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*Thesis*  
in the University of Glasgow  
and part of the of the  
with a paper on

by J. Ryan M.A. &c.  
and candidate for the degree of M.A.  
of the University of Glasgow

1845

GLASGOW  
1845  
UNIVERSITY  
LIB. RT.

John Ryan M.A. 1845

The liver is a secreting gland the largest in the human body. it fills the right hypochondrium extends through the epigastric region into the left hypochondrium as far as the cardiac orifice of the stomach sometimes as far as the spleen. It is situated below the diaphragm and above the right kidney the stomach and lesser omentum. It is held in this situation by several folds of peritoneum termed ligaments. The fatiform fovea is on the right and left coronary. The liver is of an irregular form its longer diameter being transverse its posterior edge is thick and in contact with the diaphragm its anterior edge is thin and convex. Two nodules may be observed in it one for the transmission of the common biliary or obstructed umbilical

From the other depression corresponds to  
the greater lobe. The Superior surface of the  
liver is smooth and convex and is divided  
by the suspensory ligament into a right and  
left portion and is in contact with the under  
surface of the diaphragm. The inferior surface  
is irregular marked by several projections  
and depressions, the former are called lobes  
and are five in number viz first the great or  
right lobe, second the left, third the Spigelian  
or Middle lobe this is situated behind the  
lesser curvature and transverse fissure it is  
connected to the right lobe of the liver by  
two roots. The lobulus caudatus or fourth  
lobe of the liver is also immediately behind  
the transverse fissure and abounds from the  
Spigelian along the right lobe between the

depressions marked by the colour and light  
 kidney. The lobulus quadratus or 5<sup>th</sup> lobe  
 is at the anterior part of the anterior part.  
 Right lobe in front of the transverse fissure  
 and behind the gall bladder and the  
 horizontal fissure. The depressions in  
 the superior surface of the liver are the fol-  
 -lowing. First the transverse fissure which is  
 situated between the lobulus quadratus and  
 caudatus. The vessels and nerves of the liver  
 enter the gland in this particular fissure.  
 Second the horizontal fissure extends from  
 the notch in the anterior edge of the liver, backward  
 between the right and left lobes. the anterior  
 part of this fissure contains the obliterated  
 umbilical vein, the posterior part the obliterated  
 ductus venosus. Third the fissure for the

A  
Vena cava is between the lobulus Spiegelii  
and the right lobe, fourth the depression  
for the gall bladder fifth a depression for  
the right kidney and its capsule 6 a slight  
depression on the under surface of the left  
lobe corresponding to the anterior surface of  
the stomach. 8<sup>th</sup> a broad notch in the poste-  
rior edge of the liver, corresponding to the spine  
and right cross of the diaphragm. The Vena  
Cava hepatica leave the liver in this situation

The liver has a peculiar brown colour inter-  
-spersed with yellow, in some subjects it is  
much darker than in others. In the young it  
is red and soft, and in the old it is green-  
-ly pale and yellow, often hard and brittle.  
The liver has two coats a serosa  
and a fibrous. The serosa is peritoneal

coat covers the whole surface of the  
 liver except in those situations where  
 the vessels are situated and between the  
 lamina of the coronary ligament and in  
 the depression in which the gall bladder  
 is lodged, also when it is in close contact  
 with the diaphragm behind. The serous or  
 fibrous coat of the gland is the immediate  
 capsule it is little more than condensed  
 cellular membrane. It is very distinct when  
 the serous coat is deficient it adheres  
 to the liver by innumerable processes which  
 pass into its substance. It accompanies  
 the three vessels which enter and leave  
 the transverse fissure of the liver and  
 ramifies thro' the substance of this organ

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Accompanying these Vessels, it surrounds  
them rather loosely so much so that when  
these Vessels are cut by a perpendicular  
incision thro' the substance of the Liver  
they will be found to collapse and bleed  
this shade has got the Name of Capsule of  
Glossow. The Structure of the Liver consists  
of numerous granulations of a peculiar brown  
and yellow colour, connected together  
by branches of the Hepatic Artery Veins  
and ducts, these grains are called the acini  
of the Liver by Malpighi in each of them a  
branch of the Hepatic Artery and Vena porta  
terminate and out of each proceed a  
branch of the Hepatic Veins and ducts -  
Through the substance of the Liver 4



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sets of Vessels ramify in addition to  
Numerous Lymphatics. Viz. The branches of  
the hepatic Arteries Vena portarum, Hepatic  
Ducts and Hepatic Veins. The Vena portarum  
are supposed by some to be the Vessels from  
which the bile is secreted, The hepatic Arter-  
ies a branch of Celiac Arteries nourishes the  
Substance of the Liver the hepatic ducts carry  
the bile from this organ and the Vena Cava  
hepatica return the blood which has  
circulated through the Liver to the inferior  
Vena Cava. Thus are generally three or four  
of these Veins and are seen escaping at  
the thick edge of the Liver immediately  
behind the coronary Ligament and joining  
as I said before the inferior Vena Cava. The  
three other Vessels may be seen in the layers

of the lesser omentum. The artery lying to the left side the duct to the right and vein posterior and between both. This vein is formed by the confluence of the Splenic and Mesenteric Veins. There are two hepatic ducts named the right and left, which on escaping the transverse fissure of the liver unite and form one duct or may be termed the proper hepatic duct. This descends for about an inch or two on the right side of the lesser omentum, when it is generally joined by the Cystic duct of the gall bladder. The union of both these ducts has got the name of Ductus Communis Chole-  
 =cus. This duct is about three inches in length descends behind the pylorus to the upper part of the duodenum about

The Middle of the internal or concave side of the Middle division of this gut the duct perforates the coats of this intestine in an oblique direction as this duct is about (perforating) the duodenum it is frequently joined by the duct from the pancreas.

The gall bladder being so much close contact with the liver and in fact might be considered a portion of it. I may therefore make a few remarks on its situation appearance and structure. It is situated in a depression on the inferior surface of the right lobe of the liver. It is of a pyriform figure, the large extremity being directed downwards and a little

forwards. projecting sometimes against  
 the parietes of the abdomen. The neck of  
 the gall bladder is directed upwards incli-  
 -ning backwards and inwards. And ends in  
 what is termed the cystic duct. The  
 gall bladder is closely united to the liver  
 by peritoneum. Cellular Membrane and  
 small blood vessels. It may be con-  
 -sidered to consist of three tun. Ms. Viz  
 1<sup>st</sup> the external or serous which is only  
 a partial coat 2<sup>nd</sup> The Cellular 3<sup>d</sup> It  
 is lined by a Mucous Membrane. The gall  
 bladder serves as a reservoir for the bile  
 when it is not required in the intestinal  
 canal.

Having thus considered the anatomy

And structure of the liver and gall  
 bladder. I may now make a few remarks  
 on the physiology of the liver. Much has  
 been said from time to time respecting this  
 But at present the opinions of Mr. Keenan  
 is generally adduced. Any information  
 that can be added this important subject  
 adds in no small degree towards Medical  
 literature. Some consider that the extreme  
 subdivisions of the hepatic artery all  
 terminate in veins that run into the branches  
 of the Ven. porta, this vein then cannot be  
 considered to arise solely from the other  
 abdominal Veins. Also the hepatic  
 artery as far as can be traced has no  
 termination in either biliary ducts

or hepatic Veins and most Physiologists  
 conceive that it is destined for Nutrition  
 and not for the secretion of bile. The  
 Subdivision of the Vein porta all terminate  
 in or become the hepatic Veins. That the  
 Minutest biliferous ducts. The subdivisions  
 of the Vein porta and hepatic Veins  
 are conglomerated into Minut Masses or  
 Lobules. These are surrounded except  
 at their base with a prolongation of  
 Glisson's Capsule and are supplied  
 with Minut Arteries and probably with  
 Nerves and absorbents. That the branches  
 of the Vein porta after running between  
 the Lobules and covering them (except at  
 their bases) and freely anastomosing

Around them so as to form a continued  
 plexus throughout the whole liver, and  
 enter the lobules, most minutely subdivided  
 and become hepatic veins, which unite  
 into one large vessel in each process  
 of every lobule and again these vessels unite  
 into one larger which passes down the  
 centre of the lobule and goes out at the  
 base. The veins thus formed run between  
 the bases of the lobules and are sometimes  
 and are called sublobular. The minutest  
 biliferous tubes form a reticulated plexus  
 in each lobule and unite into branches  
 which leave it. These I will call lobular  
 biliary plexuses. They have much the  
 appearance of cells. These are what

Malpighi and others have termed  
 vein of the liver. In these veins we can  
 perceive the bile which flows slowly  
 but constantly along the hepatic duct  
 The greater portion comes along the ductus  
 communis which descends into the <sup>in</sup> descending  
 but some passes from the hepatic into  
 the cystic duct and receives <sup>by</sup> into the  
 gall bladder, where it remains for a  
 short or longer period and receives then  
 the name of the Cystic bile. This has great  
 analogy to the hepatic, but becomes more  
 concentrated viscid and bitter, by stagnation  
 in the gall bladder. The cause of which is  
 in all probability owing to the absorption of  
 its more watery parts by the lymphatic  
 vessels. Many animals have no gall bladder  
 such as the Horse and goat & Currier



think that it is intended as a reservoir  
of bile when the animal is subject to long  
fasting from the uncertain supply of food.  
The gall bladder is sometimes absent  
in the human subject. It has been disput-  
-ed whether the bile is produced from  
arterial or venous blood. The former opi-  
-nion is countenanced by the analogy  
of the other secretions which depend  
upon arterial blood. Nevertheless more  
accurate investigations prove that the  
greater part if not the whole of the  
biliary secretion is venous. Our attention  
must now be turned to the bile itself,  
respecting the nature and use of which  
there has been much more controversy

than about any other fluid. Bil. taken  
 from a fresh adult subject is rather  
 viscid of a brownish green colour in-  
 -odorous and if compared, with that  
 of hautes, scarcely better. Berghius states  
 that the bil. contains alkali and salts  
 in the same proportion as the blood  
 acid that it contains No Vesiv. but a  
 peculiar matter of a bitter acid <sup>2180</sup> afterwa  
 somewhat smart taste, which possesses  
 characters in common with fibrin, the  
 coloring matter and the albumen of the  
 blood. This forms with an excess of a  
 perfectly unious Calaca precipitate what  
 was considered albumen in the bil. Berghius  
 regarded as the source of the gall bladder

Bile contained according to Linn

Water	-----	917.4
Colony Matter	-----	80.0
Mucus of the gall bladder	-----	3.0
Alkalies and Salts	-----	9.6
		<hr/>
		1000.0

It being thus considered the Anatomy and Physiology of this important organ I can with greater facility recount the description of the particular disease called Hepatitis - We might have been led to imagine that the liver is not so seriously exposed to disease as other parts in the abdominal cavity. The alimentary canal is at any rate especially exposed to the various qualities of the food which passes thro' it: and the character

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of its secretions is sometimes found  
acid and irritating. And this often  
times leads to mischief. The liver is found  
to be affected not only by Modifications  
of its secretion but likewise by external Causes  
and through the Medium of the Cir-  
-culation. All Kinds of Matters however in-  
-troduced into the Circulatory Current  
have to pass through the Venae portae &  
through the liver and this exercises a  
direct effect upon this Viscus. for instance  
Spiritus liquoros are liable to disorder  
the functions of this organ and also  
any other class of irritating and poison-  
-ous substances. The chief external influen-  
-ces which affect the liver are cold and  
heat it is known that in warm climates

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Disease of this organ is peculiarly  
apt to suffer and its functions to be  
disordered, there might be several other  
reasons assigned to the liver becoming  
affected. but considering that these  
are sufficient I hasten to return to a more  
particular part of the procedure, The  
disease which I wish to consider under  
the head of inflammatory affections of  
the liver, will be Hepatitis of the acute  
form. This disease is described as a  
very distinct one attended with symptoms  
of inflammation and disorder of the  
functions of the liver, But I have found  
at least in the country that I belong  
to, that this affection is more obscure  
than it is commonly supposed to be

And far less distinct in its character.  
 The symptoms are commonly those of  
 pain in the right Hypochondrium extending  
 to the back and sometimes to the Shoulder  
 and generally very acute, permanent,  
 and increased on pressure, a white  
 and dry tongue, slow respiration,  
 cough and difficulty of lying on the  
 left side, patient generally prefers lying  
 on the back. Bowels sometimes constipated  
 at other times diarrhoea is present. The  
 enlargement in the right hypochondria  
 region is a very diagnostic mark peculiarly  
 usually the enlargement extends downwards  
 across to the umbilicus. It is frequently  
 found from 2 to 4 inches below the margin

of the ribs. If there be a displacement  
 or enlargement of the liver upwards, it  
 pushes the diaphragm along with it  
 causing a considerable amount of  
 dulness in the right side of the chest  
 Not seen this but other signs of disor-  
 =der in the respiratory functions, a  
 case of which came under my notice  
 in the summer of 1844. The dulness will  
 be sometimes perfect as high as the fourth  
 rib. in the back though less in degree  
 the sound reaches to the angle of the  
 scapula and occasionally passes into  
 the axilla. There is a <sup>plentifol</sup> sound of dulness  
 in those parts on which the diagnosis  
 of enlarged liver depends. This particular

disease is to be diagnosed from effu-  
 sion into the pleura and pulmonary  
 consolidation: either of which may  
 greatly simulate it. In this essay  
 it does not come within my province  
 to point out the distinguishing marks  
 that exist between each. The enlargement  
 then takes place downwards or upwards  
 it also takes place outwards, this assists  
 materially in the diagnosis. It is a very  
 marked sign when there is fulness in  
 one portion of the chest that does not  
 correspond with the opposite side  
 especially when such fulness is attend-  
 ed by dullness in the region of the  
 liver and also a bulging out of the ribs



Enlargement alone does not constitute  
 a criterion of hepatitis. Enlargement  
 with dulness may exist in congestions  
 and in various structural diseases  
 and we must look therefore to the presence  
 of fever heat of the skin and state  
 of the pulse. There are other symptoms  
 which occasionally attend hepatitis  
 such as nausea vomiting and occasional  
 jaundice. Termination of the disease.  
 The tendency of the disease in the acute  
 form is either to terminate by resolution  
 by suppuration, or to pass into the Chronic  
 state. The symptoms of the former are  
 subsidence of the pain, the heat and the  
 fever and lastly the disappearance of the

Swelling. The symptoms of suppuration  
 occurring are chiefly subsidence of the  
 heat and pain, but no subsidence of  
 the swelling, and only a partial sub-  
 =sidence of the pain. There are frequent  
 ulcers as in other cases of suppuration  
 The skin exhibits a pallidity sometimes  
 accompanied with a hectic flush on  
 the face, abscesses next form, frequently  
 many of them, The abscesses may open  
 in various directions, such as into  
 the intestinal tube, sometimes into the  
 duodenum, sometimes into the gall  
 bladder or even pass through the diaphragm  
 into the pleura, sometimes into the peritoneum  
 but rarely open externally

The treatment of this disease, whether it occurs in the substance of the liver or in the peritoneal covering is to be conducted on the same general principle.

The Measures of most importance are strictly antiphlogistic, Venesection in the early stage of the disease, or cupping to the side to a large amount which in some cases answers very well, by drawing away the blood from the immediate neighbourhood of the part, which must be done till pain decreases, as well as the pain in the region of the liver, the tenderness and the swelling, purging is a very beneficial remedy especially Calomel. Copious purgatives followed by salines. Cupping may be <sup>repeated</sup> several times. Mercury is a remedy of

great Value, but it is questionable whether  
it is so useful in the acute as in the Chronic  
form of hepatitis. It is frequently  
combined with Tartarizd Antimony and  
Sulphur powder. It is necessary to main-  
tain the free action of the bowels and to  
give occasional doses of Calomel after  
attacks of acute hepatitis as the inflamma-  
tion is apt to remain in a lower degree  
and to go on to the Chronic form, or to pass  
into structural disease. Therefore Mild  
Mercurial doses should be continued  
Contra Indication is frequently used with  
considerable benefit especially after the  
application of Cupping and leeches.  
Various other Remedies might be mentioned But  
considering the present subject for the present  
occasion. I try to conclude