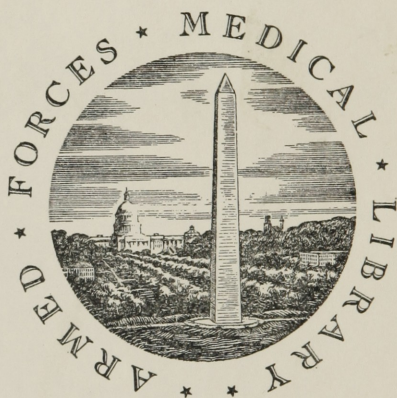


UNITED STATES OF AMERICA



FOUNDED 1836

WASHINGTON, D.C.

AN

INAUGURAL DISSERTATION

ON

THE LIVER:

*Its Influence over the Animal Economy in
Health and Disease.*

SUBMITTED TO THE EXAMINATION OF THE

REV. FREDERICK BEASLEY, D. D. PROVOST,

THE

TRUSTEES AND MEDICAL PROFESSORS

OF THE

University of Pennsylvania,

ON THE 25TH DAY OF MARCH, 1817,

FOR THE DEGREE OF

DOCTOR OF MEDICINE.

BY JOHN BELL,

OF VIRGINIA;

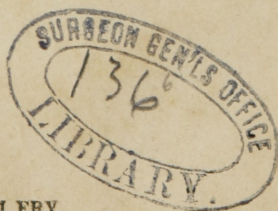
HONORARY MEMBER OF THE PHILADELPHIA MEDICAL SOCIETY.

"Vena portarum,—porta malorum."

PHILADELPHIA:

PRINTED FOR THE AUTHOR BY WILLIAM FRY.

1817.



EXHIBIT

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TO

JOHN BELL, ESQ.

RICHMOND, VIRGINIA.

DEAR SIR,

IN dedicating to you the first fruits of my medical studies, I am not influenced by the mere ties of consanguinity.

Your advice and encouragement have been among the best guides and strongest incentives to my prosecuting the course which is now happily terminated. In those hours of despondency, which all more or less feel, when my mind has been ready to sink into a lethargic slumber, you have roused me to action by the language of admonition and the offers of friendship.

Poorly indeed should I requite your kindness, if I did not thus publicly acknowledge your favours, and request you to accept this trifling but sincere tender of the esteem and respect of,

Dear Sir,

Your much obliged nephew,

J. BELL.

W. B. E. 1847

W. B. E. 1847

Dear Sir,
In declining to join the list of subscribers
and students, I am not influenced by the mere fact
of your office and encouragement have been
the first guides and suggest the course to be
pursued. The course which is now rapidly
advancing, and which will soon be
the basis of the new system, is a
self-sustaining system, and has been
the language of education and the
language of the future.
Poorly-instructed should I suppose, your
did not thus publicly acknowledge your
request you to accept the following
the esteem and respect of

Yours etc

Yours much obliged to please

J. B. E.

TO
JOHN VAUGHAN, ESQ.

PHILADELPHIA,

FELLOW OF THE AMERICAN PHILOSOPHICAL SOCIETY, &c.

THE FOLLOWING PAGES ARE ALSO

DEDICATED,

AS A SMALL TRIBUTE OF RESPECT

TO HIS VIRTUES,

AND

AN ACKNOWLEDGMENT OF HIS KINDNESS,

AND ATTENTION,

TO HIS

MOST OBLIGED SERVANT

AND FRIEND,

THE AUTHOR.

INAUGURAL DISSERTATION

ON

THE LIVER.

MEDICAL science has been charged, with not being founded on any fixed data or principles, with admitting continual innovations and being subject to perpetual revolutions; hence, some deny its right to be considered as a science, restricting the term to any branch of knowledge grounded on demonstration.

The accusation would at first strike us as just and the objection as plausible; but the former may be answered by the consideration of the causes giving rise to it, and the latter obviated by comparing our profession with other departments of knowledge, and observing if they have not also undergone many changes. On the first point it may be remarked, that man soon becomes weary of following by slow and devious marches the road to truth, as it requires continued observation and investigation before he can expect to make just deductions from known facts. Misled by appearances and deceptive analogies, he does not form a correct judgment, because he does not patiently compare; but framing an hypothesis, he decorates it with every meretricious ornament that can please the fancy or dazzle the

senses, regardless of its permanency if he gain the credit of invention and win over disciples who will voluntarily imprison in it their own judgments and offer up at its shrine their talents for its support. Time however soon abates this superstitious reverence. Some bold seceder proclaims his independence, and shaking off the trammels of old prejudices overthrows the established worship and substitutes a form of one more accommodated to the times, but not less erroneous, because, like his predecessor, he neglects the proper steps,—truth and the observation of fixed laws, which are essentially requisite to give it validity. Thus the dogmas of Stahl, of Hoffman, of Boerhaave, of Cullen and of Brown have succeeded each other in rapid succession and the facility with which the tenets of each of these men were propagated, to the destruction of those of his predecessor, must have strongly foreboded to him the speedy downfall of his own.

To the objection started at the commencement, may we not answer, that the mind of man is in a progressive state of improvement, consequently his opinions liable to continual change: but where is the science founded even on mathematical demonstration, that has not undergone many modifications and varied applications of first principles to the points connected with it. So far from adducing change of opinion as an argument to prove the uncertainty of our profession, it affords strong presumptive evidence of its improvement and advancement to perfection.

Life, it is true, can never be thoroughly understood by finite man, who, in place of wasting his time and perverting his talents in useless speculations respecting

its causes, should rather direct his abilities to studying diligently and closely the frame animated by it, and observing with precision the laws by which it is governed. The former comprehends Anatomy, the latter Physiology, the only certain bases on which medical knowledge rests. But no! we must ever be tracing things to their first causes and pursue our enquiries with such precipitancy, that we soon become involved in an inexplicable maze, and finding no path to lead us out of difficulty, erect an artificial causeway, breaking down all natural boundaries. In Natural Philosophy we account for the order and harmony with which the celestial bodies perform their revolutions, by the grand law of attraction or gravitation; and in Chemistry, when one body unites with another in preference to a third, we say it is the result of affinity,—resting satisfied with these explanations, without enquiring, why do these laws govern the material world or what is their peculiar nature? Just at this point ought we to stop in our investigation of life and not indulge in frivolous speculations respecting its nature.

These reflections naturally obtrude themselves on our minds when we see the arbitrary and visionary ideas of diseases and their unnatural divisions as laid down by many writers of even the greatest celebrity. What can be more hypothetical than many parts of Cullen's classification? Symptoms ever varying are there introduced as essential characters of the disease, and many complaints dissimilar in their nature arranged under one head. His class of Neuroses, not to mention many others, evince the correctness of this statement. Brown aiming too much at simplicity was too general: his di-

vision, correct in the abstract, could not lead to sound practice. From the various degrees of susceptibility existing in different parts of the body, impressions both healthy and diseased must be productive of proportionably diversified effects, consequently a scale of remedies would be required, adapted to each part. Thus although Pleurisy and Hepatitis are both sthenic diseases or ones of increased action, and purgatives are one of the means of lessening excitement, yet medicines of this class are by no means applicable to the same extent in the former as the latter case.

That view of disease can alone be correct which is founded on an intimate acquaintance with the organization and functions of all the parts of the human structure, and an attentive observation of the consequences of derangement in any one organ or part, and also in those which are most generally affected by the primary disease, either by their contiguity or sympathy.

In the following pages we propose adhering as strictly as possible to this rule, and should occasional deviations occur they are to be attributed to the fault of the writer and not to any incorrectness in the fundamental principle.

The importance of the subject which we intend to treat of is undeniable, and is the best justification against the charge that may be brought against us, of presumption in attempting that which has excited the attention and exercised the pens of men every way calculated to throw light on an intricate point.

When we reflect however on its importance and the influence which the liver exerts over the whole system,

that the study of morbid Anatomy displays it so often disorganized in structure or deranged in function, and that in many parts of the United States, a majority of the diseases are of the hepatic form, we are no longer surprized that much has been said about it, but that so much yet remains to be known.

It may not be amiss to premise a short account of the situation and structure of this viscus, the better to understand the opinions deduced therefrom respecting the diseases to which derangements in its structure or function give rise.

The Liver, the largest gland in the body, is situated in the upper part of the abdomen under the margin of the ribs, in the right hypochondrium, the whole of which it fills, and extends through the upper portion of the epigastric to the left hypochondriac region. In the fœtus it occupies more of the left side than it does in the adult. It is at this time nearly balanced, but the older the child grows for the first four or five years, the greater will be the proportion of it found in the right side. It is more uniform, smooth and convex on the upper surface where it is applied in close contact to the concavity of the diaphragm, and in the fœtus its margin is in contact with the abdominal muscles, because it falls lower than the margin of the ribs. Its lower and concave surface receives the convexity of the stomach, duodenum and colon, and here its great vessels enter. It has two coats, peritoneal and proper. The liver in a healthy state does not extend from under the margin of the ribs, unless near the pit of the stomach, but in the fœtus and child it is much otherwise. It is kept in its place by its ligaments so called,

by the vena cava and the pressure of the abdominal muscles.

The *broad, suspensory* or *falciform ligament* is formed by the two lamina of the peritoneum, descending from the middle of the diaphragm and point of the sternum, to the convex upper surface of the liver, from which it is again reflected off on each side and forms its upper smooth coat. The *round* or *umbilical ligament* is a firm ligamentous-like chord, which may be traced from the umbilicus along the peritoneum into the duplicature of the broad ligament and into the fossa umbilicalis. This is what was formerly the umbilical vein of the fœtus. The liver at its posterior part is in close contact with the diaphragm, and the peritoneum reflected from this last over the former is called its *coronary* ligament, but improperly, for there is nothing like a ligament, nor is the place of contact round, but rather triangular. On each side of this the peritoneum reflected from the diaphragm to the lobes of the liver forms its *right* and *left lateral* ligaments.

The posterior part of the right lobe is in contact with the right kidney: its left lies on the lesser extremity of the stomach. The great arch of the colon runs under the liver, and is in contact with it and the gall bladder, by which it is often stained of a yellow colour after death. The beginning of the duodenum is also in contact with the gall bladder, and is tinged in the same manner as the colon; it continues under the right lobe of the liver till it makes its turn, at which place it touches the kidney.

The umbilical ligament formerly mentioned, passing along under the liver and opposite to the upper or

suspensory, forms the *umbilical fissure* which divides the liver below into two great lobes, right and left. As was before remarked, this was the umbilical vein of the foetus, which on reaching the left branch of the vena portarum poured part of its blood into this vessel, and the remainder was carried straight on by a vessel called the *ductus venosus* to the hepatic veins, and immediately on to the heart. This duct in the adult has degenerated into a ligament.

At right angles to this fissure runs the great *transverse* one which receives all the great vessels running to the liver, and from which its excretory duct comes out. The trunks of all these vessels, viz. the vena portæ, the hepatic artery, and the biliary duct, together with nerves and absorbents, are inclosed in a cellular sheath which receives a partial investment from the peritoneum. It is called Glisson's capsule, and was by him supposed to possess muscularity; but this idea is now abandoned. In this sheath may however be observed a number of small gland-like masses, which by disease may press on the biliary duct, and cause jaundice. Besides the two great lobes of the liver, there are less ones, as the *lobulus spigelii*, which is situated between the posterior part of the transverse fissure and the vena cava; it belongs more particularly to the right side, and receives a small branch of the vena portarum. The *lobulus quartus* or *anonymus* is between the depression for the gall bladder and the umbilical fissure. The *lobulus caudatus* is a process of the lobulus spigelii. The liver, like all the other glands of the body, receives a supply of arterial blood, which is carried to it by the hepatic artery, a branch of the cœliac.

It enters the liver at the great transverse fissure, after sending off branches to the pyloric orifice of the stomach, the pancreas, duodenum and gall bladder. At the fissure it divides into two branches called right and left from the lobes of the liver to which they are appropriated. Sometimes, though rarely, it receives a branch from the superior mesenteric, and which enters to the right of the former. The hepatic artery penetrates the substance of the liver, and ramifies minutely through it.

But the great peculiarity of the liver consists in secretion not being performed by arterial blood, but by venous: the former is destined simply for nutrition; the course of the latter is now to be described. The veins corresponding to the cœliac, and the superior and inferior mesenteric arteries,—except those of the hepatic artery,—all unite in one trunk, the branches of which are composed of the greater and less mesenteric veins; the former consisting of the veins returning the blood from the small intestines, and of the right and middle colic veins. It passes over the duodenum and behind the pancreas; at this place it receives the great splenic vein, into which had been previously emptied the blood of the gastro-epiploic and coronary veins and the inferior mesenteric, composed of the internal hæmorrhoidal and left colic. This great trunk also receives the pancreatico-duodenalis and the cystic veins, and takes the name of *vena portæ*.

After coming from under the pancreas it proceeds three inches inclining to the right, and enters the great transverse sinus between two prominences of the liver. This part has been compared to a *porta*, or gate, and

hence the name of the vein—*vena portæ* or *vena portarum*. On arriving at the porta it divides into two great branches which are given off nearly at right angles; and after ramifying minutely through the liver, performs the office of an artery and secretes the bile, which carried by small branches called *pori biliarii*, from the acini of which the liver appears composed, collect into larger branches until they all unite in two greater ones corresponding to the lobes of the liver. The junction of these two, forms the hepatic or excretory duct of this viscus. The situation of these three great vessels is such, that the *vena portarum* is posterior, the biliary duct anterior, and the artery to the left of them. The veins corresponding to the hepatic artery and the *vena portæ*, unite at the upper part of the liver into three great trunks, or sometimes only two, called hepatic veins, which empty into the *vena cava abdominalis*. This great vessel receives the blood of the lower extremities and kidneys, &c. and runs up in a fissure on the posterior surface of the liver, and just before piercing the diaphragm receives the hepatic veins. Sometimes it is completely invested by the liver, more particularly the lobulus spigelii.

The *vena portarum* has been very aptly compared to a tree, the roots of which are the veins from the intestines, &c. and are called the *vena portæ ventralis*, and the branches ramifying through the liver are named the *vena portæ hepatica*.

The nerves of the liver are derived from the semilunar ganglion of the great sympathetic or intercostal. The hepatic plexus is formed by threads from the solar plexus which is situated behind the stomach and above

the pancreas. The nerves of the hepatic plexus extend upon the hepatic artery, and from it to the vena portarum, and are continued into the substance of the liver: branches are also sent to the biliary duct and gall bladder. Here then is a wide field for nervous sympathy between the liver and other viscera, and it is probable that by this communication we may account for the great influence which the passions exert over this organ.

The lymphatics of the liver are very numerous, and may be divided into superficial and deepseated, which communicate freely with each other. The former after uniting, enter the thoracic duct in the thorax, the latter, the same duct in the abdomen.

To enter into an enquiry of the minute structure of the liver, and the differences of opinion between Malpighi, and Ruysch, and their respective followers, would exceed the limits of this piece, and could not throw additional light on the subject.

The gall bladder, which may be viewed as an appendix to the liver or a reservoir for the product of its secretion, is situated in a pit or cavity in the concave surface of the right lobe. It is of the shape of a pear with a long neck curved or bent upon itself. Sometimes when the gall bladder is distended with bile, this angle becomes so acute as to prevent entirely the fluid from flowing out by the *cystic duct*, which is the canal for carrying it out, and which unites with the hepatic duct at an acute angle.

The union of these two forms the *Ductus Communis Choledochus*, which passes through a small portion of the pancreas and perforating the muscular coat of

the duodenum, proceeds from half an inch to an inch, before it pierces the villous coat and opens into the cavity of the intestine about five inches from the pylorus: by this contrivance the return of the bile is prevented. When this duct is in contact with the pancreas, the one from that gland generally unites with it. The gall bladder is merely a reservoir for the bile, which by remaining in it for some time loses its watery parts by absorption and becomes more stimulating. The bile most probably flows into it, when the contraction of the duodenum presses the opening of the common duct, which on these occasions must suffer a degree of distention, but this is soon relieved by the retrograde flow of bile into the gall bladder by the cystic duct.

This fluid is supposed to be poured out into the duodenum by the pressure of this intestine and of the stomach on the gall bladder, or in consequence of simple distention of this last itself. But neither of these opinions is perhaps correct. The gall bladder does not possess that irritability which would enable it to contract from the stimulus of distention, like hollow muscles, as the intestines and urinary bladder: nor does simple pressure of the parts above mentioned seem adequate to this end, for, when the duodenum is full,—the time when most bile flows into it,—its sides being pressed would be closely approximated and might be expected to prevent the passage of any fluid. Others again have referred the fact to the alternate contractions and relaxations of the duodenum, occasioning a relaxation of the orifices of the duct. But it is more rational to account for it, by the principle of the stimulus applied to the duodenum, being propagated to the duct

by continuous sympathy. The action of purgative medicines or other irritants in the intestine favour the supposition. On the same principle we find that the flow of saliva into the mouth is increased by the presence of food in it or by acrid substances being chewed, and also irritation of the glans penis at one end of the urethra will cause a discharge of semen from the vesiculæ seminales at the other end.

The bile is a viscous bitter fluid, of a green colour but becoming yellow by dilution. It consists of water; of albumen to which it owes its viscosity; resin or essential oil on which depends its bitter taste and in which the colouring principle resides; soda to which it owes the property of turning vegetable blues to a green; its saponaceous properties are derived from the union of the mineral alkali with the oil or resin.* Besides these it contains other principles in smaller quantities, as the oxide of iron and some neutral salts.

From the enormous bulk of the liver, and the quantity of blood carried to it by the vena portarum, compared to the small secretion there is of bile, chemists have with much plausibility imagined that the office of the liver is in some measure supplementary to that of the lungs and assists in clearing the blood of its superfluous hydrogen and carbon. This opinion derives some confirmation from the fact that the resinous por-

* Thenard has detected a peculiar principle in Ox-bile which he terms *picromel*, and by the intervention of which the resin is rendered easily soluble in water. The characters of *picromel* are, that it is insoluble in water and alcohol and incapable of being crystallized; and that it precipitates nitrate of mercury and acetate of lead with excess of oxide.

tion of the bile is inflammable and that it is secreted in larger quantities in warm climates, the inhabitants of which live principally on vegetable matter, which we know consists principally of hydrogen and carbon. Again, the blood of the vena portæ coming from the intestines and other parts, after all the secretions have been given off, is highly charged with carbon, which at all times abounds in venous blood, and in this instance some preliminary process may be required to deprive it of its superfluous quantity of the carbonaceous principle before reaching the lungs. If at the same time we admit with some of the French physiologists that the liver in some cases of enlargement and disease deposits adipose matter forming what they call the fatty liver, "*foie gras*," we shall have additional confirmation of this theory.* Perhaps one reason why the liver is so much affected by the abuse of ardent spirits, is from the great quantity of inflammable matter which these fluids contain, being carried by the vena portæ to the liver, in a much larger proportion of course than to any other part. Its inability to separate those constituents will impair its functions and cause disease.

If then this doctrine be correct, the lungs, liver and skin have in one respect a common office; viz. to decarbonate the blood, as the experiments of Jurin and Tingry show that carbonic acid is constantly formed on the skin. The sympathy between this last and the lungs has been much dwelt on, but that between the liver and skin has been scarcely hinted at, nor the man-

* To this we may add the fact discovered by Fourcroy, of biliary calculi being in some instances composed almost entirely of *adipocire*, a substance of an inflammable nature and somewhat resembling spermaceti.

ner in which it takes place been accounted for. This connexion founded on a community of function may be termed immediate or direct. The sympathy between the skin and intestines is well known, and if we recollect the termination of their venous system in the liver we shall readily acknowledge that this last organ and the skin have another kind of sympathy which may be termed mediate or indirect.

This view is perfectly conformable to the phenomena of disease. As disorders of the pulmonary system predominate in the winter and spring, we find obstructed cutaneous perspiration prove the most frequent cause of them, whilst to the same source we can trace during the summer and autumn, the complaints of the hepatic and intestinal systems which at these seasons have the supremacy.

If also the functions of the liver should be impaired by disease, the blood returned from it would be surcharged with inflammable matter, and carried to the lungs, prove an oppressive load to them, causing great derangement.

To return to the bile. Its influence in digestion is well known, although the particular manner in which it acts, is far from being satisfactorily ascertained. It was at one time believed that the bile mixing with the chyle was carried by the lacteals into the circulation: but this opinion is now exploded and has given way to another which supposes that the bile and pancreatic juice exert a chemical action on the chyme after its passage into the duodenum, by precipitating the excrementitious from the nutritious or chylous part, the ^baluminous and saline parts of the bile uniting with this last and carried into the circulation. The alleged fact

that chyle has been formed without the presence of the above fluids, as well as the experiments of some who have observed the lacteals absorbing chyle where the digestive mass has not been at all tinged with bile, strongly militate against this doctrine. Perhaps this fluid may exert a particular action on the mouths of the lacteal vessels fitting them for the absorption of part of the chymous mass, which should not in strict language be called chyle till subjected to the power of these vessels. That the bile is the appropriate stimulus of the intestines, keeping up their regular peristaltic motion, is well known. It also most probably tends, like vegetable bitters, to check those spontaneous changes to which animal and vegetable matter would be subject when exposed to such a degree of heat as prevails in the intestines. Some provision of this nature would be more particularly required in the large intestines, where the fecal matter remains for so long a time. May not the bile be also the stimulus to the secretory vessels of the intestines, regulating the quantity and quality of the *succus intestinalis*, preventing an inordinate secretion of it by giving the part a proper degree of tone and soliciting a sufficient quantity at the same time for the purpose of digestion? The stimulus of the bile is not confined to the intestines, but is through them communicated to the whole system imparting energy and vigour to all the functions. Its influence on the sanguiferous system is evinced by the languid circulation, in those in whom the secretion of bile is deficient. That clear florid complexion, one of the most certain signs of health, appears to depend on the suitable supply and proper quality of this fluid, which

in fine gives tone to the mind and energy to all the natural and vital functions.

The state of the hepatic secretion is very much under the influence of climate and seasons. It has been asserted and with a great deal of reason, that heat always increases it; and this opinion derives additional confirmation from the fact that most of the diseases of the tropical climates and of the warm seasons in temperate ones arise from excessive secretion of bile, which at these times and places is poured out in great quantity. By a parity of reasoning and from the analogy of other secretions, as the menses and perspiration, we may conclude that cold has a contrary effect and that bile is formed in much smaller quantities in the inhabitants of cold countries. In them the pulmonary system is the part most liable to disease, being that most called into action.

Now when we observe that in jaundiced persons where the system is surcharged with bile, the complexion becomes of a yellow hue approaching to an olive; and that where the secretion of it is stopped or impeded by a torpid state of the liver, the skin is of a dirty white; the former resembling an inhabitant of the torrid zone, the latter of the frigid; we are immediately led to the adoption of that opinion which grounds the varied colour of the skin among the different people of the earth, more on the state of the hepatic secretion, than on any extraneous cause. That this is not a strained analogy we are justified in believing from the observations of the celebrated Blumenbach, who says, "that among nations of a dusky or black complexion, it is a frequent, not to say general thing to find persons otherwise in their full health, who have the white of the

eye tinged with a certain yellowish appearance like those who have been affected by bilious disorders. This is very observable in the natives of India, of tropical Africa and America." Again, "we frequently see in those who have been affected by jaundice, according to the degree of the disorder, the skin, in different persons, stained with various shades greatly resembling the complexion of different nations of colour, which stain often remains permanent after the disease has been entirely removed."

Another author (Dr. Strack) speaking of jaundice arising from intermittent fevers, says, "I have seen the skin after such a jaundice, remain of an olive like that of the Asiatics, and even be imparted to children." The sympathy between the liver and skin, which we have before mentioned, as arising from community of office, will go far to account for these appearances. If the bile regurgitate or be absorbed into the system, the liver no longer carries off the necessary portion of carbon; consequently the skin is tasked to more than it can perform. Part of the carbon may go off in the state of carbonic acid, but there will still be a great surplus of it or its oxide, causing in proportion to its quantity a darker hue of the skin. In the Africans, if we might be allowed to judge from the peculiar odour emitted from their skins, there is probably a considerable evolution of phosphuretted hydrogen.

The operation of those causes acting for centuries on the human body, would so interweave the colour of the skin with the constitution, that it would become a fixed characteristic trait in national appearance, as in the *African* and *Asiatic*. And we can hence have some idea of the great length of time requisite to produce a

change in a different climate and under different circumstances, as in the African translated to a temperate climate.

Did time admit, we might trace still farther the influence of the liver on the physical and even moral qualities of man. Thus, what physician has not witnessed the peculiar changes induced in the mind and temper of those who have laboured under diseases of this viscus. Preceding the attack of bilious fevers there is a high degree of mental excitement, and in hepatitis there often exist great irascibility and passion amounting to delirium, whilst in the more chronic state of the disease or in jaundice, uneasiness, mistrust, jealousy, &c. prevail. The ancients made a temperament founded on the predominance of the hepatic system, which they termed *BILIOUS*; and its distinguishing features as respects the minds of its possessors, were that they were irascible, impetuous, and violent. This is the principal temperament of the inhabitants of a southern climate, and in whom also great dissimulation and constancy are often found.—And

“Where the rage of the vulture—the love of the turtle

“Now melt into sorrow—now madden to crime.”

We are now to take a view of the diseases to which derangement of the liver give birth; and in doing so, we shall not be confined to any nosological order, but present them in succession as they may occur to us. At the same time we must be understood throughout as not insisting on our viscus being the sole origin or seat of the complaint, but as modifying or altering

its nature, and showing the necessity of holding in mind its probable cause.

The liver, like all other glands, is liable to inflammation, which is, by the common consent of authors, divided into acute and chronic.

The former is defined, "Inflammatory fever; tension and pain in the right hypochondrium, sometimes pungent like the pleurisy, but generally obtuse; the pain extending to the clavicle and top of the right shoulder; difficult lying on the left side, dyspnœa, dry cough, vomiting, hiccough."

The pain of the clavicle and top of the shoulder has been accounted for, by the liver pressing against the diaphragm, from which the irritation is propagated by the phrenic nerve, which is principally derived from the third cervical: but this explanation is by no means satisfactory. We do not find any other instance of the irritation at the extremity of a nerve producing pain at the place of its origin. We must, after all, refer it to a peculiar sympathy, the precise nature of which we do not understand. Were we allowed this nervous communication, we might explain by the course of the intercostal nerve, the pain so often felt in this disease, extending up the posterior part of the thorax. The difficulty of lying on the left side proceeds from the dragging of the liver by its peritoneal attachments. The dyspnœa, dry cough, and hiccough arise from the irritation communicated to the diaphragm, pressing it up, and its consequent inability to perform its functions in respiration, which is now principally carried on by the intercostal muscles. The vomiting is caused by that part of the liver resting on the stomach, irritating it. To

the above symptoms may be added others, as pain in the larynx, a frequent hard pulse; a tongue dry and white, although often yellow. The bowels are generally in a constipated state, and the stools indicate a very defective biliary secretion, or rather excretion. It is said by some that the dark matter discharged from the bowels and often destitute of smell, is the blood passed from the extremities of the vena portæ in the liver, in place of bile. The urine is in small quantity and of a saffron colour. The skin and white of the eye are often tinged yellow. Delirium and *subsultus tendinum* are not unfrequent symptoms. This last proves clearly that our opinions of the existing state of the system are often founded on very fallacious grounds; for we find *subsultus tendinum* laid down by most systematic writers as a sign of extreme debility, and requiring powerful stimulants for its removal.

The indications in the cure of acute hepatitis are simple, and consist in allaying the inflammatory action and restoring the healthy functions of the liver.

The first is accomplished by the free use of the lancet proportionate to the violence of the pain and the state of the pulse; or to use the words of a celebrated medical teacher, formerly of this University, "bleed early, bleed copiously and bleed often." Nor must we be deterred by the small and feeble pulse which is said to exist when the concave surface is the seat of inflammation.

Generally, however, there are few diseases in which it is so difficult to lessen the hardness and frequency of the pulse. The intestines are to be acted on by brisk purgatives, the best of which are the mercurial. Dr.

Girdlestone placed the greatest confidence in the neutral salts given in small quantities and at intervals so as to keep up a constant catharsis. As auxiliaries, laxative enemata are useful. When perspiration can be induced it is of great service, and for this purpose nothing answers so well as the antimonial preparations, the best of which is the tartar emetic, in common with nitre in the form of the common nitrous powder; or what answers very well is the acetate of potash or ammonia, with a little antimonial wine.

These medicines given in small and repeated doses produce a general relaxation and moisture of the surface. When the capillaries of the skin become relaxed, the *vis a tergo* or action of the great vessels is diminished, and the pulse, which had resisted the repeated use of the lancet, now becomes softer and more natural.

To answer the second indication, and at the same time as acting more immediately on the liver, a succession of blisters applied over it or alternating with the use of leeches to the part, is very useful.

If these remedies are found ineffectual, mercury should be freely given, so as if possible to induce salivation. It may be introduced into the system by the mouth, combined with the nitrous or Dover's powder, or applied to the surface inflamed by blisters, or lastly by injections. Dr. Saunders reprobated the use of mercury before the inflammatory action has subsided; and says that from its stimulating properties it appears better calculated to increase than retard the suppurating process. But this reasoning is more specious than solid. Mercury is undeniably a stimulus, but it is one *sui*

generis, which appears to equalize rather than increase action. It is a law of the animal œconomy that no two diseased actions of equal force can exist at the same time in the same person; but the weaker will always be destroyed or have its power suspended by the stronger.

In hepatitis, the excitement is irregular and accumulated in one part; mercury diffuses this excitement through the system; it excites a new action, or it may be called a new disease, consequently by the law just stated it must remove the primary disease of the liver. Accordingly, many practitioners of the present day prescribe it without hesitation in all the phlegmasiæ, and even consider it more peculiarly applicable to this class of diseases.

Another set, at the head of which is Dr. Jackson, a name high in medical science, contend that in all diseases of high action, no reliance is to be placed on mercury with a view to its sialagogue powers, for, say they, before you can get it to act, the violence of the disease will have abated either by the common remedies, or the effects of nature. But here again an attentive examination of the question will conduct us to a very different result. To what stimuli is the body most susceptible? to those certainly to which it is least accustomed. Now if the blood, the natural stimulus to the heart and arteries, excites them to increased morbid action,—and light, sound and heat the senses; the ordinary food, the stomach;—and the bile which is carried into the system, the absorbents;—why should mercury fail in producing its impression,—that, let it be remembered, of a foreign and extraneous stimulus?

Again, how is the action of mercury propagated through the body: by its impression on the stomach. Now that this viscus is susceptible at this time to the action of medicines is proved by the effects of those usually administered in these cases, as purgatives, diaphoretics, &c. and also stimulating articles of diet, should we be imprudent enough to administer them. Certainly then it cannot be insensible to mercury, and if it acknowledge the presence of this article, the rest of the system soon gives its assent. If blisters acting on a spot lessen inflammation and affect the whole body, why should not mercury, having so general and diffusible an operation, also remove fever and inflammation. By extending this doctrine of Jackson, to other medicines, we should recur in our reasonings and practice to the *Anima Medica* of Stahl, and the *Vis Medicatrix Naturæ* of some of his successors. To say that our Sampson is only to be brought on the field after the enemy is subdued, is surely detracting too much from its virtues and derogating from its dignity.

The *chronic* inflammation of the liver is characterized by nearly the same symptoms as the acute, but in a milder degree and accompanied very generally with more or less enlargement of the viscus. The opinion of Saunders that this state is more intimately connected with derangement in the venous or secretory function, would appear more probable, from reflecting that it may continue for months and years without proving fatal,—a state of things inconsistent with increased arterial action, which must soon terminate in suppuration if not checked by timely remedies. The causes of this variety of the disease tend also to confirm the

opinion. They are, whatever weakens the circulation in the vena portarum, such as intermittent fever, excessive heat, intemperance, and an indolent and sedentary life. The remedies are occasional small bleedings, salivation, mercurial purges to solicit the secretion of bile; blisters over the right hypochondrium, kept running for some time. Issues in the same place have been found highly serviceable. Nitric acid has been used with much advantage, more particularly where the system is too much debilitated to bear a mercurial course. From the very powerful influence which polygala senega exerts over the whole system, and above all the glandular, might it not be of service here after evacuations, and perhaps restore the healthy secretion of bile? Daily exercise is as necessary to the accomplishing of a complete cure as to prevent a return of the disease. The action of the liver is not merely increased in common with other parts through the medium of the general circulation, but is acted on in a peculiar manner by the diaphragm, between which the intestines and abdominal muscles it is subjected to continual pressure.

There is a state of acute inflammation of the liver supervening in chronic disease, which is not noticed by medical writers. The patient shall have laboured under chronic hepatitis for a long time still able to go about and perform his usual business, when on a sudden from exposure to great heat, joined to immoderate exercise, or intemperance in the use of ardent spirits, almost all the symptoms of acute inflammation come on, except that the pulse is not so hard or strong, but more irregular and yielding to pressure. The whole abdomen

feels hard, and its muscles are rigidly contracted. Respiration is extremely laborious; the countenance indicates indescribable anxiety; and the pupil is dilated. This last is increased when pressure is made on the liver. The surface is cold, together with partial sweats on the forehead. There exists a disposition to somnolency sometimes amounting to stupor; but at times the patient is very restless and tossing about. The bowels are costive, and the discharges from them, when procured, are similar to what is observed in common acute hepatitis.

This is evidently a centripetal disease, in which the tide of the circulation is thrown back on the great branches of the vena portæ, and in which there is probably an engorgement similar to that existing in pneumonia notha. The blood when drawn exhibits a buffy coat, although the state of the pulse and other symptoms evidently forbid venesection to the same extent as in genuine hepatitis. The most correct practice would perhaps be, after immersing the patient in a warm bath to ~~extract~~^{de} blood in the Riverian method, viz. a few ounces at a time and repeated every four or six hours, or even in less time, so as gradually to allow the vital fluid, that has been dammed up, to retrace its accustomed channels. This is to be furthered by the use of Dover's powder or camphor with calomel, repeated every two hours. The surface should be stimulated by blisters, applied to the extremities and over the region of the liver, and as soon as they are taken off, should be dressed with mercurial ointment. Mercury ought also to be given by enemata.

Cases of this kind will prove fatal if medical aid be

delayed for twenty-four hours. The patient sometimes complains of pain in the right kidney and testicle, with a numbness of the thigh on the same side. These symptoms probably arise from the lower part of the right lobe of the enlarged and inflamed liver pressing on the right kidney.

The stomach possessing great sensibility, and being furnished with such a profusion of vessels and nerves, must necessarily be very susceptible to impressions. And when we reflect on the variety of aliment, solid and liquid, that is taken into it; that at one time it suffers from excessive repletion and again from inanition; and that the gastric juice, the proper solvent of the food in the stomach, undergoes proportionable changes in quantity and quality; we cannot be surprised that the functions of this viscus are often deranged, giving rise to a train of painful and distressing symptoms constituting the disease called *dyspepsia* or *indigestion*. This is generally viewed as a purely gastric affection, but a review of the causes inducing it and of the concomitant symptoms will clearly prove that it is often supported and aggravated by hepatic derangement. Among the former have been enumerated the depressing passions, intense study and a sedentary life, the abuse of ardent spirits, drinking too freely of warm diluent liquors, and the too free use of narcotics, as of opium and tobacco. Of the latter, the deficient secretion of bile and consequent costiveness is of frequent occurrence. The countenance is generally observed to be of a pallid or sallow hue, and the appetite irregular or depraved. The causes above enumerated

all act on the liver which is proved to be diseased from the symptoms just mentioned.

We are in these cases too hasty in assigning the stomach as the sole seat of the disease. It is highly probable that many of the morbid changes, productive of much distress, take place in the duodenum or the *second stomach*, (as it is properly termed by some,) where the process of digestion is completed and where the alimentary mass is mixed with the pancreatic and biliary fluids.

If these are deficient or depraved, the chyme will undergo a kind of decomposition, evinced by the spasm and flatus which will be felt in many cases extending under the seventh or eighth rib, passing deep and stretching towards the right hypochondrium, and which is often the more distressing from the manner in which this intestine is braced down by the mesocolon. Again, from a defect in the natural degree of the stimulating power of the bile, it will accumulate in the duodenum, occasioning anxiety and loss of appetite with the sallow or jaundiced skin.

The inefficacy in many instances of all the common remedies that are addressed simply to the stomach, and the advantages often attending purgatives and even salivation, all prove that dyspepsia very often depends on hepatic disorder. An enlarged liver pressing on the stomach will also cause all the symptoms of dyspepsia.

Hæmatemesis or vomiting of blood is generally supposed to be symptomatic of some other disease as suppressions of the menstrual or hæmorrhoidal flux, obstruction in the liver, spleen, &c. The blood discharged is evidently *venous*, being of a dark colour and gru-

mous. A knowledge of the termination of the veins of the stomach will readily suggest the idea of the discharge depending on obstruction of the liver either primarily or from suppression of the piles, which last disease we shall hereafter attempt to show is kept up by derangements in the vena portarum. A constipation of the bowels is an almost invariable concomitant of the disease. Dr. Hamilton was the first who pointed out the correct mode of treating it.

He found "the disease under the usual management, of uncertain duration and unequal severity." Acidulous medicines and emmenagogues often afforded no relief and he was induced to try purgatives which mitigated and removed all the disagreeable symptoms. The alvine evacuations on the exhibition of calomel were copious and of an unnatural appearance. He says, "the feces which are brought off are copious, unnatural in colour, consistence and smell, as they generally are after long remora, the consequences of obstinate and protracted costiveness." But our author does not appear to have extended his views sufficiently far in this as well as in some other diseases, for we cannot conceive of such an unnatural appearance of the feces without a vitiated secretion of bile.

It has been before remarked that heat greatly increases the biliary secretion, consequently in hot climates and during the warm months of more temperate ones, we may expect to meet with diseases arising from this source. Hence during the summer months *Cholera Morbus* occurs—a disease which consists "in frequent and violent discharges of bilious matter both upwards and downwards with painful gripings." It is

sometimes accompanied by cramp and spasms of the lower extremities. The pulse is frequent, weak and fluttering. This disease appears to consist in an increased and hurried secretion from the liver. The bile is both in increased quantity and of a vitiated quality, being sometimes between the nature of blood and bile. Although heat be the predisposing, suppressed perspiration, and acid and unripe fruit taken into the stomach seem to be the exciting causes. It would appear that the capillary vessels of the surface as well as those of the intestines, having been previously much weakened and relaxed by the excessive heat, now suddenly collapsed and contracted by a cold or moist night air, refuse a free passage to the blood which is determined to the internal parts particularly to the great vessels of the vena portarum and forced through the liver causes the very hurried and imperfect secretion of bile observed on these occasions. If this view be correct, as it is the activity of the venous not arterial vessels that is so much increased, venesection would not seem to be so rigidly demanded as in most other abdominal diseases. It might however be useful by equalizing the circulatory powers and as a guard against inflammation of the stomach and intestines.

Considering the nature of the case, evacuating remedies do not appear to be demanded to any great extent. The duodenum is the part which dissections show to have suffered most and from which the disease is spread both upward and downwards and is the place where the bile is poured, *pleno rivo*. Emetics might be thought proper to evacuate the stomach and duodenum, and by their effects on the former excite a

new action in the system; but what is the necessary and unavoidable consequences of vomiting? It compresses the liver and increases very much the secretion of bile and causes an inverted action of the stomach, &c. But the bile already flows too rapidly, and it ought to be our object to lessen its secretion and check the inverted peristaltic action by which it is thrown up. As regards the propriety of purging in this disease we have nearly the same objections, the natural purgative of the intestines, bile, is too abundant and is sufficient to evacuate any matter that they might previously have contained. In fine, in the majority of cases when the practitioner is called in, he will find the stomach and bowels completely evacuated of any irritating or foul matter, and he will see the bile passed upward and downwards in as free a quantity as blood poured out from a ruptured vessel in the lungs.

Reflecting then on the predisposing and exciting causes of the disease and knowing the sympathy between the surface and alimentary canal, he will endeavour to determine the blood to the former by the use of the warm bath and sinapisms and blisters to the extremities and a large blister over the abdomen. The internal remedies will consist of diluent drinks, freely given, afterwards the various remedies to check vomiting, as the effervescent draught, lime water and milk, &c. or an injection of laudanum. As soon as the stomach will retain medicine the Dover's powder will prove an useful auxiliary to the means already indicated of determining to the surface, and perhaps the addition of calomel will prove serviceable by altering the diseased action of the liver. We may indeed sometimes find it necessary

to remove the accumulation of bile which may be expected to exist in the duodenum after the vomiting is checked,—this is done by castor oil, rhubarb and magnesia, &c.

Of the after remedies it is not necessary to enter into a detail in this place; indeed it will be observed all along that we only mention those which have a particular bearing on our subject. In the case before us an uniform temperature of the surface is of essential importance, accordingly a flannel jacket should be constantly worn next the skin by those who are convalescent from this disease.

Bilious Colic is also a disease of the summer months. It is ushered in by a chill, violent pain and spasm in the bowels and lower extremities, accompanied by great irritability of the stomach and occasional vomiting of bilious matter: this last is sometimes carried so far as to produce the iliac passion. The bowels are almost universally in a constipated state, distinguishing the disease from cholera morbus. The pulse is hard and frequent, though seldom full. In the country this complaint is often brought on by a draught of cold water after a person is overheated by his exertion in a harvest field, or by bathing in a cold stream after the labours of the day are over. The great arch of the colon running under the liver is for some time particularly painful, but the formes of the disease would seem to be lodged in the small intestines especially the duodenum, for reasons to be afterwards given.

The treatment consists in free venesection and the use of the warm bath succeeded by a dose of laudanum or opium in pill for the purpose of allaying the violent spasms. Having tranquillized the stomach we endea-

vour to open the bowels, which is best accomplished by calomel, or what is perhaps preferable combined with opium in the proportion of 12 or 15 grains of the former to 2 or 3 grains of the latter. As it is of the utmost importance to procure alvine discharges and as it is found that no medicine answers the purpose so well as calomel, we need not be backward in prescribing it in much larger doses than the commonly received opinions on the subject justify. A large dose acts both by its ponderosity* and stimulus. The writer of this article has found $\mathfrak{z}\text{i}$. operate more mildly on himself and with less irritation than five grains; and a friend of his of a robust make and constitution was so kind as to make an experiment on himself with $\mathfrak{z}\text{i}$. and he found that the only effect was, that the medicine operated sooner than a smaller dose would do, and after procuring a few very copious discharges ceased to purge. A pupil of Dr. Physick's has taken eighty grains without any unusual consequences resulting.

* We are aware of the objections that may be urged against mercury even in its crude state acting in this way, from the fact that it is carried against gravity in parts of the intestines, as in the arch of the colon: but if it act simply by its stimulus why would not gamboge, scammony, &c. be more prompt and efficacious remedies in overcoming constipation. We see nothing inconsistent in admitting our principle. Thus the contraction of the intestine is the propelling power, the mercury, the body propelled, and the constriction in the gut, the resistance to be overcome. Are we not then justified in believing that this obstruction will be more readily obviated in proportion not only to the energy of the muscular contraction, but also to the density or ponderosity of the body propelled? No matter how great the contractile power of the intestines, castor oil, &c. would be inefficient.

Even after the spasms are removed and the inflammation has abated, a fever will still continue with occasional recurrence of pain, for two or three days, requiring a continuation of purgatives until we observe a dark foetid matter and of a pitchy consistence discharged by stool. This was evidently lodged in the upper intestines and is probably a vitiated secretion from the liver. The subsidence of the disease when this matter is evacuated, tends to confirm the opinion advanced above of the cause of the disease existing in the duodenum, and is also additional proof of the sympathy between this gut and the rest of the system.

The bile being the natural stimulus to the intestine, it may readily be conceived that if the functions of the liver be disordered and that it is secreted in an increased quantity or of a vitiated quality, it will increase the peristaltic motion of the bowels, to an unnatural degree, producing continued purging accompanied by occasional griping pains, constituting the disease called *Diarrhœa*. In many cases the discharges do not evince any redundancy of bile but appear to consist of an increase of the mucus secreted from the internal or villous coat of the intestine, causing what is called *Diarrhœa Mucosa*, and which may arise from the contents of the intestines not properly mixed with healthy bile, proving an improper stimulus to their mucous follicles. Passing over the disease as it appears in adults we shall only touch on it as a malady of the most troublesome kind to which infants and young children are subject. It is marked in them by frequent dejections of a green and often sour and curdy matter, accompanied with fever and wasting of the flesh. In many

instances a vomiting accompanies the disease. It is then called *Cholera Infantum*, and is most likely the same which Cheyne calls *Atrophia Ablactatorum* or *Weaning Brash*. Both diseases arise from the same causes, viz. warm and impure air and weaning the child too soon and putting it on improper diet. They are also marked by the same morbid phenomena, and the appearances in dissections establish the identity. The liver in both is much enlarged, and the gall bladder generally found distended with dark green bile. It is said indeed that in cholera infantum the intestines exhibit marks of inflammation in their villous or mucous coat, more especially the duodenum, as might *a priori* be expected, whereas in weaning brash, they were pale and contracted in their diameter in many places. It is doubtful if their internal surface has been examined with sufficient minuteness.

The great change in the circulation of the vena portarum after birth, the causes inducing the disease, the nature of the alvine discharges and the bad success so often attending the usual routine of absorbents, opiates and astringents, clearly indicate the source of the disease, and that our remedies must be directed to producing a change in the action of the liver. The relying on absorbents, &c. to check the excessive intestinal discharges may be compared to the applying styptics to stop the bleeding from a large artery, in place of tying it up by a ligature. It is an opinion very commonly entertained, that the earthy and alkaline carbonates are of service here and in some other diseases, by neutralizing the acrimony of the bile. But this is probably an erroneous idea, for on mixing

a portion of ox bile with some of the carbonate of magnesia and also of the carbonate of lime (chalk) no change was produced except that some carbonic acid was given off and there appeared to be a slight precipitation of albumen, but the bile retained its peculiar odour, taste and colour; hence these substances act simply as absorbents. The carbonate of potash changed the bile from a dark green to a straw colour with a shade of red: its bitterness, &c. the same. The addition of the carbonate of ammonia was attended with nearly a similar result.

The known sympathy between the skin and intestines would naturally suggest the propriety of producing action on the former. This is accomplished after moderate venesection, by small doses of opium and ipecacuanha as soon as the stomach is settled, or magnesia and ipecacuanha with minute doses of calomel proportionate to the age of the patient. The effect of this last article will often be strongly evidenced in the altered appearance of the stools and the general amendment in the health of the patient. The abdomen, before hard and tumid, now becomes soft and of the usual size. Flannel worn next the skin and the occasional use of the warm bath are also required. Strict attention to diet is demanded, or what would answer still better, if the age of the child and other circumstances will admit, it should be again put to the breast of its mother or nurse.

Dysentery has been defined, “a contagious inflammatory fever, frequent mucous or bloody stools, the alvine feces generally retained; severe gripings and tenesmus.”

Cullen who gives the above definition considers the disease as depending upon a preternatural constriction of the colon. But that it is a bilious disease, caused by morbid action of the liver, may be inferred, first, from its occurring most frequently in warm climates and appearing at the latter part of summer and beginning of autumn; secondly, from its preceding and succeeding bilious fevers and being sometimes combined and complicated with them; thirdly, from a yellowness of the skin accompanying the disease and enlargement of the liver and ascites succeeding it, when it assumes the chronic form; and lastly, from the relief obtained by a free discharge of bile either by vomiting or purging or both, and the entire removal of the disease by salivation.

Dysentery may commence with an increased secretion of bile, or it may be deficient. It remains to account for these opposite states of the liver causing disease. It may be naturally imagined that an excessive quantity of bile of an acrimonious quality will irritate the intestines, producing gripes or tormina, or even allowing it only produces a simple looseness, it "gradually washes off the mucus from the intestines, erodes their membranes, and at last brings on severe gripes with bloody stools."

But the most frequent cause of dysentery is suppressed secretion and excretion of bile or its retention in the duodenum. That irritation in this part should cause pain and tenemus in the rectum is no more astonishing than that pain and itching should be felt in the glans penis from a stone in the bladder and from piles, or that worms in the intestines should cause

itching of the nose and anus, or the titillation of a feather in the fauces produce vomiting; or finally, irritation of the glottis give rise to a troublesome cough.

Another view of the subject rather more chemical will also account for the production of tormina and tenesmus, from a defective secretion of bile. The feces on reaching the large intestines are detained there for a long time and appear to undergo a degree of incipient putrefaction, evinced by the extrication of gases. The excrements thicken, harden, become formed or moulded in the cells of the colon. In speaking of the uses of the bile it was observed that it was an antiseptic opposing the fermentation and putrefactive processes, consequently if it be withheld, the excrementitious matter acquires a peculiar acrimony, new products originate and morbidly stimulate the coats of the intestines, causing tenesmus, an increased discharge of mucus and sometimes blood. The colon for want of the stimulus of bile cannot expel its contents, which from being long retained act as a foreign body and cause those permanent constrictions observable on dissection. It should be remembered that in the cases of weaning brash detailed by Cheyne, and where he made examinations after death, he discovered constrictions in many parts of the intestinal tube, and at the same time the gall bladder was distended with bile. Cleghorn makes a similar remark, as respects this last appearance in dysentery: hence we have used the terms excretion as well as secretion. The evacuation of hardened scybalæ will not always give relief, for the griping is often kept up by

a serous fluid which has been supposed to flow from the liver.

The most approved modern practice comports with this view of the disease. It consists in bleeding where the fever is high and in young subjects; emetics, and purgatives, the best of which are the mercurial. Cleghorn found that six grains of calomel and one grain of opium procured fecal discharges when every thing else had failed. Clark, in the second volume of his observations on the diseases of long voyages, page 364, details a case which strikingly illustrates the connection of the disease with the biliary secretion, and the efficacy of a combination similar to the above in procuring relief. It is necessary to continue the mercurial cathartics for some days, during which time there is often a great quantity of bile discharged.

The sulphat of soda and magnesia (Glauber's and Epsom salt) and castor oil are often prescribed. Equal parts of magnesia and super-tartrate of potash (cream of tartar) are occasionally serviceable. The determination to the intestines is to be taken off by inducing perspiration, which is best done by a combination of calomel, ipecacuanha and opium, repeated at intervals. Where the disease proves obstinate the calomel may be continued long enough to salivate, and blisters to the abdomen are resorted to with advantage.

The rectum is furnished with a great profusion of blood-vessels, particularly veins which form a complete net work on it and empty into the inferior mesenteric vein. Hence we see why costiveness, and enlarged uterus as in pregnancy, should by pressure on these vessels, cause congestions of blood in them, and

give rise to the disease called *Hæmorrhoids* or *Piles*. But as these veins, or at least the majority of them, empty into the vena portæ, we may naturally regard hepatic obstructions as a very frequent cause of the disease, and by holding this in mind, the necessity of administering and repeating at intervals laxative medicines, will be more strongly impressed on the mind of the practitioner, who gives them with the double view of removing the pressure of fecal matter on the rectum, and of keeping up an active circulation in the liver. The surgeon when operating on these parts, especially high up, should ever recollect the termination of these veins, and that there is no valve between them and the sinus of the liver, so that hæmorrhage might if not checked prove fatal. We are told that this event has actually occurred from a rupture of the hæmorrhoidal tumours. It is true, that the verge of the anus is supplied by vessels from the hypogastric or internal iliac artery: but on knowing the fact, that these tumours are sometimes high up in the rectum, this will not militate much against our opinion.

Constipation of the bowels is a complaint that often proves troublesome and difficult to cure. It has been said to proceed from two principal causes; first, a defective secretion of bile or not sufficiently stimulating, and secondly, a torpor of the intestines; but both are resolvable into the first. Our remedies should be addressed to the liver and to the restoration of its healthy secretion. Mercurial carthartics are best, and where the case proves obstinate, mercury is to be given to salivate. It is under these circumstances that large doses of calomel might be given not only with

impunity but with decided efficacy. If it purges it gives relief, and if it salivates our end is also accomplished. We should here hold in view the reciprocal influence exerted over each other by the liver and intestines. The latter are preserved in their proper tone by the secretion of bile, whilst the healthy function of the former depends on the energy of the latter and the force with which their blood—that of the *vena portarum*, circulates; hence we deduce the propriety of tonics, exercise, &c. to invigorate the intestines.

Diabetes Mellitus is a disease which has given rise to considerable disquisitions respecting its nature and treatment. By some it is attributed to increased action of the kidneys. Cullen supposed it to arise from a derangement in the assimilatory functions. Rollo considers it as depending on a morbid state of the stomach. Meade regarded it as an hepatic disease. Although the reasoning of this last author is founded on erroneous principles, indeed might be termed jargon, yet the opinion would appear plausible if not just, if the process of digestion be considered. All the causes giving rise to diabetes, also weaken the circulation in the *vena portarum*, and consequently diminish the energy of the liver. Costiveness, one of the most common and troublesome symptoms of the disease, shows a torpid state of the bowels and defective biliary secretion. But it is almost universally admitted that the stomach is in a state of increased activity, and the gastric juice secreted in increased quantity and of a vitiated quality. We know at the same time that the healthy function of a gland depends on the vigour of its circulation, both on the quantity of blood carried

by its arteries and the freedom with which it is returned by its veins.

Now in the present instance we suppose that from obstruction in the liver, or from a torpid state of that viscus, the gastric veins terminating in the vena portæ, do not act with sufficient power, and the flow of the blood in them is retarded; but as this fluid is brought with its wonted freedom by the arteries, their smaller and minute terminations are called into increased action, of course an increased secretion of gastric fluid results, and which like that formed by all other glands when hurried in their office will be imperfect. The kidneys sympathize with the stomach and are also acted on by a peculiar stimulus, if we allow that the blood of a diabetic patient evinces a predominancy of saccharine matter, which the experiments of Dobson and others clearly prove. We are next to inquire into the manner in which defective action of the liver produces the imperfect and hurried chylification that evidently exists.

The chyme passes from the stomach into the duodenum, in this instance with a greater proportion than ordinary of saccharine matter. Bile is essentially opposed to and is one of the best correctors of the evolution of this principle, hence if it be deficient the lacteals take up nearly unchanged what was brought from the stomach and carry into the circulation an imperfectly elaborated fluid, which gives to the blood its sweet taste, &c. Carried to the kidneys it there acts as an unnatural stimulus exciting them to increased action and causing them to secrete urine in unusual quantity, and of this saccharine taste and milky appear-

ance. The application of the same exciting cause, as long as the morbid chylicification continues, proves a source of perpetual irritation to the kidneys, which become flabby and enlarged. It may be objected to this reasoning, that we ought to detect a sweetness of all the other secretions, and an assumption that this state of things does not exist has induced some to argue that the kidneys secrete the saccharine principle by a peculiar power of their own. But why invest these organs with new and unnatural functions, when a more ready and philosophical explanation of the fact presents itself? besides we have cases well attested where all the secretions, even the saliva, have been of a sweet taste, nor need it excite our surprize that they are not universally so. The structure of the kidneys is comparatively simple, and physiologists, resting probably on the opinions and experiments of Ruysch, have called them *secerning* rather than *secreting* organs. This celebrated anatomist demonstrated by his injections the minute ramifications of the renal arteries terminating in the *tubuli uriniferi* or excretory ducts of the kidney. Now recollecting the simplicity of their organization and the vast quantity of blood carried to them, one sixth of the whole that is carried by the aorta, we readily perceive the reason why such a large quantity of a saccharine fluid passes away by them, whilst the more complex structure of the other glands will generally so change the circulating mass, as not to permit the passage of the above fluid. It has been objected also to the liver's being the source of the disease, that dissection has not shown any morbid alteration in its structure. Meade, however, asserts that he found it very often diseased; but at any rate the

above is only a negative argument. Derangement of function does not necessarily imply destruction of organization. The liver may be in a torpid state from the languid circulation in the intestines and yet evidence no signs of disease after death. It would be worthy of investigation to ascertain what would be the consequence of tying up the biliary ducts, and what would be the effect particularly on chylification.

Regarding then diabetes as depending on a defective secretion of bile, the treatment will be in some measure opposed to that generally adopted, and in place of commencing with the use of astringents, animal diet, &c. we shall endeavour to stimulate the secretory vessels of the liver by the administration of brisk purgatives, as aloes or rhubarb combined with calomel. What would be the effect of inspissated ox bile taken at proper intervals? Another advantage attending purging would be, procuring fluid discharges from the intestines, thereby lessening the determination to the kidneys. From the intimate sympathy between these last and the skin, sudorifics have been highly recommended, as it is observed that the quantity of urine and perspirable matter is always in an inverse ratio to each other. But as the action of medicines on the skin depends on the impression made on the stomach, and as this viscus is in a diseased state, it cannot propagate the necessary train of motions to produce a free perspiration, and hence the disappointment so often experienced in the use of diaphoretics. On the other hand the sympathy between the intestines and kidneys is not much less than that between the latter and skin, so that purgatives might be expected to answer extremely well

the purpose of diverting action from the parts morbidly excited. Having accomplished these two ends, viz. restoring the secretion of bile and moderating the action of the kidneys, nourishing diet and tonics, exercise, &c. might be resorted to with advantage.

We now advance to the consideration of the connection between the diseases of the liver and those of the lungs. The sympathy between these viscera is both contiguous and remote,—the former from their vicinity to each other being only separated by the diaphragm; the latter from their similarity in some respects of function, both carrying off carbon from the blood.

In hepatitis, the lungs often take on diseased action. In one case of this disease, the patient for the first two days complained only of pain in his breast, accompanied by a hard cough and spitting of blood: after venesection and purging the usual symptoms of hepatitis developed themselves, with a jaundice. Here the liver was engorged, and its functions at first completely suspended, and the lungs thus tasked to perform double duty, became not merely sympathetically but organically diseased. In another case when the physician thought his patient labouring under Phthisis Pulmonalis and treated him by expectorants, &c. dissection after death showed the liver to be enormously enlarged, rising up in the thorax and pressing against the lungs to such a degree as to produce effusion of water in the cavity of the chest in order to relieve the vessels from their distention. The lungs were quite sound.

Many cases of Phthisis no doubt arise from similar causes with the above. The lungs will in many instances after death exhibit the same appearance as if primarily diseased, from having so long acquired the

habit of diseased action, so that even a removal of the original disease after a certain period would be ineffectual. From this we shall deduce the importance of forming a correct diagnosis in time.

It is most probable that many cases of consumption reported to have been cured by mercury have been disguised hepatic affections.

In *Bilious Pleurisy*, a disease of such frequent occurrence in the southern states, the pain in the breast is merely secondary, as is proved by the state of the pulse which is fuller and easily compressible, nor is the lancet of course required to be used to the same extent as in genuine pleurisy, but relief is obtained by emetics and mercurial purges. Of this compound disease originating in disorder of the *primæ viæ* we have instances in the *Pleuritis Verminosa* of Morgagni and the *Pneumonia Notha* of other authors.

The writer of this is acquainted with a gentleman who is subject to repeated attacks of pain in the right side of the chest, with a cough, which are removed almost invariably by one or two doses of calomel, which discharges a great quantity of bile. Another has cough and some symptoms of asthma, and is relieved by the same means which produce a similar effect.

It may perhaps be somewhat difficult to determine when the lungs are primarily or secondarily affected. The tongue is the best index under these circumstances. In the former state it is usually of a *natural* or *white* colour, and *moist*, whereas in the latter it is *dry*, *furred* and of a *brown* or *yellow* colour; there is also a bitter or nauseous taste in the mouth in the morning, at which time the patient or invalid feels worst, whereas in the

first he is at this period most free from fever and uneasiness, but is worse in the evening. In genuine pulmonic disease the pulse is frequent and more or less hard and resisting; in the symptomatic species it is fuller and softer. These with a due attention to the preceding diseases and habit of the patient will generally enable us to form a correct diagnosis, and prevent us, as is the fashion with some, from calling every disease a liver complaint. Such sweeping assertions savour too much of empiricism, and are only convenient cloaks for ignorance and indolence: thus when we are gravely told by a physician that such and such a disease is only a misplaced affection of the liver, without being able to assign any reason either anatomical or physiological for his opinion, we may safely infer that he is a charlatan or an ignoramus.

The consideration of pulmonary as connected with hepatic disease, inevitably leads us to touch on the winter epidemic which committed such dreadful ravages for two or three winters successively in various parts of the United States. It was generally termed *Typhoid Pneumonia* or *Pleurisy*. That this is a correct name for the disease as it appeared in various parts of the country, it would be presumption to deny, but that it universally assumed this type, we shall be far from admitting. Those who have treated of the disease have been too general in their accounts of it. It assumed different forms according to age, temperament, previous habits, or preceding diseases, and without entering into a minute detail of its commencement, origin and progress, it is sufficient to remark that in the young and robust it was chiefly the pulmonary system that was

affected, whilst in those of more advanced life, the abdominal viscera were diseased. The anginose form is to be regarded, for reasons to be hereafter given, as more a secondary disease depending on general derangement than primary.

In elderly persons and those of irregular habits, the hepatic system was evidently the part most deranged, as the manner of the disease being ushered in evinced, viz. by bilious vomiting, acute pain in the lumbar and right hypochondriac regions, shooting up to the scapula and shoulder, and dark, fœtid and bilious discharges *per anum*: this is what might *a priori* have been expected, on the principle that in proportion as a part is called into action or debilitated so will be its liability to disease. The abdomen felt hard and unyielding, and in fine there was nearly the same train of symptoms as in the acute hepatitis, supervening on chronic, before mentioned. On considering attentively the agents employed in respiration, we shall find, that if the abdominal muscles are fixed and permanently contracted, the diaphragm acts with difficulty and breathing is performed by the intercostal muscles. Pain, as in the case before us, will be felt at the breast and sternum, at the origin of the abdominal muscles, which are pressed against by the viscera within.

In this disease the efficacy of emetics has been generally acknowledged. Purgatives are by some thought a more questionable remedy, but they have been of unqualified benefit, by evacuating much dark and fetid feces, relieving the abdominal muscles, and rendering respiration easier, and removing pain. The pulse, before weak and irregular, now becomes fuller and more

uniform. The repetition of this class of medicines is to be regulated by the same rule as in other derangements of the hepatic apparatus, that is, they are to be continued until the fecal discharges are of a natural colour and smell.

It is not however to be concealed, that with purgatives, the best of which is calomel, we may combine with advantage stimulants, as opium and ipecacuanha in form of Dover's powder, the camphorated or volatile julep, &c. The calomel and carbonate of ammonia (volatile alkali) were sometimes prescribed together in powder, but this is a very unchemical procedure, as the alkali decomposes the mild muriate of mercury, and converts it into a black oxide. Whenever ptyalism was induced, the patient was considered out of danger.

As respects the use of the lancet in the more distinct pneumonic form of the disease,—some advised bleeding *ad deliquium animi*, whilst others again recommend the most powerful stimulants. Truth lies between the two extremes. At first, the system is in a depressed state, from which it will be roused by an emetic: heat and fever then succeed, accompanied by great pain, bloody expectoration, and hurried and laborious respiration; here if stimulants are used the lungs become completely engorged and the patient dies, as was too often the case.

The judicious use of the lancet, succeeded by the milder diaphoretics and mercurial purges, will prove eminently serviceable in such a state of the disease, and is perhaps the only course of treatment to be relied on. Of the local remedies, blisters are the foremost.

Cleghorn's account of the pleurisy of Minorca would justify the opinion of the epidemic of our country being in many points analogous, and its fatality under the usual treatment would lead us to enquire whether the same free use of the lancet with proper precautions might not have been equally serviceable in the latter as in the former disease. That judicious writer remarks that after bleeding at the commencement of the disease, the fever rose so high about the fourth or fifth day as to endanger the life of the patient, if not met by free venesection. The first stage was probably a depressed state of the system; in the second it reacted forcibly.

Now whether this was a disease precisely similar to our epidemic, is difficult to answer; but taking into view the latitude of Minorca, (40 deg. N.) the season of the year at which the disease appeared, and the symptoms by which it was characterized, we shall find such a coincidence as to justify our hazarding an opinion of the one founded on arguments drawn from the other.

We must here take the liberty of dissenting from those who maintain that a general and copious perspiration never failed to afford relief; and if kept up for twenty-four hours, accomplished a cure; or to use the language of the schools, it was a critical evacuation. Had this been correct, many who now slumber in the tomb and over whom the curtain of death has fallen might to this day have been actors on this busy, bustling theatre of life. We should no doubt be borne out in the assertion that a profuse watery sweat has existed

in many cases for twenty-four, aye forty eight hours before death.

The treatment of the anginose form of the disease would vary but little from that of the one first mentioned. By reference to the work of Hamilton on purgatives, p. 43, we shall find he quotes from a Mr. Rodbard, an account of a certain epidemic marked by the predominance of anginose symptoms. Mr. R. treated it by evacuants, as antimonials and purgatives, principally the mercurial. He considers as its predisposing cause whatever generates a quantity of acrid bile in the *primæ viæ*. In another place he says, the *pabulum morbi* is acrid bile.

What gives additional strength to the position assumed respecting the nature of our epidemic, is the fact that in many parts of the southern states, where bilious diseases are most prevalent, this epidemic raged with violence and was marked by all the symptoms of an highly aggravated bilious fever.

As vomiting was of acknowledged efficacy, and salivation not less so, in this formidable disease, what would be the effect of giving a dose of Turpeth Mineral to act as an emetic? In *hernia humoralis* this medicine has been prescribed as an emetic and a sialagogue; and the objection urged against it as being harsh and violent in its operation, and that we had better give milder emetics and afterwards salivate with calomel, &c. is not applicable here. We want something that will act promptly and powerfully, as we have scarcely time to wait for the operation of the milder mercurial preparations.

Extending the consideration of the subject to the

influence of the liver on our autumnal diseases, every American practitioner must be struck with the importance of a correct knowledge of the hepatic system and its connexions. In vain shall we prescribe the whole routine of remedies for this tribe of diseases, if the functions of the liver be overlooked or continue deranged. Why has the practice in intermittent fevers been so empirical. Why has bark, has arsenic, and the whole class of bitters and astringents so often failed in this disease. Because we have overlooked the state of the liver, and neglected to restore its healthy condition by the previous use of emetics and mercurial cathartics. Indeed by these last remedies, joined to bleeding, many cases of intermittent fever may be cured without any auxiliary means.

What renders a pupil of the European school, clothed in all the pride of science, so often inferior to one of our plain country practitioners, in the management of a bilious fever: because he has not been taught the importance of our viscus in disease. In vain shall we look to European teachers, trammelled by old and inveterate prejudices, for correct information on this subject. They will tell us of fever, of debility, of nervous tremors and muscular spasms, but very rarely have they fathomed the depth of the mischief, and it would seem to have been only within a few years, especially since the work of Hamilton has appeared, that they have acquired precise notions of the importance of attending to the intestinal discharges. The writer just mentioned has shown, that even in typhus, the bug-bear debility may be removed by the very means that were thought above all others, the most

calculated to increase it. Even he has restricted his views on the subject, when he limits the action of purgatives to the intestines alone.

Typhus as it usually appears in the United States, or at least in the south, is a protracted form of bilious disease. The torpor of the liver is propagated through the whole system: the bowels are constipated, the tongue loaded with a black or brown crust, and the eyes tinged with a yellow hue. Here by mercurial purges we stimulate the liver, restore the secretion of bile, and evacuate the intestines of the load that oppresses them; whilst by a simultaneous action the powers of the body are restored, or at least the susceptibility is now so much recovered as to enable us to give with advantage those stimulants and tonics which before would only have prostrated the system beyond the power of reaction.

May we not then lay it down as a fixed principle, that in intermittent, remittent, and continued fevers, including bilious and typhus, it should be our constant aim to support the intestinal discharges, and never expect a cure until their natural colour and appearance be restored; which is only to be accomplished by an healthy state of the biliary secretion.

Few diseases have excited more discussion as to its nature and treatment than *Dropsy*. Our present more correct physiological knowledge more particularly of the absorbent system and of the laws regulating it, have done much to facilitate our treatment of the disease, although it must be owned that much remains to be known.

Dropsy, or an effusion of water or serous fluid in

the cavities of the body and in the cellular membrane, may take place under two different circumstances: 1st, where there is an increased action of the arterial system; 2d, where the absorbents are in a torpid state. To these may be added whatever obstructs the return of blood by the veins. The blood when stopped at the extreme vessels or terminations of the arteries excites them to increased action, and there follows an effusion of fluid in the cellular membrane. If for example a ligature were passed round the great crural vein, or that it were much compressed, œdema of the thigh would result.

It is to something of this kind that we must refer those dropsies caused or kept up by visceral obstructions, and of these the most common by far is that of the liver. By recurring to what was said at the commencement as respects the circulation in the vena portarum, we shall be at no loss to account for enlargement or scirrhus of the liver causing ascites. The vena portarum, it will be recollected, is the trunk of all the veins arising from the chylopoetic viscera. Now if the liver become indurated and enlarged, it presses on this great trunk just as it begins to ramify through it, and produces precisely the same effects as the ligature applied round the crural vein, viz. an effusion of fluid which here is called *ascites*, and which is generally contained in the cavity of the peritoneum. But an indurated liver will not give rise to ascites alone. *Anasarca* may also proceed from it. It has been already mentioned that the vena cava abdominalis runs under the liver and sometimes through its substance. If it be diseased, pressing on this vessel it will give rise to

dropsy of the lower extremities and part of the trunk; but the proportion between the circulatory system being destroyed, general anasarca will soon succeed. Hence the practice of bleeding in this disease where there is increased action, first disseminated and enforced by the late Dr. Rush, is scarcely more important than attending to the state of the liver and purging and salivating where it is diseased. It is probable that we may now account for the fact stated by Dr. Ferrar, who in speaking of dropsy, tells us, that he found purging in some cases relieve, in others, aggravate the disease. In the simple atonic dropsy, purgatives might be hurtful, but where visceral obstructions exist their propriety is obvious.

Jaundice and *Chlorosis* may be regarded as the same disease modified by sex. Both are characterized by the obstruction of the biliary secretion; in both there is a yellow or dirty white coloured skin, languid circulation, constipated bowels and clay coloured feces; also anasarca swellings. The mind is much depressed, and even sometimes torpid. 'Tis true that chlorosis is supposed to originate from retention of the menses, and this may be the case, but this last is as often the consequence as the cause of the disease. Independent of the uterus being affected by the general debility of the system in this case, did time admit, we might by analogical reasoning render it probable that as the liver and uterus are both important glands, they would necessarily have a considerable sympathy founded on similarity of parts. As farther illustrating this connexion, bilious vomiting and discharges of black fetid matter by stool, are often predominant symptoms in

puerperal fever, and probably led Dr. Gordon of Aberdeen to its successful treatment by mercurial purges. Jaundice, arising from a variety of causes as biliary calculi, or viscid tenacious mucus, obstructing the cystic or common duct, scirrhus of the liver or pancreas, and sometimes perhaps enlargement of the small glandular masses contained in Glisson's capsule, also from accumulation of bile in the duodenum,—is only to be cured by remedies addressed to the liver. Emetics have a double effect both by their action on the duodenum, propagated along the ducts, and by the pressure produced on the liver in vomiting, by the abdominal muscles and diaphragm. Occasional bleeding is useful, but our chief reliance is to be placed on calomel in combination with aloes and rhubarb with soap. These to be succeeded by tonics, chalybeate preparations, and, if they can be called in, the exhilarating passions. Precisely the same plan is applicable in chlorosis. Both diseases exhibit clearly the influence of the liver on the mind, which is either impatient and fretful or gloomy and desponding; ever prone at this period to contemplate the dark side of things, and literally “corroding every thought.”

The connexion between the state of the alimentary canal and the various spasmodic diseases, as hysteria, epilepsy, chorea, &c. is now almost universally acknowledged, and need not be dwelt on here. Hamilton has illustrated this subject in his work on purgatives, and the account which he gives of the state of the digestive organs shows the absolute necessity of watching over the biliary secretion which is to regulate the healthy action of the whole canal.

In *Marasmus*, or general wasting of the body, prevalent among children and especially those who are kept in close and crowded manufactories,—the pathology of the disease was ill understood, the treatment of course unsuccessful, and parents had to deplore the gradual undermining of the constitution and exhaustion of vital powers in their offspring, without being enabled to procure them relief. Here, as in too many other diseases, symptoms ever illusory had misled practitioners; and while their attention was directed to the debility, they totally overlooked its cause, and gave tonics when they should have emptied the intestinal canal.

At length Hamilton, after refuting the opinion of the disease depending on worms, tells us, “I am more disposed to think that a torpid state or weakened action of the alimentary canal is the immediate cause of the disease.”

But when do we find a part torpid; either when it has been worn out by excessive action, or its appropriate stimulus has been withheld. What is the stimulus of the alimentary canal? Every person is prepared to answer,—the bile. On its obstructed secretion or vitiated quality then, depends the disease in question.

Cheyne, a writer already alluded to, has shown by dissections of those who have died of this disease, that the liver was firm and pale,—twice its natural size, and that the mesenteric glands were inflamed and enlarged. The best remedies in this complaint are purgatives; and from the experience of the two preceding authors, the mercurial are preferable. “The object of these is to remove indurated and fetid feces the accumulation perhaps of months;” and once let them exhibit by

their colour and odour the usual quantity of healthy bile, and “the gradual return of appetite and vigour marks the progress of recovery.”

Cheyne remarks that he has seen a strumous or scrofulous appearance of the child succeed obstinate bowel complaints.

The connexion between the intestines and skin has been repeatedly alluded to, and we are of course prepared to anticipate the origin of many cutaneous affections in a disordered state of the *primæ viæ*. One of the strongest irritants that can be applied to them is acrid bile, and accordingly we find that erysipelas, scarlatina, &c. and more especially the erysipelas infantum, often arise from this last cause. Schroeder, a German writer, observes, that we often wholly remove erysipelas by removing the irritating matter which is generally bilious, from the stomach and intestines. It is well known that an eruption round the lips is a sign of recovery from hepatitis. The gutta rosea and other eruptions attacking drunkards evidently depend on diseased liver; and hence the danger so often attending any attempt to remove them by external applications, as saturnine lotions, &c.

We might here say something about that epitome of all diseases—Gout; but to attempt an investigation of what has baffled the ablest men in the profession, would be futile. We shall only take the liberty of remarking that many of the phenomena of the disease indicate a connexion between it and derangement in the hepatic system, such as the paroxysm terminating sometimes in a cholera morbus, or diarrhœa, or dysentery, and the black fetid discharges following the use

of purgatives. To these we may add as exhibiting the analogy,—the causes inducing the disease, the persons and habits in which it is most apt to occur, and what is still more conclusive, the fact that after a *podagra* has continued for some time and treated by stimulants internally and blisters to the extremities, a change in the plan, resorting to a milk and vegetable diet and the occasional use of calomel as a purge, has substituted for this hydra of disease, a chronic inflammation of the liver.

Next to the stomach, perhaps no viscus has so close a sympathy with the brain and nervous system as the liver. They exert a powerful reciprocal influence over each other. Thus great injuries of the head proceeding from external violence, are often succeeded by bilious vomitings and sometimes also abscesses of the liver. In the same way the rays of the sun falling on a bare head are among the causes of hepatitis. Teething, which we know produces great irritation of the nervous system, has, according to Mr. Abernethy, suspended entirely the secretion of bile.

A bite of the viper has induced universal yellowness of the skin and bilious discharges per anum. Added to this, when we reflect that delirium is of more frequent occurrence in hepatitis than in any other of the phlegmasiæ, phrenitis excepted, we are unavoidably led to imagine that derangement of the liver is a frequent cause of many mental alienations, as *mania*, *melancholia*, &c. In completely marked *hypochondriasis*, there is an evident torpidity of the hepatic system, which seems to keep up and produce the disease, and causing that despondency and misplaced sensation so characteristic

of it. In melancholia there is nearly the same train of symptoms, more highly aggravated and joined to an erroneous judgment of things; and here our position receives additional confirmation from the fact that a melancholic patient sent into a miasmatic country is sometimes cured, by a strong and powerful determination made to the liver. The benefits resulting from drastic purgatives and from mercury, may all be accounted for on the principle of their exciting to new action the biliary apparatus.

The power of the passions over our viscus is well known. Thus a violent paroxysm of anger has caused hepatitis, cholera morbus, and at other times jaundice. Zimmerman, at once the philosopher and physician, informs us in his work on dysentery, of a case of that disease that terminated fatally, solely from an intemperate indulgence in passion. The continued operation of hatred and anger will cause a pain in the right hypochondrium, and other concomitant symptoms. Fear and grief on the other hand, are followed by the pallid or jaundiced skin, weak pulse, and enfeebled appetite, proclaiming a torpor of the liver amounting sometimes to scirrhus. Jealousy has been so long supposed to have an almost specific relation to this organ, that poets both ancient and modern, in portraying its baneful effects, speak of the jaundiced eye of jealousy, viewing all objects through its distempered and discoloured medium.

These effects of the passions did not escape the authors of holy writ, who, in the beautiful simplicity of eastern style, describe pity, forgiveness, &c. by a figure like the following: "and his bowels were moved with

compassion:" and in another place, " his bowels yearned," &c.

To conclude, as the sound state of the brain is necessary to the proper reception and transmission of sensation; and that of the heart to supporting the vigour of the circulation, so is a healthy condition of the liver essentially requisite for the due performance of digestion and assimilation. Its size, situation, connexions and office, all conduce to vest it with absolute sway over the other abdominal viscera. It will not, it is true, like the stomach, when irritated excite those rapid and violent commotions which threaten our frames with instant dissolution; nor does it on the other hand, possess that power of accommodating itself to noxious impressions, which the stomach evinces in common with the rest of the alimentary canal.

The liver is slow in taking on diseased action, but proportionally tenacious of it when once established. In this state, Proteus like it wears the mask of all diseases, and we can only hope for success in eradicating them, by a close examination of its transmutations and a knowledge of the disguises it assumes.



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