

YOURSELF and YOUR BODY

By WILFRED T. GRENFELL

THE PUMP AND PIPES



"BUT father, how does the lymph get back?" "Every time you move a muscle or breathe, you squeeze it out of the spaces which end in openings into special little vessels. Valves keep it from ever getting back. So on and on it has to go into a large pipe, which empties at last into the blood through a big vein in the neck near the heart. It is pushed on also a little by the heart, and sucked on by the current in the vein. Moreover, it is helped along by the fact that it is different in composition from the other fluids, and so passes out into any fluid next to it. This process is called diffusion."

"But, father, what makes the blood go round to all the cells?"

"I don't wonder you ask. That is a real job, isn't it? For, you see, the cells cannot live as we can, on meals three times a day. They must get air and food brought to them day and night and all the time. So long as they get that, they do not care where they are, and they will therefore grow outside the body just as well as inside. If you also keep them warm. Then you must remember what an awful lot of pipes we must have to reach all the cells, and what an awful heap of pumping we shall have to make our pump do. Moreover, ours are far the most wonderful pipes in the world. They grow bigger or smaller just as they are told."

"There is a trap in the pipe. What makes the trap shut? Why, because it is a valve or trap which opens only one way, and the rubber, springing up again, sucks or pulls up the lid, and when you squeeze down, the lid closes again, kerplunk! It is exactly like the trap-door of our attic; and don't you remember the one we made to pump out our boat, with a wooden flap, a leather hinge, and a heavy coat of lead fixed on the trap-door to shut it down. Doesn't that work well?"

"Splendidly."

"Well, the heart has invented far better valves for itself, and it has built two bulbs to make it throw stronger than it could with one, and to give a more even flowing current; not one that jerks."

"We'll take the best pump in the world—a good heart. So we have two two-cylinder engines, as you see in the picture. One set pumps the impure blood into the lung, and the other pumps the pure blood into the body. This pure blood carries the food and air. The pumps lie side by side and are joined together, making a shape something like the ace of hearts. They throw twenty tumblerfuls in a minute, and all the blood in the body in one and one-half minutes. But if you run a race or climb a high mountain all the blood in your body may pass through in one minute. The first pipes are large and are called arteries, or 'air thoroughfares.' They get smaller, and smaller, and smaller, like Alice in Wonderland, till they are mere hair tubes, or capillaries, and then these join together and get bigger and bigger again, till they are pipes called veins."

"The arteries are strong and thick and very elastic. Can you guess why?"

"Because the heart pumps hard right into them?"

"Yes, that is part of the reason. But there is another, and a very clever reason. You know those squeaker toys with elastic bags that you blow up, don't you? What makes them go on squeaking so long?"

"Oh, the elastic bag squeezes the air out slowly through the pipe."

"Exactly so. That is why the arteries are so elastic; because in between the strokes of the pump, they are squeezing out through the pipes the blood which was forced into them. The splendid result is that the stream

flows onward evenly all the time through the hair tubes into the veins and back again to the heart on its never-ending round. The veins are soft and have thin walls, but they have fine valves to help the blood not to rush back into the hair tubes."

"Sometimes these valves give out. They are not very strong, and they have a heavy weight on them if they happen to be in the legs of a fat person. Then what happens is this: The blood does run back, and leaks out everywhere, and the legs swell up and turn blue and hurt, and the poor man cannot get his boots on."

"Where is your heart? Can you feel it?"

"Surely."

"What is it doing?"

"Thumping."

"How many thumps to the minute? Here is my watch. Count them. Seventy?"

"Now lift this chair up five times. Now count again. How many thumps now? Eighty? Right. Every bit of work, you see, gives our hearts more to do. If you listen carefully you can hear that the pump rests for a fraction of a second after every two beats. That's all the rest it ever takes—less than ten minutes in twenty-four hours. Like every other pump, we shall have to grease it; otherwise it will get hot and jam, like the engine."

"We will hang it in an oil-bag. That will help also to keep it in its place. The bag is slung by fine ties inside the box made by the ribs. Inside the bag there is a beautiful soft, moist lining, very thin, and covered with the same cells which prevent blood clotting in the pipes. The cells lining the oil-bag must, of course, manufacture their own oil. I wish the lining of our gasoline tank would do likewise."

"Every dog has to have a name to tell it from other dogs, and all these parts of the body have Latin names or Greek ones. They are very easy if you know Latin and Greek. But we do not really need them."

"The big pipes which are elastic remain open and are full of air after the elastic has squeezed all the blood out of them. But that made doctors think that they always carried air, and so they called them 'air-teries,' and we still call them by the old name; just as the first bulb of the heart is called the auricle (which just means ear), and the second bulb is called the ventricle (which only means belly). Thus the pipe to the lungs is called the lung-pipe or pulmonary artery; and the pipe that carries blood to the whole body is called the aorta, or carrier."

"For the heart's guidance local offices exist, both in and on its walls. Some messages come direct by special wires all the way from the central office in the brain. These long wires are called the Wanderers (Vagi). Isn't it odd, these only bring messages to say, 'Go slow, brother,' exactly like the slang phrase 'keep your shirt on,' or 'keep cool'? All the messages to 'speed up' or 'hustle' come from offices close to the heart, and connected directly with the big wires in the spine, right alongside the heart."

"The hair tubes are so fine that it takes two to three thousand, side by side, to measure one inch. As people get old the arteries get very chalky and break easily. When an old person has a 'stroke' it is because an artery has broken inside the head office in the brain, and the managers are drowned. Just so the body dies eventually. But if we are careful not to overeat, and if we avoid toxins or poisons like alcohol, there is no reason that the pipes should not last a hundred years easily."

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AGRICULTURAL EXTENSION DEPT.

Edited by
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And
Hugh Overstreet County Farm Agent

HARKER'S ISLAND WOMEN IMPROVE THEIR KITCHENS

There were only two cases in Police the Kitchen Improvement Contest on Harker's Island. Two of these women have done outstanding pieces of work in remodeling their kitchens. They are Mrs. Cleveland Davis and Mrs. Walter Yoemans.

Mrs. Davis began by painting the walls and ceiling of her kitchen. The ceiling is ivory, and the walls were intended to be cream colored, but the painter accidentally put in a little too much coloring matter so that the walls look like the cream of a cow which has been kept in a rye pasture all winter. This is not a bad color, but Mrs. Davis was not quite

satisfied with it because it was not like she had planned it. She expects to change the color a little next summer.

Mrs. Davis had an old kitchen cabinet which she remodeled by taking off the doors at the top and making open shelves. She used white enamel to freshen up the inside, and varnish the outside. It is now a usable

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- Lettuce, large head ... 15c
- Celery, fancy ... 10 & 15c
- Carrots, per bunch ... 10c
- or 3 for ... 25c
- Beets, ... 10c bunch
- or 3 for ... 25c
- Cabbage ... 4c lb.
- Irish potatoes ... 4c lb.
- Rutabagas ... 4c lb.
- Onions ... 4c lb.
- Seckle Pears, very sweet, ... 15c qt.
- Bananas ... 45c doz.
- Oranges ... 50c doz.
- Lemons ... 35c doz.
- Cooking Apples ... 25c pk.
- Coconuts ... 9c
- or 3 for ... 25c
- Grapes ... 15c lb.

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piece of furniture, while before it was too good to throw away and yet not pleasant to work upon.

A shelf put up with brackets adds greatly to the convenience of the kitchen.

A new oven for the oil stove was needed; so it was added.

A problem arose because of the fact that there was no place to put cooking utensils when not in use. This was solved by salvaging an old goods box from the store, putting a top with hinges upon it and putting rollers on it so that it could be kept underneath the work table. Mrs. Davis said today, "That is the most convenient thing I have in my kitchen. I wouldn't be without it for anything."

The varnish from the safe was removed and new varnish applied. The tin doors were replaced with glass. Mr. Davis said that it looked worse than it did before, but I'm not so sure of that.

A new piece of linoleum and new curtains complete the improvements.

An itemized account of these improvements might be interesting.

Paint and hire for applying	\$15.00
Oven for oil stove	9.50
Linoleum	6.50
Varnish for safe, chairs and cabinet	1.60
Remodeling cabinet and making box	2.50
Rollers for box	.40

Curtains and rods	1.30
Brackets for shelf	.20
Oil cloth cover for shelf and cabinet shelves	.55
Glass for safe doors	1.00
Enamel for inside of cabinet	.50
TOTAL	\$39.05

Mrs. Yoemans has made a marvelous change in her kitchen too. Fresh paint for the walls and all-over linoleum for the floor gives one hundred percent appearance. Curtains too, add to the general appearance.

A new Florence oil stove replaces a wood stove which was somewhat the worse for wear.

A safe was varnished and so were the chairs. Now they look like new. Mrs. Yoemans' kitchen had a total cost of \$89.05, fifty-one of which was for the oil stove.

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The Beaufort News

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