WONDERS OF HUMAN BODY

Is a Sack of Moving Fluids, With Tides.

Blood About One-Eighth of Body Weight—Marvelous Adoptability of the Blood Vessels.

There is perhaps no fact about the human body so surprising to him who hears it for the first time as that the body is practically a sack of circulating fluids. A man weighing 150 pounds contains about 110 pounds of water, most of which is combined with other elements to form fluids thicker and heavier than water. If the weight of the water, then, in the human body is nearly three-quarters of the total weight, the weight of the fluids of which that water is a part is considerably greater. We may mention, for instance, that nearly half of the blood, by weight, consists of solid matters, the cells, and that the blood as a whole is from 5 to 8 per cent heavier than water.

Still more interesting, the fluids of the body are all in constant motion. The body is a collection of fluids all moving in tides round, back and forth, in and out. All these fluids are manufactured in the body mainly by the glands. Some are made in large quantities, some in small quantities, some are used up quickly, others are so slow in being used up and replenished that they may be called "the fixed fluids." Some of the tides in the body's fluids move like Niagara; others like a glacier.

Of the fluids of the body about twenty-five have been recognized and studied. That there are more than this we know; how many more we do not know. There has been discovered quite recently a new fluid (the "adrenoxin" of Sajous), knowledge of which elucidates many physiologic operations hitherto but imperfectly understood.

In a general way the fluids of the body may be divided into the fixed and the tidal. This distinction is, in reality, quite arbitrary; for the fixed fluids are always slowly dying and passing out of the body, while at the same time they are being constantly renewed. Among these "fixed" fluids may be mentioned the serous. In many places in the body there are surfaces which constantly play upon each other, as, for instance, the lungs against the chest walls in respiration. In situations like this we often find a closed sac so disposed that it covers both surfaces, as in the chest the outer surface of the lungs and the inner surface of the chest are covered by the pleura, which is a closed sac containing a serous fluid, which moistens the surfaces and prevents undue friction during respiration.

Two interesting fluids are the tears and the meibomian fluid of the eye. The lachrymal fluid (or tears) is produced and stored up in two little glands, one on the inner side of each eyeball. If any foreign substance lodges in the eye the gland is informed of the fact by a delicate telegraphic arrangement, and a flow of tears is poured out for the purpose of dislodging the intruder. The apparatus as a whole is one of the most delicate and beautiful in the body.

The meibomian fluid is formed by a system of tiny glands situated on the under surface of the eyelids. On the upper lid there are about thirty of these glands, while the lower lid contains almost as many. The ducts of these glands open on the inner edges of the eyelids and pour forth fluid which prevents the lids from adhering to each other or to the eyeball.

These fixed fluids, however, are much less important and much less interesting than the fluids which fluctuate through the body. Of these the one most essential to all the life processes is the blood. The blood is the center of all the activities of the body. Into the blood enter the oxygen from the lungs and the digested food, while out of the blood are filtered the other fluids or the material from which they are made. The total amount of blood is about one-eighth of the body weight—that is, about eighteen pints (nine quarts), in a person weighing 144 pounds. The blood, while in constant motion from before birth to death, varies somewhat in its distribution. As a general thing is may be said that of all the blood in the body one-fourth is in the heart and great blood tubes near the heart, one-fourth in the muscles, one-fourth in the liver and one-fourth in the rest of the body. By a marvelously beautiful and complex arrangement of the nervous system the caliber of the blood vessels is regulated in accordance with the requirements of the system. Through the action of the nervous system the arteries (blood vessels) of the part used or to be used are increased in diameter. By this increase in caliber the part receives more blood, and the glands (which are merely filters), have more materials out of which to manufacture their products.

For instance, the thought of food or the eating of food causes an increase in the caliber of the blood vessels (arteries) going to the stomach. This increase means more blood to the part, and the glands of the stomach, which produce the gastric juice from the blood, receiving more blood, begin to pour out their fluid. It is estimated that the amount of gastric juice so poured out is usually not less than ten quarts a day. The quantity of saliva is probably from one to two quarts, and that of intestinal juice, while not exactly known, is probably quite equal to the amount of gastric juice. Then there is the bile, of which there is produced from the blood from one to two quarts. All this fluid—about five gallons—is withdrawn from the blood and returns into the blood every day. For, of course, the fluids poured out into the mouth, the stomach and the intestines are reabsorbed with the digested food, again entering the blood and supplying material for the maintenance of the life process.

The lymph circulation is peculiar and important. During the passage of the blood through the capillaries, a portion of the plasma, or fluid part of the blood, escapes from the vessels and bathes the tissues, which select from it the materials they need for their sustenance. The excess of this plasma not used by the tissues is reabsorbed by a set of vessel called the lymphatics. These lymphatics unite, forming larger and larger trunks, and finally ending in two ducts or tubes, one on each side of the body, which return the lymph so absorbed into the blood stream near its entrance into the heart.—W. R. C. Latson, M.D., in Chicago Record-Herald.

There are 107,848 dressmakers employed by firms in London. The highest wages obtainable—except in the case of about a dozen heads of departments—are 18 shillings a week.

Rev. E. H. Wallace, pastor of the Montoursville (Pa.) Methodist Church, has discharged the old church ushers and substituted four pretty girls. The size of his congregations is growing rapidly.

From London Punch.

Lady—Have you lost yourself, Little Boy?

Little Boy—No—boo-hoo—I've a found a street I don't know!

Starting a Balky Horse.

For the benefit of those who have been caused a great deal of anxiety by a balky horse, lost trains as well as tempers, and even sometimes ruined the horse, says a correspondent in the Horseshoers' Journal, I will give your readers a remedy which, no matter how bad he is, will start such a horse 99 times out of 100. Of course it may fail one time in a hundred. When a horse balks, no matter how badly he sulks or how ugly he is, do not beat him; don't throw sand in his ears; don't use a rope on his forelegs, or even burn straw under him. Quietly go and pat him on the head a moment; take a hammer, or even pick up a stone in the street; tell the driver to sit still, take his lines, hold them quietly, while you lift up either front foot; give each nail a light tap and a good smart tap on the frog; drop the foot quickly, and then chirp to him to go. In 99 cases out of 100 the horse will go right on about his business, but the driver must keep his lines taut and not pull or jerk him back. If I have tried this once I have tried it 500 times, and every time I have suggested it people have laughed and even bet $5 and bottles of wine that I could not do it. So far I have won every bet. This may make you smile, but a horse has more common sense than most people are willing to give him credit for. The secret of this little trick is simply diversion. I am a firm believer that with kindness and proper treatment a horse can be driven with a string.

Chicago, Nov. 27. — Harry Van Dyne and Peter Niedermeier, accused of sensational murders and robberies at the street car barns in Chicago, are reported to have been trapped in a dug-out near Miller Station, Indiana. The dug-out has been surrounded by Chicago police. Urgent telegrams for help reached Assistant Chief of Police Schuettler trees; all in good order; onlypaJgoCh-.. today, and fifty men under the assistant chief's command, left at once for Miller Station, armed with Winchester rifles and revolvers.

The Lutheran Church ranks first among Protestant denominations in the United States, having 1,200 congregations and a membership of 1,800,000; 48 theological seminaries, 43 colleges, 50 academies, 10 young ladies' seminaries, 22 hospitals, 52 orphan asylums, 20 homes for the aged and 8 deaconess houses.

LIFTING A BIG BATTLESHIP

Thousands of Tons Taken Out of the Water.

Operation Without a Parallel in British Naval History—How It Was Done.

The lower reach of the Medway was recently the scene of an experiment which is without parallel in the records of the royal navy, so far, at any rate, as British waters are concerned. A line-of-battleship in commission, of about 11,000 tons displacement, with all her armor, guns and stores in position, was lifted bodily out of the water. The feat formed part of the official trial of the new Bermuda floating dock.

The vessel that the admiralty had selected to be docked was H. M. S. Sans Pareil. She is 340 feet long and 70 feet wide. Her armor is 16 to 18 inches thick, and her principal armament consists of two 110-ton guns, which are both carried in a heavily-armored turret well forward.

It will be seen from this that though the Sans Pareil is not of so great displacement as the most recent battleships, there is a concentration of weight which is disposed to test severely any floating platform upon which she has been supported. The dock has been moored in a deep part of the river, just off the mouth of the Swale, and at about high water the battleship, which was lying above Sheerness, was taken in charge by three tugs and brought up to the lower entrance of the dock. There was a smart breeze, and so long as the flood lasted there was quite a run at sea.

There is, of course, a great difference between entering and grounding a big ship in a dock floating in still water, and carrying out the same maneuver in the run of a turbulent tide-way. About 12 o'clock the ram bow of the Sans Pareil was entered between the walls of the dock. The ship was then drawing about 27 feet 4 inches. The dock had been sunk until only the tops of the walls were above the surface, and the tops of the keel blocks were just upon 28 feet below the surface. The ebb tide had begun to make down strongly by the time the bow of the ship had been well entered.

THE OPERATION.

The wire rope cables were made fast and the delicate operation of warping-in began. The tide was now running through the dock at over three knots, but as it was in the same direction as the wind, the water was smoother than before. The chief constructor of Chatham dockyard, Mr. James, took charge of the berthing, and under his direction the vessel was, after some time, brought within the dock, and accurately placed in a central position. The operation of shoring up then began. An army of dockyard hands placed balks of timber so that they extended horizontally from the side walls of the dock to the ship's sides, and these were tightly fixed by means of wedges driven between their ends and the dock sides.

The Sans Pareil was now just resting on the keel blocks, and tightly pinned on the center line of the dock. The time occupied in berthing the vessel and in fixing and in putting the shores in place was about two hours.

The eight large circulating pumps were started shortly after 2 o'clock to clear the dock of water. In this part of the proceedings care has to be taken that both sides rise equally; otherwise a considerable strain may be thrown on the struts on one side. The work now was carried on under the direction of Mr. Lyonel Clark, who has had considerable experience in these operations, and of Mr. Denton, of the firm of Swan & Hunter. Pumping was continued until the tips of the propeller blades were showing, and the spur or ram bow was well out of water. At 3 o'clock the pumps were stopped, and a fresh row of shores was put in position on each side.

The successful docking of a heavy battleship under conditions by no means the most favorable shows the utility of floating docks, and, though there are divided opinions as to the rival merits of the excavated graving docks ashore and the floating structure, there can be no doubt that the advocates of the later have scored a substantial success in the operations in the Medway.

It will perhaps be remembered that the United States battleship Illinois, a vessel of over 11,000 tons, was recently docked in the same manner. The Americans, however, proceed on a different plan. In place of poising the ship on her keel and trusting to shores to keep her upright, they build into the ship's structure docking keels, of the nature of bilge keels, so that the vessel sits upright on level blocks. It is said that these keels do not detract appreciably, if at all, from the speed of the vessel. This is a statement that would have received less credence a few years ago, but recent investigations into the subject have shown that the supposed resistance due to bilge keels has been much over-rated, especially when vessels are steaming in anything other than smooth water. However this may be there is no doubt that the extra keels much facilitate docking operations, either in floating docks or otherwise, the fitting of the struts being a heavy and tedious operation.—London Times.

THE SORT OF FOOLS FOUND TO BE USEFUL

Short Discourse on the Unility o Certain Types.

Into the "clever fool" class come two very rare and superior kinds. One may live a lifetime and not encounter more than one of each. But they do exist. We mean the learned fool and the fool of culture. The learned fool is a "fact glutton," if we may be allowed the expression. He has more appetite for knowledge than power to assimilate it. Kept in his place, he is useful as a kind of index to other men, but once let him get what Scotch people call "above himself," and he will begin to use his facts as missiles and become a great intellectual danger. The cultivated fool has lived in the hothouse atmosphere of a highly cultivated clique till he literally smells of culture; but the source of the aroma is not in his own mind, and if put out to air among Philistines for a sufficient period he will lose all traces of his much-prized artificiality. It is a great bore to be obliged to observe for any length of time the antics of this type of fool; but they are amusing sometimes to tell about.

Very few "silly fools" afford any pleasure to the spectator. Yet out of two types of them some dangerous entertainment may be derived. The first of these two is a pretty woman—an inhabitant, perhaps, of the "fool-frequented fair of vanity." But she may thrive anywhere in any station. As a rule she is not such a fool as she looks, and her mind is capable of some expansion, at least in one direction, the direction of self-interest. The man made to match her is generally aware that folly is his most remarkable quality, and as he likes to be remarkable for anything, he exaggerates all he can. Did he omit to act in an ineffably silly manner, no one would notice his actions at all. Those who enjoy the sight of his folly are to a great extent responsible for him, and as he is an entirely useless member of society the responsibility is pretty heavy.

As to the fool of fiction, the only fear about enjoying him is that we should come to imagine that he really exists. The greater number of fictitious fools are in French books. The fool of the French author is a puppet made of a mixture of saintliness, silliness and sin. Generaly he does not know right from wrong, and he seldom has any sense of duty. All his good works are works of supererogation. He is capable of self-sacrifice, and his errors proceed from defect rather than design. Not that he is deficient in the ordinary sense of the word; indeed, he is usually represented as having some kind of genius.

As to the fool who never knows his own interest, he may be the most charming or the most irritating of people, but it is impossible in either case to dislike him. In the least estimable form he is "no one's enemy but his own." In his highest he is one of the finest types which human nature produces. The early Franciscans called themselves "the fools of the world," and an epitaph on a priest of the fourteenth century (quoted by Doran in his "Court Fools") invokes heaven for "this thy fool." We find the expression "a fool in the court of God," used in 1609 in a laudatory sense. Probably St. Paul's daring and eloquent expression, "We are fools for Christ's sake," threw this fanciful and beautiful side meaning into the word. The man who realizes that the highest wisdom is not to be measured by the foot rule of prudence is perhaps the only fool whose folly may be enjoyed without economy, and who all through the ages has illustrated the old saying that "a fool may learn a wise man wit."—London Spectator.

Wax From Worms.

On the banks of the River Anning, in China there grows a tree—known as the Ligustrum Lucidum—which in the spring becomes covered with little excrescences about the size of a pea. If we cut one of the bulbs we shall find inside what at first appears to be farina, but if we examine the contents carefully we shall discover myriads of eggs, which represent the product of an insect known as the white waxworm.

In the latter part of April the Chinese gather these bulbs and put them into little bags, each containing about one-half pound in weight, after which they are carried to the town of Chiating, where there is a regular market for this queer product. At Chiating the bags are emptied and the contents redistributed in little sacks made of leaves, about twenty of these bulbs being placed in each bag, and after the leaves have been pierced with holes they are suspended from the branches of a tree, which botanically named is the Fraxinus chinensis. Of these trees we find large plantations around the town of Chiating, this tree being the feeder of the worm, as the Ligustrum was the producer.

It generally requires about fifteen days for the larvae to complete their transformation, after which—having become full-grown insects—they abandon their artificial homes and install themselves upon the trees reserved for them. The females at once begin to lay eggs, and in order to protect them these tiny mothers place them under the bark itself. The males complete this work of preservation by secreting a greasy matter, which in time completely covers the trunk and branches of the tree with a brilliant, moisture-proof varnish. This varnish, however, is the product sought by the Chinese, and is the purest of white wax.

The wax is now gathered, and in order to do this the inhabitants of the country carefully scrape the trunk of the tree and cut off the branches and throw them into boiling water. The wax is thus melted, and after the water has been cooled it is found in a thick deposit on the bottom of the vessel in which it has been boiled. The wax is sold for about 60 cents a pound, and is equal in quality to the best product of our native bees.—Public Opinion.