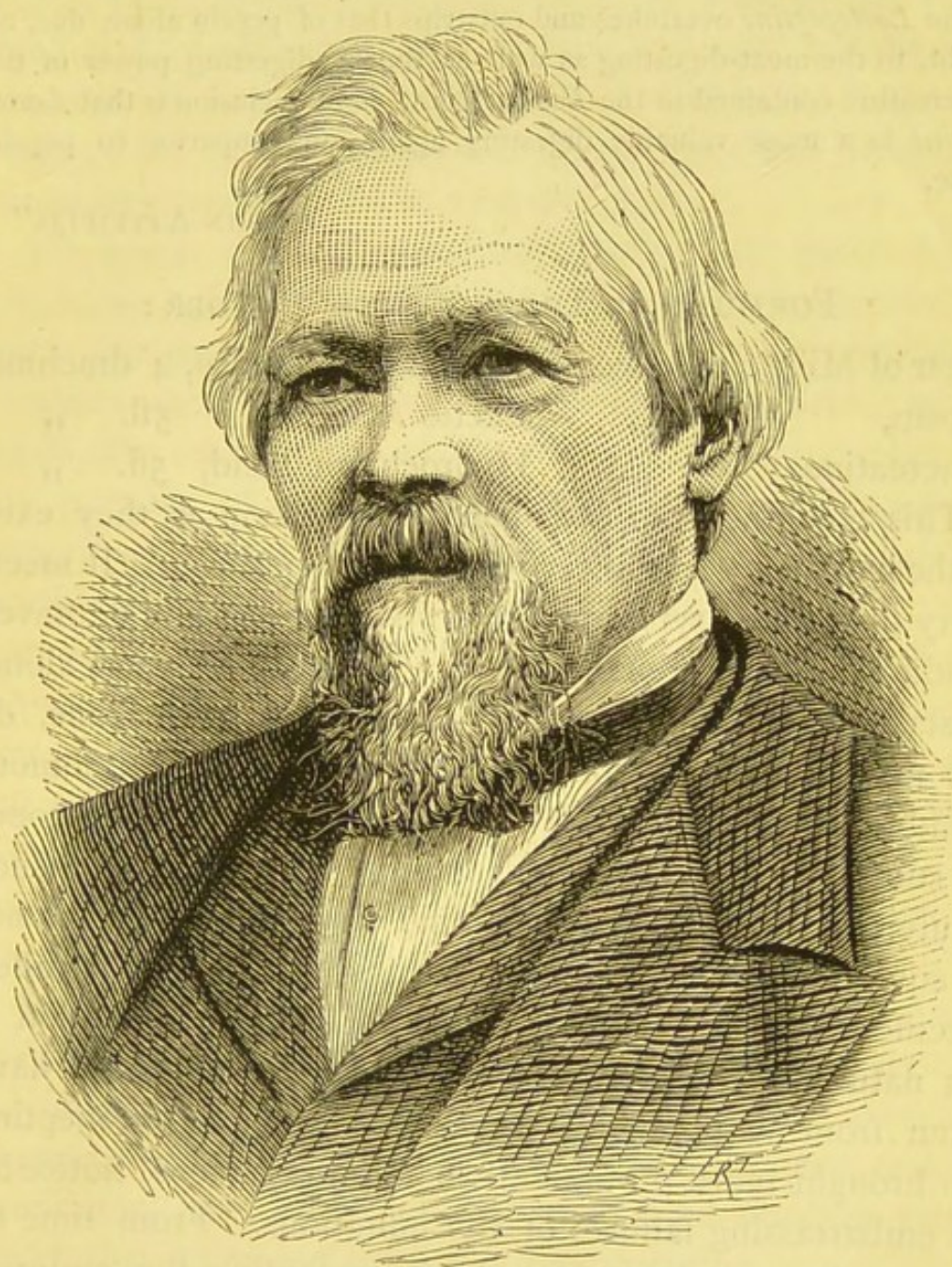
Vice-President of the Royal College of Surgeons.

6. GENERAL REMARKS.

From the foregoing it becomes evident that disordered digestion may depend upon, 1. Insufficient mastication. 2. Altered blood supply. 3. Nervous irritation. 4. Alteration of the saliva. 5. Deficient action in the gastric juice. 6. Pancreatic indigestion. 7. Intestinal indigestion. 8. Torpidity of the liver. Many years of study in this matter of digestion led the New York Pharmacal Association to institute a series of experiments in physiological therapeutics, which resulted in their giving to the profession a preparation of such scientific composition, that its sale has been unprecedented. Of Lactopeptine, Prof. Attfield says :

LONDON, May 3, 1882.

“*Lactopeptine* having been prescribed for some of my friends during the past five years—apparently with very satisfactory results—its formula, which is stated on the bottles, and its general characters, have become well known to me. But recently, the manufacturer of this article has asked me to witness its preparation on a large scale, to take samples of its ingredients from large bulks and examine them and also mix them myself, and to prepare *Lactopeptine* from ingredients made under my own direction, doing all this with the object of certifying that *Lactopeptine* is what its maker professes it to be, and that its ingredients are in quality the best that can be obtained. This I have done, and I now report that the almost inodorous and tasteless pulverulent substance termed *Lactopeptine* is a mixture of three chief agents which enable ourselves and all animals to digest food. That is to say, *Lactopeptine* is a skilfully prepared combination of meat-converting, fat-converting, and starch-converting materials, acidified with those small proportions of acids that are always present in the healthy stomach ; all being disseminated in an appropriate vehicle, namely, powdered sugar of milk. The acids used at the factory—lactic and hydrochloric—are the best to be met with, and are perfectly combined to form a permanent preparation ; the milk-sugar is absolutely pure ; the powder known as ‘diastase,’ or starch-digesting (bread-, potato-, and pastry-digesting) material, as well as the ‘pancreatine,’ or fat-digesting ingredient, are as good as any I can prepare ; while the pepsin is much superior to that ordinarily used in medicine. Indeed, as regards this chief ingredient, pepsin, I have only met with one European or American specimen equal to that made and used by the manufacturer of *Lactopeptine*. A perfectly parallel series of



MR. JOHN MARSHALL, F.R.S., LL.D.

experiments showed that any given weight of acidified pepsin, alone, at first acts somewhat more rapidly than *Lactopeptine* containing the same weight of the same pepsin. Sooner or later, however, the action of the *Lactopeptine* overtakes and outstrips that of pepsin alone, due, no doubt, to the meat-digesting as well as the fat-digesting power of the pancreatine contained in the *Lactopeptine*. My conclusion is that *Lactopeptine* is a most valuable digesting agent, and superior to pepsin alone.

“JOHN ATTFIELD.”

FORMULA OF LACTOPEPTINE POWDER :

Sugar of Milk,	40 ounces.	Ptyalin or Diastase,	4 drachms.
Pepsin,	8 „	Lactic Acid,	5fl. „
Pancreatine,	6 „	Hydrochloric Acid,	5fl. „

This combines the five agents of digestion as they exist in the human system in very accurate proportion. It meets every disordered symptom upon which a generally depraved condition of the alimentary tract depends. Pepsin alone, diastase alone, pancreatine alone, mineral acids alone, do not meet the indications. There must be a harmonious blending of all the digestive agencies if the physician hopes for success. In the reflex dyspepsias, either from pregnancy or uterine disorders, *Lactopeptine* in combination has not its equal. Its power is unique among the host of so-called specifics. As a scientifically compounded preparation it has naturally had many imitations, none of which have taken from its popularity, since the value of *Lactopeptine* was brought more prominently before professional notice by the embarrassing failures of the imitations. From time to time we have sent out pamphlets containing the endorsements of the best men in the profession in both hemispheres. We have taken this new departure to show from a study of the physiology of digestion how perfectly *Lactopeptine* satisfies the demand in this division of physiological therapeutics. It supplements the action of the ptyalin, it reinforces the gastric juice, it lends additional power to the

pancreatic juice, and assists the enteric secretion. There is no other preparation known which claims for itself this logical combination. Its value must be apparent to every intelligent practitioner, and the fact that over seventy-five per cent. of physicians prescribe it bespeaks for it unusual power. We shall, from time to time, issue other pamphlets containing new theories and experiments.

We know that frequent substitution is made when physicians prescribe Lactopeptine, and we desire to caution them very particularly upon this point. Some unprincipled chemists substitute cheap compounds, purporting to be made after our formula, which are sold in the market for the purpose of being substituted when Lactopeptine is prescribed. Most of these imitations are comparatively worthless. Some of them, instead of containing what they purport to, are composed of simply an inferior quality of pepsin. Our analyses and tests show that this pepsin is composed of nine parts of peptone (digested stomach) and but one part of pepsin. Other chemists put up for Lactopeptine, pepsin alone, and others still mix pepsin and pancreatine together, and dispense their prescriptions for Lactopeptine with this combination.

In some instances where physicians have complained that they did not get as good results as formerly in prescribing Lactopeptine, we have traced their prescriptions direct to chemists' shops where the preparation was obtained, and the proprietors have admitted that they used another article which they supposed to be like Lactopeptine.

We are happy to state, however, that chemists as a class are an honourable body of men, and are not disposed to sanction any such petty dishonest practices when they are made acquainted with the true facts in the case.

A large portion of the pepsin sold in the market contains nine parts of peptone to one part of pepsin. When the

animal is killed, the pepsin immediately commences to dissolve the tissues of the stomach, and this digestion continues as long as the animal heat remains above 60° F., and in the summer season until a large portion of the stomach is digested. In the ordinary mode of separating the pepsin from the stomach, the peptone or digested stomach is separated with it, and thus it is that most of the pepsin in the market is nine parts of peptone to one of pure pepsin, and this so-called pure pepsin is sold for 20s. per lb., while absolutely pure pepsin cannot be produced for less than 10s. per oz.

The component parts of Lactopeptine are pure, and uniform results will always be obtained, and its effects will always be positive, when prescribed in appropriate cases.

SUGGESTIVE NOTES.

Lactopeptine is always *uniform*, and its effects are *specific*, and no one has ever been able to imitate its digestive value. If you do not obtain positive results when you prescribe Lactopeptine, you can be sure that some substitution has been made, and in such cases it may be necessary for the physician to prescribe Lactopeptine in the original ounce package to insure certainty of obtaining the genuine article. We can confidently make this assertion, knowing the scrupulous uniformity in digestive value of every ounce of Lactopeptine.

Lactopeptine has always been kept strictly in the hands of the Medical Profession. It is prescribed by the most intelligent and educated physicians in all parts of the world, and there are but few physicians who have ever used Lactopeptine that will not agree with the late Prof. L. P. Yandell, when he says : "Lactopeptine is one of the certainties in medicine, and in this respect ranks with Quinine."

In the various forms of Dyspepsia, in Vomiting in Pregnancy, and in Malnutrition of children, there is no known remedy so positive in results.

CAUTION.

We regret that we are compelled to caution the profession in prescribing Lactopeptine, but very careful investigation has proven to us clearly the necessity for it.

There is no more honourable class of men than Chemists, but there are, nevertheless, quite a large number that are substituting their own compounds when Lactopeptine is prescribed, and others are filling prescriptions for Lactopeptine with compounds sold in the market claimed to be identically like Lactopeptine; but a careful analysis of each and every one of these shows that in most cases they are simply an inferior quality of pepsin. We have learned of several instances where chemists have gone so far as to boldly ask the patient having a prescription for Lactopeptine to take some worthless compound, claiming it to be similar and *cheaper*. We consider such chemists more honourable, however, than a class who secretly fill their prescriptions for Lactopeptine with inferior mixtures of their own, or cheaper and worthless imitations manufactured by other firms styling themselves Manufacturing Pharmacists.

PROFESSIONAL OPINIONS OF LACTOPEPTINE.

There has probably been more written by the medical profession in commendation of Lactopeptine than any pharmaceutical production of this century. The matter from medical and pharmaceutical publications, together with communications direct from physicians, would fill a book of four hundred pages of this size.

We have selected a few, showing the general character of all, and present them in the following pages.

The undersigned, having tested the preparation of Pepsin, Pancreatine, Diastase, Lactic Acid, and Hydrochloric Acid, made according to published formula, and called LACTOPEPTINE, find that in those diseases of the stomach where the above remedies are indicated, it has proven itself a desirable, useful, and well-adapted addition to the usual pharmaceutical preparations, and therefore recommend it to the profession.

ALFRED L. LOOMIS, M.D.,

Professor of Pathology and Practice of Medicine, University
of the City of New York.

LEWIS A. SAYRE, M.D.,

Professor of Orthopædic Surgery and Clinical Surgery,
Bellevue Hospital Medical College.

SAMUEL R. PERCY, M.D.,

Prof. Materia Medica, New York Med. College.

F. LE ROY SATTERLEE, M.D., Ph.D.,

Prof. of Chem., Mat. Med., and Therap. in the N. Y.
College of Dent.; Prof. of Chem. and Hygiene in the
Am. Vet. College, &c., &c.

New York, *April 6th*, 1875.

A. VAN. DERVEER, M.D., Prof. of the Prin. and Prac. of Surg., Alb.
Med. College; Surg. Albany and St. Peter's Hospitals.

"I have given LACTOPEPTINE a good, thorough trial, and have been greatly pleased with the excellent results that have followed its administration.

"Albany, N. Y., *June 8th*, 1878."

JOHN H. PACKARD, M.D., Pres't Pa. Ko. Obstet. Society ; Surgeon
Episcopal and Women's Hospitals.

"I have found great satisfaction in the use of LACTOPEPTINE, and have ordered it frequently in cases of Dyspepsia, especially where there is want of tone and defective secretion.

"Philadelphia, Pa., *May 30th, 1878.*"

JAS. AITKEN MEIGS, M.D., Prof. of the Institutes of Med. and Med.
Juris., Jeff. Med. School ; Phy. to Penn. Hos.

"I have used LACTOPEPTINE with very good effect in a number of cases of Dyspepsia.

"Philadelphia, Pa., *June 20th, 1878.*"

W. W. DAWSON, M.D., Prof. Prin. and Prac. Surg., Med. Coll. of
Ohio ; Surg. to Good Samaritan Hospital.

"I have used LACTOPEPTINE with great advantage in cases of feeble digestion.

"Cincinnati, O., *June 21st, 1878.*"

ALBERT F. A. KING, M.D., Prof. of Obstetrics, University of Vermont.

"I have used LACTOPEPTINE both in hospital and private practice, and have found it to answer fully the purposes for which it is recommended. As an immediate aid to the digestive function, I know of no remedy which acts more directly.

"Washington, D.C., *June 19th, 1873.*"

D. W. YANDELL, M.D., Prof. of the Science and Art of Surg., and
Clinical Surg., University of Louisville.

"I have made much use of LACTOPEPTINE, and take great pleasure in stating that it has rarely disappointed me. I shall, of course, continue to prescribe it.

"Louisville. Ky., *March 7th, 1878.*"

ROBERT BATTEY, M.D., Emeritus Prof. of Obstetrics, Atlanta Med.
College, and Ex-Pres't Med. Ass'n of Ga.

"I have used LACTOPEPTINE in Dyspepsia with satisfaction. I think well of the preparation.

"Rome, Ga., *June 7th, 1878.*"

From "The Physician and Pharmacist."

"We have no hesitation in affirming that LACTOPEPTINE has proved itself to be the most important addition ever made to our pharmacopœia."

*From "Medical and Surgical Reporter," Phila.,
February 2nd, 1878. (Vol. xxxvi. p. 245).*

"We have employed it in cases of obstinate Dyspepsia, and have been gratified, even surprised, at the very excellent results obtained in the great majority of cases."

From "Cincinnati Lancet and Observer," January, 1878.

"In the treatment of Diarrhoea, produced by imperfect digestion, we have had most satisfactory results from the use of LACTOPEPTINE; also in cases of Impaired Digestion. This is one of the most valuable pharmaceutical preparations that has been placed in the hands of the profession. We take pleasure in attesting to its value."

From "Cincinnati Medical News," February, 1878.

"It has been found to be an excellent remedy in Gastritis, Chronic Dyspepsia, in Diarrhoea and Dysentery, Vomiting in Pregnancy, &c. It has received much praise in wasting diseases attended with improper digestion of food."

From "Physicians' Monitor," New York.

"We have in this preparation, we believe, the only perfect dyspeptic remedy that can be produced, for it supplies those deficient natural elements that are required to perfectly digest food, and the digestive organs are soon restored to their normal condition."

From "St. Louis Medical and Surgical Journal."

"We have for several months been prescribing LACTOPEPTINE as an important aid to digestion. The theory of its action being prescribed above with evidence of it we possess."

From "Missouri Medical Journal."

"It is, *par excellence*, the remedy for weak and imperfect digestion."

From "The Canada Medical and Surgical Journal," Montreal.

"LACTOPEPTINE.—The attention of practitioners generally is called to this valuable medicine. It is an efficient remedy in digestive troubles, and also acts well in *Cholera Infantum*, either alone or in combination with other remedies. During the hot summer months Infantile Diarrhoea is particularly prevalent and fatal, but after a somewhat extended use of LACTOPEPTINE we can recommend our *confrères* to give it a trial, and can assure them they will not be disappointed."

From "The Canadian Journal of Med. Science, Toronto, Canada.

"This valuable preparation, LACTOPEPTINE, has become so well known that we need scarcely call attention to its usefulness in all varieties of dyspepsia. It has also gained a high reputation in *Cholera Infantum*, so prevalent in our hot months, and in that other troublesome complaint that is always in season, *Vomiting in Pregnancy*."

From "The Canada Lancet," Toronto, Canada.

"The superiority of LACTOPEPTINE over pepsin as a digestive agent is everywhere acknowledged, and it is rapidly superseding it. From extended experience in the use of LACTOPEPTINE we unhesitatingly recommend it as a most valuable remedial agent in certain forms of Dyspepsia, *Vomiting in Pregnancy*, and especially in *Cholera Infantum*."

From "The Canada Medical Record," Montreal, Canada.

"LACTOPEPTINE is a remedy which is constantly gaining in favour with the profession. Our own experience with it has been most satisfactory. In the Summer Complaint of children we have used it with excellent results. Indeed, we have found it very valuable as a preventive of this affection. We frequently order it with this object in view, and we believe that our expectations have been realized."

Various Stages of Dyspepsia.

Toronto, Canada, 268, Queen Street West.

"I have used LACTOPEPTINE, and have found it serviceable in various stages of dyspepsia.

W. W. OGDEN, M.D.,

Physician to the Toronto Dispensary, Lecturer on Medical Jurisprudence and Toxicology."

Recommend it to the Profession.

Toronto, Canada, 547, Church Street.

"I have great pleasure in certifying to the good results which I have obtained from the use of LACTOPEPTINE. I have used it in the 'Infants Home,' and 'House of Providence,' and hereby recommend it to the profession.

JAS. B. BALDWIN, M.C.P.S., Ont."

Can testify to its Great Value.

Toronto, Canada, 46, St. Joseph Street.

"Having employed LACTOPEPTINE for some time in the treatment of deranged digestion, I can testify to its great value in such cases.

JAMES H. RICHARDSON, M.D., M.R.C.S., Eng.,

*Consulting Physician, Toronto General Hospital,
Professor at Trinity School of Medicine of Toronto."*

Contains the Natural Gastric Digestive Principles

Toronto, Canada.

"As to the value of LACTOPEPTINE, I can testify that the components of it come as nearly as possible to the natural gastric digestive principles. In the cases in which I have employed it, I have had reason to feel satisfied with the results.

JOHN E. KENNEDY, A.B., M.D.,

*Professor Materia Medica and Therapeutics, Trinity Medical School."**Prescribing it with great Satisfaction.*

Brockville, Ont., Canada.

"I have used LACTOPEPTINE, and find it superior in quality and preparation to anything of the kind. I am prescribing it constantly, and with great satisfaction.

JOHN EASTON, M.D."

An Important Adjuvant to other Remedies.

Toronto, Canada.

"I have been in the habit of prescribing LACTOPEPTINE for many months, and experience teaches me to appreciate its value more and more highly, not alone for its intrinsic worth in various forms of impaired digestion, but as an important adjuvant to other remedies, such as cerium oxalate in the *Vomiting of Pregnancy*, Irritable Dyspepsia, Gastrodynia, Infantile Diarrhœa, and every irritable atonic condition of the alimentary canal.

H. E. BURHAM, M.D.,

*L.R.C.P. Edin.; L.F.P.S. Glasgow."**Satisfactory Results in cases of Dyspepsia.*

Peterboro', Ont., Can.

"I have used LACTOPEPTINE extensively during the last two years, with very satisfactory results, in cases of Dyspepsia, but more particularly in *Cholera Infantum*.

H. C. BURRITT, M.D.,

*Member of Medical Council of Ontario."**The Happiest Results.*

Kingston, Ont., Can.

"I have used LACTOPEPTINE in many cases of Dyspepsia, and particularly in the Summer Diarrhœa of Infants, with the happiest results.

ALFRED S. OLIVER, M.D.,

*Professor of the Institutes of Medicine,
Royal College of Physicians and Surgeons,
Kingston, Ont., Canada."*

Constipation and Flatulence.

St. Catherine's, Canada.

"After an experience of one year and six months of LACTOPEPTINE I am able to speak very favourably of it as a remedial agent, especially so in Diarrhoea of Children, Atonic Dyspepsia, accompanied by constipation and flatulence. I have prescribed it, with good results, in cases where the gastric juice seemed not to be properly secreted, and in Chronic Diarrhoea.

W. S. DOWNEY, A.B., M.D."

I consider it almost Indispensable.

7, Wilton Ave., Toronto, Can.

"I have used LACTOPEPTINE in my practice for some time, and find it an excellent remedy in Dyspepsia, and in *Cholera Infantum* I consider it almost indispensable.

L. MCFARLANE, M.D.,

*Professor University of Toronto, and University of Victoria College."**More Satisfaction than any other Preparation.*

Toronto, Canada.

"I have used LACTOPEPTINE very frequently during the last four years, and find it gives more satisfaction than any other of the different preparations recommended for Summer Complaints in Children.

J. E. WHITE, M.D."

Diseases accompanied by Indigestion.

Toronto, Canada, 482, Yonge Street.

"I have prescribed LACTOPEPTINE on several occasions, in diseases accompanied with indigestion, and found it to answer admirably.

JOHN FRASER, M.D.,

*L.R.C.P. London: L.R.C.S. Edinburgh;**Demonstrator of Anatomy, Trinity Medical School Toronto."**Vomiting in Pregnancy.*

Brockville, Ont., Canada.

"I have used LACTOPEPTINE in seven cases of obstinate Vomiting in Pregnancy, with perfect success in each case.

V. H. MOORE, M.D., M.C.P.S., Ontario."

London Medical Journals.

From "Retrospect of Practical Medicine and Surgery," July, 1877.

"A glance at the formula of LACTOPEPTINE would convince even the most sceptical of the valuable results that must ensue through its administration."

From "The British Medical Journal."

"We have submitted the LACTOPEPTINE to trial, and can confidently recommend it."

From "The London Medical Times and Gazette."

"Its employment has been decidedly satisfactory."

From "The London Medical Press and Circular."

"Such a formula is a desideratum, considering that the preparations of pepsin now in use have disappointed the expectation of many practitioners."

REPORT ON THE VALUE OF LACTOPEPTINE.

By AUBREY HUSBAND, M.B., C.M., B.Sc., F.R.C.S.Ed., Medical
Officer to the Royal Dispensary, Edinburgh.

THE GASTRIC DISORDERS OF CHILDREN.

"Of all the disorders to which young children are liable, those affecting the digestive organs are at once the most common and the most fatal. It has been calculated from the Registrar-General's report that one quarter of the deaths among children under five years is due to diseases of the digestive organs, and this fatality is considerably greater under one year. The vague terms

"Debility,"

"Atrophy and Debility,"

"Inanition,"

"Convulsions,"

which help to swell the reports of the infant mortality of this country, all point to the inability to digest the food provided, and to draw from it the nutriment required for the development of the growing infant.

This mortality is probably not due to any inherent complexity in the digestive organs of the child, but to the nature of the materials supplied as food, and it may confidently be asserted that the young of no other animal is subject to such a variety of dietetic experiments as that of man. Among the poorer classes of our towns these efforts to solve the problem of infant dietetics are unavoidable, and in most cases it is **worse than absurd to lecture the people on the necessity for suckling their infants, or the keeping of their feeding bottles sweet and clean.** It is not as a rule the feeding bottles that are at fault, but the materials which are placed in them, and which the force of circumstances compels them to use. Passing from these general considerations, I would specialize one or two diseases, which, from their constant recurrence at the Royal Dispensary, Edinburgh, cannot but fail to attract attention, where, by the cordial assistance of Mr. E. Arthur Marsack, I was enabled to **watch the effect of Lactopeptine** in their treatment. The cases were those chiefly of **rickets, and of so-called infant atrophy, with dyspepsia and diarrhoea.** The prevalence of rickets in Edinburgh and in Glasgow is most marked, and is to be attributed to the too early use of oatmeal porridge and other farinaceous foods. This opinion is of course most heterodox in Scotland, where attention is at once directed to the strength and vigour of the Highlanders; but it must be remembered that the two cases have nothing in common except in the use of porridge, for in these highland districts a large allowance of milk is taken with the oatmeal, whereas in large towns the supply of milk is scanty and not of the best, even if it can be procured. Then, again, the surroundings of the two classes are different, for whilst one has all the benefits of country life and fresh air, the other is exposed to all the injurious effects of bad air and deficiency of sunlight. **The formation of an excess of lactic acid in the stomach of children fed largely on a farinaceous diet,** and the irritation caused by it in the osteo-plastic or bone-forming tissue of the long bones, as suggested by Wagner, together with the constant drain from the system of the salts of lime by the diarrhoea which, as a rule, accompanies the derangements of children, is probably to be found the cause of rickets so prevalent in Edinburgh. It must further be borne in mind that the dread of large families, more keenly felt in large towns than in the country, causes women to prolong the period of lactation till pregnancy causes them to desist. Owing to the debilitating effects of protracted nursing, the strength of the woman is greatly impaired, and her future offspring suffers in proportion. It is not, therefore, surprising to find an increasing **want of vitality and vigour** in each additional number of the series, and as the means of support do not increase in a propor-

tionate manner, a marked tendency to infantile disease of an adynamic character, followed with a high mortality, is the result.

The following cases are of this type, and are recorded almost *verbatim* from the report of the gentleman above mentioned :—

1. **C. D.**, *æt.* three. The little patient was brought by her mother to the dispensary **with all the signs and symptoms of rickets**. She had a heavy, stupid look, the chest much contracted laterally, and the bones of both legs and arms much affected. She vomited occasionally, but did not complain of any pain, but never smiled, and, in her mother's words, was "dwining away." She was ordered gr. v. of **Lactopeptine** after each meal, and under this treatment the child **gradually and then rapidly improved**, the mother frequently expressing her gratitude for the change in the health of her little one.

2. **M. W.**, *æt.* two. This child, when first visited, was found **suffering with symptoms of gastric derangement, colic, vomiting, and loss of flesh**. On inquiry, the fact was elicited that the diet consisted of anything that could be obtained, from a piece of cheese to a bit of dried cod or potato. As there seemed no chance of providing more suitable food for the child, it was hoped that by means of **Lactopeptine** the diet might be made more digestible and nourishing. Acting on the suggestion, she was ordered gr. v. of the drug three times daily after food. The result was more favourable than was at first expected, and the treatment was combined as far as possible with regularity of habits, meals, &c., and **the little patient when last seen was quite well**.

3. **J. M.**, aged seven years and a-half. This little lad appeared to be well cared for, but **evidently of a strumous habit**. He complained of no special symptoms, except that he **always felt pain after taking food, and from the report of his mother was losing flesh rapidly**. He could not take cod-liver oil. There were no chest symptoms. He was ordered gr. v. of **Lactopeptine** as in the former cases. The treatment was continued for about a month, but before that time he was able to take cod-liver oil without any return of the vomiting after each dose, which had before prevented its administration. He ceased to attend at the dispensary, and when visited was found to be quite well and able to go to school. **The above cases, and several others which might be appended, serve to demonstrate the value of Lactopeptine in the treatment of some of the gastric disorders of young children, and I may also state that I have found it of value in children far younger than those mentioned above. In two cases, the children of a mother in the last stages of phthisis, the**

mother declared that the lives of her babes had been saved by its use. In these cases, the doses are, of course, much smaller than those given above."—*From the "Medical Press and Circular," London, May 30th, 1883.*

Dr. J. C. THOROWGOOD, 61, Welbeck Street, London, W.

"My experience with the LACTOPEPTINE powder as an aid to feeble digestive powers has been favourable.

"February 10th, 1881."

Marked Good Effects.

Dr. G. DE G. GRIFFITH, 9, Lupus Street, Belgravia.

"I have found decidedly marked good effects from taking it.

"February 26th, 1881."

First Importance in Typhoid Fever.

H. W. VERDON, F.R.C.S., 410, Brixton Road, S.W.

"I think your preparation, LACTOPEPTINE, a very useful one, more especially in the continued fevers. During the latter part of last year I used it in four cases of typhoid, and in every case there was a marked improvement in the intestinal symptoms immediately following its use. The tongue became moist and cleaner, and the flatus quite disappeared. I think this result was due to the LACTOPEPTINE supplying the place of the intestinal and gastric juices, which one knows are produced in very scanty quantities in this disease. I think this is a remedy of the first importance in typhoid fever.

"I am, Sir, yours truly,

"(Signed) H. W. VERDON, F.R.C.S.

"February 18th, 1881."

N. T. HAYDON, M.R.C.S., L.S.A., The Laurels, Newton Abbott.

"I have used it with benefit.

"January 18th, 1881."

A good Opinion.

SLADE J. BAKER, M.R.C.S., Abingdon.

"Still have a good opinion of LACTOPEPTINE, which I have used for some years."

Gastric Diseases of Children.

H. AUBREY HUSBAND, F.R.C.S., L.S.A., &c., Edinburgh.

"I have used your LACTOPEPTINE and have found it a most valuable drug, especially in the gastric diseases of children.]

"February 23rd, 1881."

Most Efficient.

Dr. T. H. HUNT, 134, Embden Street, Manchester.

"I have tried your Preparation in many ways, and consider it one of the most efficient remedies.

"April 7th, 1881."

A Curative Agent, not merely Palliative.

Manor Chambers, Bradford.

"I have prescribed LACTOPEPTINE for many years, and carefully noted its admirable qualities. In cases of atonic dyspepsia, especially in connection with anæmia, I have found most excellent results to follow the use of this *digestion compelling medicine*, if I may make use of such a term as expressive of its action. As it restores the digestive function, and improves the condition of the blood, it is a *curative agent* and *not merely palliative* and temporary.

"(Signed) REGINALD G. ALEXANDER, M.A., Can., M.B.,
Hon. Senr. Phys. to the Bradford Infirmary;
Consulting Phys. to the Lords of the Admiralty.

"Feb. 2nd, 1881."

Invaluable in Dyspepsia.

Dr. BREASEY, Scarboro'.

"I look upon your preparation of LACTOPEPTINE as invaluable in dyspepsia. . . . I have used much of it.

"March 23rd, 1881."

Dyspepsia and Phthisis.

RICHARD FEGAN, M.D., Old Charlton.

"I have used LACTOPEPTINE in cases of Dyspepsia, accompanied with phthisis (where it was necessary to administer cod-liver oil), with much benefit.

"January 27th, 1881."

Dyspepsia.

Dr. GARDINER, Milton Ho., Warwick Place, Worthing.

"Will you kindly send me a package of your LACTOPEPTINE? I require it for myself, as I have been much troubled by indigestion, and have come down from London for a fortnight for a change of air. I found it of much use in several dyspeptic cases, but never tried it myself till now.

"April 1st, 1881."

J. R. WHITE, M.B., Blackmore.

"I have used your LACTOPEPTINE, and am well satisfied with its action.

"March 2nd, 1881."

BARNSBY ROBERTS, M.R.C.S., Eastbourne.

"I have much confidence in LACTOPEPTINE.

"Feb. 26th, 1881."

Very Efficacious.

J. K. ROBERTSON, M.D., 20 Ardgowan Square, Greenock.

"I have used LACTOPEPTINE for several years, and find it very efficacious in my experience.

"March 24th, 1881."

Invaluable.

W. STEWART, F.R.C.P.E.

"I consider your LACTOPEPTINE invaluable in cases of indigestion arising from gastric debility.

"Jan. 24th, 1881."

Prescribed with much benefit.

Dr. A. STOKES, Sidmouth.

"I often took LACTOPEPTINE, and prescribed it in numerous cases with much benefit.

"Jan. 28th, 1881."

G. STRATTON, Clyde House, Spennymoor, Co. Durham.

"A small quantity of your LACTOPEPTINE has been given to me, which I have used, and derived much benefit from, &c."

J. E. BULLOCK, M.D., 87, Ladbroke Grove, W.

"I have tried LACTOPEPTINE, and have found it to be very complete as a digester of mixed food.

"January 1st, 1884."

HUGH TAYLOR, Coltishall, Norfolk.

"I must again say that I have found your preparation of great service.

"July 8th, 1883."

T. S. HUTCHINSON, L.R.C.P., &c., Newington House, Newington, Sittingbourne.

"The LACTOPEPTINE you prepared has been a favourite prescription with me for some time, and prescribed by me in preference to Pepsin.

"September 16th, 1882."

R. M. TEIL, Newton Abbott, Devonshire.

"I have taken your LACTOPEPTINE for some time in tea, and have received great benefit from it.

"March 27th, 1882."

R. E. HAYES, L.R.C.P., Lisburn, Co. Antrim, Ireland.

"I have been in the habit of prescribing your LACTOPEPTINE for some years, and I can only say that the more I used it the more satisfied I am that it is one of the most beneficial medicines at present extant for the treatment of Dyspepsia.

"Its remedial effects in Chronic Indigestion are most marked. Some twelve months since I ordered it in a case of no less than fourteen years standing ; my patient, after taking some 24-grain Powders, expressed herself as feeling quite another being, than she had felt for the above mentioned period, and expressed a strong desire for me to order her a bottle or two of the powder.

"August 27th, 1884."

GEO. H. ELLIOTT, North Street, Chichester.

"LACTOPEPTINE most efficacious.

"October 12th, 1884."

H. A. ALLBUTT, M.R.C.P., &c., 24, Park Square, Leeds.

"I have had some wonderful results from LACTOPEPTINE.

"October 22nd, 1884."

R. N. HORMAGDJI, M.R.C.S., &c., Rosebank, Ashdown Road,
Worthing.

"I consider the LACTOPEPTINE simply invaluable in cases of deficient digestive action. I have tried it in a case of Twenty Years standing, and it gave instant relief, to the infinite gratitude of the patient. It is without doubt a most valuable and carefully prepared remedy.

"June 19th, 1884."

Much pleased with Results.

A. C. CLARKE, Esq., M.D., 6, Adelphi Street, Salford.

"I have used your LACTOPEPTINE for some years, and I have been much pleased with the results I have obtained by its use.

"January 29th, 1881."

Taken with much Advantage.

THEODORE DAVIS, M.R.C.S., Devon House, Caterham Valley.

"I have retired from practice, but the value of the preparation is not unknown to me, for I have taken it myself with much advantage, and have recommended it to friends who have derived benefit from its use. Will you be kind enough to send me two bottles, &c.

"March 1st, 1881."

No Doubt of its Efficacy.

R. DEBENHAM, M.R.C.S., Heath House, Commercial Road, E.

"I have received your sample, and have no doubt of its efficacy, having used it extensively, &c.

"February 18th, 1881."

Sick headache.

W. S. ECCLES, Lyndhurst, Church Road, Upper Norwood,

Has tried it in a case of sick headache with apparent good effect, but would like a large supply to make an extended trial.

"March 23rd, 1881."

Excellent Results.

J. THOMPSON, M.D., Leamington.

"Mine is a non-dispensing practice, but I largely prescribe LACTOPEPTINE, and have had excellent results from its use.

"February 26th, 1881."

Satisfied as to its Results.

ED. RAYNER, F.R.C.S., &c., Tiviot Dale, Stockport.

"When LACTOPEPTINE was first introduced I prescribed it frequently, and was satisfied as to its results.

"February 27th, 1881."

J. J. RITCHIE, M.R.C.S., L.S.A., &c., &c., Leek, Staffordshire,

"I have used LACTOPEPTINE with success.

"February 26th, 1881."

Dr. I. VANCE, 8, Rathbone Street, Canning Town.

"Your drug I order extensively, &c.

"March, 3rd, 1881."

J. W. WOLFENDEN, L.R.C.P., Tutbury.

"I use LACTOPEPTINE very largely, with great benefit to my patients."

Gastric Disorder.

Dr. J. S. STUART, Bucklyvie, Stirling, N.B.

"I have ordered your LACTOPEPTINE very successfully in a case of gastric disorder, &c.

"January 27th, 1881."

Excellent.

Dr. R. MORTIMER, Bishop's Lydeard, Taunton.

"I have used three bottles of your remedy, and found it excellent, &c.

"January 24th, 1881."

The best Remedy Known.

H. A. NEWCOMB, 33, Campion Terrace, Leamington.

"Having both taken and prescribed LACTOPEPTINE during several years, and found it the best of all aids to digestion known to me, &c.

"January 27th, 1881."

Impaired Digestion and Defective Assimilation.

Dr. F. RENNIE, Cullercoats, Northumberland.

"LACTOPEPTINE I have used extensively, and it gives me the best results in all cases of impaired digestion and defective assimilation. In atonic states of the digestive system after acute diseases it is simply invaluable.

"April 4th, 1881."

Exhaustive Diseases of Children.

Dr. TRESTRAIL, M.C.C.P., &c., Aldershot.

"I have long used your LACTOPEPTINE with very marked results, especially in cases of exhaustive diseases of children, &c.

"February 26th, 1881."

Dr. MORLEY ROOKE, Cheltenham.

"I consider LACTOPEPTINE a very valuable agent. I have used it for the last year or two pretty extensively.

"February 25th, 1881."

Atonic Dyspepsia in Aged Persons.

C. VAUDIN, L.R.C.P., M.R.C.S., &c., York House, Jersey.

"I have tried the LACTOPEPTINE, and, I am happy to say, with satisfactory results. It was given in the prescribed doses to two patients, both over 80 years of age, suffering from atonic dyspepsia; it quite relieved pain and the other discomforts thereon attendant, and restored appetite, which had long failed.

"April 8th, 1881."

FREDRK. GRANT, M.R.C.S., Market Harboro'.

"I find the LACTOPEPTINE a most useful remedy, especially in cases of Atonic Dyspepsia, where the usual tonic drugs not only fail, but disagree.

"November 19th, 1876."

G. OVEREND DREWRY, M.D., 57, Queen Anne Street,
Cavendish Square, London, W.

"A perfect digestive.

"October 6th, 1876"

JAS. E. WALES, Brotherton, Yorks.

"Marked benefit in chronic dyspepsia.

"October 9th, 1876."

P. DEDMOND, Esq., Cornfield Terrace, Eastbourne.

"I find it has done me more good than anything I have ever tried for indigestion.

Dr. HARRISON, Killough, County Down.

"Dr. Harrison, being himself a subject of dyspepsia, has used the LACTOPEPTINE in his own case with the greatest benefit, and will not fail to recommend it confidently to his professional brethren.

"October 8th, 1876."

Cured after suffering Months.

W. O'NEILL, M.D., Michelstown, Ireland.

"The second supply for my patient has cured her. She had been suffering for many months from a very painful form of dyspepsia.

"November 2nd, 1876."

Never received such Relief from any other Medicine.

H. H. BOXWELL, M.D., Infirmary House, Wexford.

"An old dyspeptic patient of mine called just as your LACTOPEPTINE reached me, and I gave him four 10-grain doses. This morning he called again and begged me to give him some more, as he never received such relief from any other medicine.

"September 29th, 1876."

Weakness and Irritability of the Digestive Organs.

W. DOUGLAS HENNING, M.R.C.S., 26, Notting Hill Terrace,
London, W.

"I shall recommend it with confidence to my patients in many cases."

"June 4th, 1877."

Has Never Failed.

JOHN NEAFFEY, L.R.C.P., L.R.C.S., &c., Bradford, Yorks.

I have now given it repeated and fair trial in many cases of dyspepsia, and have yet to find it fail once when used in appropriate cases.

"November 16th, 1877."

Valuable in Weak or Slow Digestion.

J. ALLEN, M.R.C.S., Ripley, Derby.

"I still find your LACTOPEPTINE very valuable in cases of weak or slow digestion.

"September 29th, 1876."

NOBLE SEWARD, M.D., Riversdale, Dublin.

"I am using your LACTOPEPTINE in many cases, and the more experience I have of it the more fully am I convinced of its value as a remedial agent in the treatment of stomach diseases.

"November 20th, 1876."

Vomiting in Pregnancy.

Dr. EDWARD PARKE, West Derby, Liverpool.

"I have found it very beneficial in many cases of dyspepsia, and in relieving the *morning sickness of pregnancy* invaluable.

"November 22nd, 1876."

M. P. COALDER, M.D.

"I can only say that I have been practising medicine for twenty-five years, and I have used a variety of medicines in diseases of the digestive organs, and in severe cases of *vomiting in pregnancy* have found none equal to the LACTOPEPTINE.

"May 28th, 1878."

Cholera Infantum.

Dr. PHILIP HUBERT, Arundel, Sussex.

"The action of your LACTOPEPTINE in infantile diarrhœa, vomiting, &c., was superlative.

"October 16th, 1876."

"I find it continues to realize my previous assertion as to its beneficial efficacy in the treatment of dyspepsia and infantile diarrhœa. In the latter it seems quite a specific, and acts very quickly.

"October 25th, 1876."

WILLIAM HOLDER, M.R.C.S., Hull.

"The excellence and uniformity of the composition of your preparation renders it unapproachable in the treatment of dyspepsia and kindred ailments.

"November 20th, 1876."

Constipation and Diarrhœa.

WM. WRIGHT WILSON, M.R.C.S., Belgrave House, Birmingham.

"I have used your LACTOPEPTINE in my practice for some months back with marked benefit, more especially in constipation and diarrhœa, and I am now prescribing it in cases of 'improper feeding amongst infants,' particularly those in which unbaked starch foods have been the staple food.

"November 25th, 1876."

FREDK. H. CLARKE, M.R.C.S., Chillington, Devon.

"In a severe case of irritative diarrhoea, speedy and good results.

"November 22nd, 1876."

JOS. P. OATES, M.R.C.S., Erdington, Birmingham.

"A very valuable addition to the *Materia Medica*.

"November 24th, 1876."

Dr. J. R. MILSOME, Addlestone, Surrey.

"Tried the LACTOPEPTINE on a patient who has long suffered from indigestion, and found it of much use.

"November 9th, 1876."

FREDK. G. LAWRENCE, M.R.C.S., Ixworth, Suffolk.

"I have found it to be a very useful preparation.

"November 17th, 1876."

JOHN P. BURROWS, M.R.C.S., Ivy House, Aigburth Road, near
Liverpool.

"I have prescribed the LACTOPEPTINE with much remedial benefit. I have also recommended my professional friends, both in this town and others, to make a trial of it, assuring them they would be gratified with its results. I have a profound conviction of mind with regard to its remedial power in dyspepsia.

"June 3rd, 1878."

Irritative Diarrhoea.

FREDK. H. CLARKE, M.R.C.S., Chillington, Devon.

"I have used the LACTOPEPTINE in a severe case of irritative diarrhoea, with speedy and good results.

"November 22nd, 1878."

Disorders of the Digestive Organs.

CHAS. LOWDER, M.D., Lansdowne House, Ryde, Isle of Wight.

"I am constantly prescribing your LACTOPEPTINE, and increasingly convinced of its excellent value and superiority to pepsin and all other preparations for dyspepsia.

"November 23rd, 1876."

An Excellent Preparation.

FREDK. W. RICKETTS, M.R.C.S., 120, Mount Pleasant, Liverpool.

"It appears to me a very excellent preparation.

"November 26th, 1876."

ALFRED JACKSON, M.D., Holmbush, Grove Road, Southsea.

"Please send me another pound of LACTOPEPTINE. I find it very useful."

Satisfied with its Effects.

Dr. ARTHUR WOOD, Kirby Moorside, Yorks.

"I have tried your LACTOPEPTINE, and have every reason to be satisfied with its effects.

"September 22nd, 1876."

Proved very Successful

WM. FREW, M.D., Newmilns, Ayr.

"The LACTOPEPTINE has proved very successful.

"October 10th, 1876."

Vomiting after Meals."

HUGH J. KEAN, M.D., L.R.C.S.I., &c., Newry, Ireland.

"The last ounce of LACTOPEPTINE has had a most wonderful effect in the cure of a lady who has been complaining some twelve years from habitual costiveness and vomiting after meals.

"October 23rd, 1876."

DR. RHIND, Penton Villa, Torquay.

"Has been prescribing LACTOPEPTINE, and finds it very useful.

"October 3rd, 1876."

A Remedy of the First Importance.

WM. H. DODD, M.D., Kilorglin, Ireland.

"I now consider the preparation a remedy of the first importance in various forms of indigestion.

"November 22nd, 1876."

OWEN WILLIAMS, M.R.C.S., Rhosygaer, Holyhead.

"I find your LACTOPEPTINE to answer admirably in cases of indigestion, and wish to continue its use.

"September 25th, 1876."

SLADE I. BAKER, M.R.C.S., L.S.A., &c., Abingdon, Berks.

"From the second supply the patient has derived the greatest benefit.

"November 18th, 1876."

37, Leuthorpe Road, Middlesboro'.

"DEAR SIR,—I am quite sure the LACTOPEPTINE will have a very large sale through time ; all people who try it praise it.

"Yours, very respectfully, T. CROSBY GIBSON.

"August 21st, 1877."

Sanitary Office of the Riverstown District, Parsonstown.

"DR. WALLACE begs to introduce Mr. Lalor, Surgeon-Dentist, to Messrs. C. K. & Co., as he is desirous of trying LACTOPEPTINE as a remedy, Dr. Wallace having recommended it to him, having found it so beneficial himself.

"July 26th, 1877."

RICHD. W. WARING, L.R.C.P., Edin., L.M., 1865; L.R.C.S., Edin.,
Cavendish, Sudbury, Suffolk.

"In reference to LACTOPEPTINE I am much pleased with its action.

"December 19th, 1876."

JAMES MORRIS, M.D., 13, Somers Place, Hyde Park Square, W.

"LACTOPEPTINE is one of a class of preparations which *deserves increased professional attention.*

"October 23rd, 1878."

The Best Remedy.

JAMES G. HUNT, M.D.

"In all cases of dyspepsia, vomiting in pregnancy, and cholera infantum, it is the best remedy I have ever used for these complaints.

"February 18th, 1878."

E. V. BLACKLY, M.D.

"I prescribe it in conjunction with other remedies almost daily.

"April 15th, 1878."

R. M. BROWN, M.D.

"GENTN.—In every species of enfeebled digestion I believe it has no equal.

"In one case of incipient 'Pulmonary Tuberculosis' I used LACTOPEPTINE in connection with alcoholic stimulants, quinine, iron, counter-irritation, &c. The patient recovered her usual health, and retained it at last accounts (nearly two years after treatment). This case I am satisfied would have been a rapidly fatal one had it not been for the assistance afforded to digestion by the LACTOPEPTINE.

"April 25th, 1878."

JAMES C. HOWARD, M.D.

"GENTN.—It affords me much pleasure to add my testimony to the value of LACTOPEPTINE. I have prescribed it with the utmost satisfaction in all cases of indigestion, from whatever cause.

"February 16th, 1878."

Palmerston Road, Southsea, Hants.

"GENTN.—I find medical men here extending its use, with particularly good results.—Yours faithfully,

T. H. CAUSE.

"July 18th, 1878."

C. MARCHANT JONES, F.R.C.S., Tavistock, Devon.

"Since my first experiment in LACTOPEPTINE I have prescribed it in suitable cases, and always with good results.

"February 2nd, 1879."

ANSTER FG. WALKER, M.D., Hurricane Lodge, Glenbeigh,
Co. Kerry, Ireland.

"I have found it of more use in cases in which its administration was indicated than any other agent I have tried.

"October 25th, 1878."

Q. C. SMITH, M.D.

"A splendid remedy for the wasting diseases of children, and for consumption in adults in its later stages, especially when they assimilate with difficulty.

"February 24th, 1878."

J. V. DE HANNE, M.D.

"I have found the preparation exceedingly valuable in several cases of dyspepsia, bowel complaints, and infantile marasmus.

"March 20th, 1878."

Non-assimilation and Indigestion.

STEPHEN F. DUPON, M.D.

"I had a case of a little girl who had suffered from Cholera Infantum; she had a ravenous appetite, and was dying from starvation, non-assimilation, and indigestion; I immediately prescribed LACTOPEPTINE, and the cure was miraculous to the fond parents. I have not been disappointed in a single case with children.

"March 26th, 1878."

ALBERT BAKER, M.D., Dawlish.

"I am daily testing your preparation, and believe it to be a most valuable adjunct to the treatment of weak or impaired digestion from whatever cause.

"November 17th, 1876."

Extract from the Report of the Chemical Analysis

MADE BY

Professor H. C. BARTLETT, Ph.D., F.C.S.

Laboratory, 7, South Square, Gray's Inn, London, W.C.,
22nd February, 1876.

"I have found that the preparation of LACTOPEPTINE contains within self all the principles required to promote a healthy digestion."

LACTOPEPTINE is invariably tested, so as always to insure perfect uniformity.

LACTOPEPTINE can be obtained of all chemists, and may also be sent by post to any address.

PRICE OF LACTOPEPTINE POWDER.

							s.	d.
One ounce	...	...	...	...	...	...	4	6
Quarter-pound (4 oz.)	...	...	...	...	...	...	14	0
Half-pound (8 oz.)	...	...	...	...	...	...	27	0

The prices of the 1-oz., 4-oz., and 8-oz. Bottles have been advanced 6d., 2s., and 3s. respectively, to cover the cost of the Government stamp, which the Board of Inland Revenue have ordered to be affixed to each Bottle.

Lactopeptine is chiefly known in the form of LACTOPEPTINE POWDER; and the cases described in these pages are the result of its use *as a powder*. At the suggestion of some members of the Medical Profession, and for their convenience, we also prepare the following ELIXIRS, SYRUPS, WINE, and COMPOUNDS OF LACTOPEPTINE. The Formulas are given of each preparation. Physicians and Chemists may rely upon their being prepared with the skill and accuracy which our exceptional experience and facilities insure.

							s.	d.
Lactopeptine Elixir	...	...	...	...	1 lb. bottle,	6	6	
Lactopeptine Elixir with Bismuth	...	...	...	...	1 lb. ,,	6	6	
Lactopeptine Elixir with Strychnia and Bismuth	...	...	...	...	1 lb. ,,	10	6	
Lactopeptine Elixir with Calisaya	...	...	...	...	1 lb. ,,	6	6	
Lactopeptine Elixir with Calisaya and Iron	...	...	...	...	1 lb. ,,	6	6	
Lactopeptine Elixir with Calisaya, Iron, and Bismuth	...	...	...	...	1 lb. ,,	6	6	
Lactopeptine Elixir with Cinchona, Iron, and Strychnia	...	...	...	...	1 lb. ,,	10	6	
Lactopeptine Elixir with Gentian and Chloride of Iron	...	...	...	...	1 lb. ,,	6	6	

			s.	d.
Lactopeptine Elixir with Phosphate of Iron,				
Quinia, and Strychnia	... 1 lb. bottle,	10	6	
Lactopeptine Liquid	... 1 lb.	6	6	
Lactopeptine Wine	... 1 lb.	6	6	
Lactopeptine Wine with Calisaya	... 1 lb.	6	6	
Lactopeptine with Beef, Iron, and Wine	... 1 lb.	6	6	
Lactopeptine Syrup	... 1 lb.	6	6	
Lactopeptine Syrup Compound	... 1 lb.	6	6	
Lactopeptine Syrup with Phosphate of Iron,				
Quinia, and Strychnia	... 1 lb.	10	6	

Copy of Letter signed by leading Chemists and Druggists throughout the Country:—

“The undersigned, Wholesale Druggists and Dealers in Medicines, have pleasure in stating that we have sold the LACTOPEPTINE since its introduction, and find it to be an article of increasing sale and reputation.”

(Signed) [For want of space a few only are given].

James Woolley, Sons, & Co., Manchester.	Fredk. Clifton, Derby.
Wm. Mather, Manchester.	W. Proctor & Son, Newcastle-on-Tyne.
Goodall, Backhouse, & Co., Leeds.	Glaisher & Kemp, Brighton.
Hirst, Brook, & Hirst, Leeds.	Thomas H. Cruse, Southsea.
Ferris & Co., Bristol.	Thomas R. Lester, Cork.
Hamilton, Long, & Co. (Lim.), Dublin.	John Thompson, Liverpool.
Anderson & Adams, Dublin.	Fleeming & Son, Wolverhampton.
Boileau & Boyd, ”	Jno. Johns & Co., Southampton.
W. Webb, Man., Apoth. Hall, Dublin.	Grattan & Co., Lim., Belfast.
W. and R. Hatrick & Co., Glasgow.	W. and H. M. Goulding, Cork.
Brown Bros. & Co., Glasgow.	Hempstead & Co., St. Leonards.
Glasgow New Apoth. Co., Glasgow.	Clark & Pinkerton, Edinburgh.
Glasgow Apothecaries Co., ”	Raimes & Co., Edinburgh, York, and Liverpool.
Michael Rogerson & Son, Bradford.	Jas. Sim & Co., Aberdeen.
Wm. King, Huddersfield.	Wm. Foggitt, Thirsk.
Bradley & Bliss, Reading.	John McGuffie & Co., Liverpool.
Wyleys, & Co., Coventry and London.	Jas. McCormick, Castlederg, Ireland.
Nathl. Smith & Co., Cheltenham.	John Saville, York.
Evans, Gadd, & Co., Exeter.	Saml. Jas. Coley, Stroud.
Francis Earle, Hull.	&c. &c. &c.
Davies & Hughes, Bath.	

From Messrs. TREACHER & Co., Bombay and Poona.

“In confirmation of the telegram from my house for one gross of LACTOPEPTINE, they say by letter to-day—‘The quantity received was sold in a few days, and we are besieged for more by those who have tried it.’

“J. W. COLCLOUGH, Agent.

“King William Street, London Bridge, March 2nd, 1878.”

Exported to the Brazils.

"DEAR SIRs,—We have pleasure in stating that LACTOPEPTINE is gaining increased favour with the Medical Profession. Our sales, both for home and export to the Brazils, are steadily increasing, which is the best evidence we can offer you of the satisfaction it gives.

"SYMES & Co., Pharmaceutical Chemists.

"14, Hardman Place, and 58, Bold Street, Liverpool.

"*July 12th, 1878.*"

Increasing Demand.

"DEAR SIRs,—We find an increasing demand for LACTOPEPTINE by Druggists all over the country, and our sale of it has greatly increased during the last few months.

"RAIMES, BLANSHARDS, & CO.

"Leith Walk, Edinburgh, *July 12th, 1878.*"

WE have also the pleasure to refer to any of the LONDON Wholesale Druggists and Medicine Houses, among whom may be mentioned—

Apothecaries' Hall.
General Apothecaries' Co.
Allen & Hanburys.
Ashton & Parsons.
J. Bell & Co.
Barron, Harveys, & Co.
Barclay & Sons.
Burgoyne, Burbidges & Co.
Baiss Brothers & Co.
Barron, Squire, & Co.
Battley & Watts.
Burgess, Willows, & Francis.
Curling & Co.
Corbyn & Co.
Davy, Yates, & Routledge.
W. Edwards & Son.
Evans, Lescher, & Webb.
Gale & Co.
Hodgkinsons, Stead, & Treacher.
Herrings & Co.

Hodgkinson, Prestons, & King.
Hearon, Squire, & Francis.
Horner & Sons.
C. J. Hewlett & Sons.
A. S. Hill & Son.
R. Hovenden & Sons.
Langdon Edden, Hicks, & Clark.
Lynch & Co.
Maw, Son, & Thompson.
W. Mather.
May, Roberts & Co.
Newbery & Sons.
Sanger & Sons.
Savory & Moore.
W. Sutton & Co.
Tidman & Son.
Thompson, Millard, & Co., Ltd.
Wright, Layman, & Umney.
&c. &c.

And to the following Continental, Colonial, and Indian Firms, all of whom supply the genuine LACTOPEPTINE.

FRANCE.

B. TILLIER, Pharmacien, Dunkerque, Wholesale Agent.
Paris—H. H. Swann, 12 Rue Castiglione.
" Roberts & Co., Place Vendome.
" T. P. Hogg, 2 Rue Castiglione.
Pau—John Jarvis, 4 Rue Serviez.
Biarritz—Jules Moussemple, Place St. Eugenie.
Nice—J. Daniel, 3 Quai Massena.
Mentone—The English Pharmacy, P. Bézoz, 27 Rue St. Michel.

ITALY.

Florence—Roberts & Co.	Milan—Menzoni & Co.
Rome—Sinimberghi, Via de' Condotti.	Naples—Kernot, 14 Strada San Carlo.

BELGIUM.

Agence Générale à la Pharmacie anglaise de CH. DELACRE,
Montagne de la Cour, BRUXELLES.

Anvers—Pharmacie De Beul.	Liège—Pharmacie Bérard.
Bruges—Pharmacie Dryepondt-Bergeron.	Mons—Pharmacie Carez.
Charleroy—Pharmacie Sohet.	„ Pharmacie T. Accarain.
Courtrai—Pharmacie Hulpiaugavier.	Namur—Pharmacie Winand.
Liège—Pharmacie Péters.	St. Trond—Pharmacie Van Horen.
„ Pharmacie Gilman.	Tournay—Pharmacie Brame.
„ Pharmacie Delbaistaille.	„ Pharmacie Delobe.
„ Pharmacie Goossens.	„ Pharmacie Sykendorf.
	Ypres—Pharmacie Frysou.

GERMANY.

Elnain & Co., Frankfort-on-Maine.
G. F. Ulex, Apotheke, Hamburg.

COLONIAL.

Melbourne—Felton, Grimwade & Co. Rocke, Tomsitt, & Co.	Cape Town, S. Africa—Heynes, Matthew, & Co.
Adelaide—F. H. Faulding & Co.	King Williamstown, ditto—Townsend & Smith.
Brisbane—Elliott Bros. & Co.	Grahamstown, ditto—H. B. Bell.
Sydney, New S. Wales—Elliott Bros.	Durban, Natal,—ditto, E. J. Challoner.
Auckland, N. Zealand—Kempthorne, Prosser & Co.	Port Elizabeth, ditto—B. G. Lennon & Co.
Dunedin, ditto—Ditto,	Hong Kong—Hong Kong Dispensary.
Wellington, ditto—Felton, Grimwade, & Co.	Shanghai—Llewellyn & Co.
Christchurch, ditto, Cook & Ross.	

INDIA.

Bombay, Byculla, and Poona—Treacher & Co.
H. Ballantine.
Calcutta—Smith, Stanistreet, & Co.
„ Nobin, Chunder, Daw & Sons.
„ Cooper, Madon, & Co., Limited.
Cawnpore and Meerut—Charles & Co.

POISONS AND THEIR ANTIDOTES.

ARRANGED FOR CONVENIENT REFERENCE.

Carbolic Acid, muriatic acid, nitric acid, sulphuric acid, cobalt, creosote, nitro-muriatic acid, iodine and its preparations, croton oil, oil of penny-royal, savin, tansy and rue, phosphorus and tin and its compounds.

Give white of eggs, or flour mixed with water ; then cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water ; give strong soapsuds, chalk or soda with milk, demulcent drinks of flaxseed or slippery elm.

Chromic Acid and its soluble salts, antimony and its compounds, cantharides, copper and its compounds, delphinia, elaterium, mercury and its compounds, zinc and its compounds.

Give white of eggs or flour mixed with water ; then cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water ; give strong tea or coffee, soda with milk, demulcent drinks of flaxseed or slippery elm.

Caustic Ammonia, caustic potassa, and caustic soda.

Give vinegar, oil and milk.

Prussic Acid and its compounds, oil of bitter almonds (also water of), chloral hydrate and chloroform.

Apply cold affusion to the head ; give stimulants ; apply mustard poultice to the stomach ; wash with spirits of camphor or vinegar ; arouse the patient ; give plenty of fresh air ; artificial respiration.

Cotton Root and its preparations, ether and compound spirits of ether, sulphurets of the alkalies.

Cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water ; apply cold affusion ; wash with spirits of camphor ; arouse the patient ; give plenty of fresh air ; artificial respiration.

All preparations of the following: *Coculus indicus*, *colchicum*, calabar bean, *cannabis indica*, *gelsemium*, hemlock, opium and its preparations, and *santonine*.

Cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water; give strong cold tea or coffee; apply cold affusion; keep the patient in constant motion; give demulcent drinks of flaxseed or slippery elm.

All preparations of the following: *Aconite*, *belladonna*, *digitalis*, *ergot*, *hyoscyamus*, *lobelia*, *nux vomica*, *nicotine*, *stramonium*, *veratrum viride*, *veratrum album* (white hellebore), and *veratrine*.

Cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water; give strong cold tea or coffee and powdered charcoal; give stimulants and demulcent drinks; apply warmth to the extremities; the recumbent position should be maintained.

Baryta and its compounds, and all the compounds and preparations of lead.

Give Epsom salts freely, dissolved in water; then cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water; give milk or demulcent drinks.

For Arsenic and its Preparations: Cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water; then give hydrated oxide of iron, dialyzed iron or magnesia, in abundance, followed by oil, milk or mucilaginous drinks.

For Oxalic Acid and its Soluble Salts: Give chalk, lime, whitewash from the wall or powdered wall plaster with water, or lime water. Give one ounce castor oil.

For Nitrate of Silver: Give solution of common salt, then cause vomiting by giving a teaspoonful of ground mustard and abundant draughts of warm water; give white of eggs or flour mixed with water.



