the fire, all the passion, of that wonderful poetry finds vent in his beautiful voice:

Oh that I durst crush thee out of life with love, and die,—
Die of thy pain and my delight,—and be
Mixed with thy blood and molten into thee!

To be in love with Alan, to have Alan in love with me, and to hear him read Swinburne, are the three dearest things in this world. JEAN.

ANGIE, the bolt has fallen! Everything is over! I am absolutely wretched,—wretched with a misery that can see no ray of brightness in the whole future.

Alan came this morning. I noticed that he looked a trifle pale, but in spite of that I thought as he came into the room that he had never looked handsomer.

"Jean," he said very quietly, "I have had a letter from my sister. She was married a week ago, and sailed for New York at once, bringing with her—"

"Her husband, of course," I interrupted gaily. "A perfectly natural proceeding, and one that ought to rejoice rather than vex you."

"Wait, Jean," he said, even more gravely; "you don't understand. She is bringing with her— Oh, Jean! how can I tell you?" Angie, he almost broke down here. "I have told you," he went on after a ghastly pause, "that I have been married, and that my wife died six years ago. Jean, my children—"

Angie, a sublime sense of the ridiculous saved me here, or I should have fainted dead away. "Children, children!" I howled.

"Yes," said he, speaking very rapidly, "my children, my six daughters, who have lived with my sister, are coming over with their aunt, and as she is married they must now live with me—with us. I have never told you of their existence, because I almost lost you when I told you of my marriage. I did not mean to tell you that until we had been married for sometime. I thought that they would always live in Germany with my sister. But, dearest," he went on very tenderly, "nothing can make any difference now between you and me; for I love you, and you have told me that you love me, and you will learn to love the little ones for my sake; will you not?"

Angie, as I am a living woman, I thought I loved that man! But, not for all the love in the world, could I start out in life with a ready made family like that. I told him so in short meter, and sent him from me, and, just as he got to the door, I burst into hysterics, and amid tears that were torrents, and laughter that must have been maniacal, I yelled, "Six, six! Oh, oh, that awful half-dozen!" Then he slammed the door,—yes, my dear, he actually slammed it.

I hope I may never lay eyes on him again. I'm beginning to feel that he was too ideal to last, anyway,—like those wonderful servants our friends sometimes tell us about, who never do anything wrong, and after they've had them in their homes for two months or less, they find that they are thieves or drunkards or something else unspeakable.

First a wife; then six children; then—how did I know but there might be thirty-six grandchildren lurking in ambush somewhere, ready to pop out and call me "Granny" at the slightest provocation? No, I could never have felt safe with that man after that last revelation. But, oh, it's hard! He, my hero, my Adonis in a bathing suit, my lover with the nature of a poet, he the father of six!

Your heartbroken JEAN.

P. S. Isn't it fortunate that no one knew of our engagement? I should have been the laughing stock of our set, and the joke of every club!

### Four Months Later

DEAREST ANGIE: The unexpected has once more occurred. I heard to-day that Alan Wingate and that Montgomery "mess" are to be married at Saint Giles in December. His eldest daughter is to be maid of honor, and the youngest is to be flower girl. The Montgomery has taken him and his six olive branches at one swallow. May they choke her!

Don't mention men to me for five years at least!

Your disgusted JEAN.

P. S. Do you happen to know Ned's address?

# MARVELS OF THE HUMAN BODY

By W. R. C. Latson, M.D.

IN the ancient world there were seven wonders. In the modern world we have in reality only one, and that is the human body. Regarded from a purely mechanical viewpoint, the human body is a superbly efficient instrument, infinitely complex, exquisitely delicate, and yet powerful, enduring, and adaptable beyond belief. The human body is a microcosm of the universe, a miniature world in itself. It embodies within its composition, its structure, its operations, everything that is to be found anywhere in the world outside of itself.

For instance, the body contains all of the important chemical elements. Nearly three-quarters of its weight is made up of oxygen, that most important and universal element. Then there are the other gases, nitrogen, hydrogen, chlorin, and fluorin. In addition to these gases we find carbon, calcium, phosphorus, sodium, sulphur, potassium, magnesium, iron, copper, lead, and silicon, lithium, mercury, arsenic, and other solids. The first five named, the gases, are sufficient in quantity to fill a tank of about four thousand cubic feet capacity,—say of a size twenty feet long, ten feet high, and twenty feet wide. The solids in the body, such as the carbon, lime (calcium), silicon, sodium, potassium, magnesium, are all in the ground on which you walk.

The body contains enough fat to make about one hundred candles, enough soap to keep its own surface clean for a month, enough sugar to do for a family meal, and enough salt to supply the family for a month. It contains only a little iron, just about enough to make a couple of small nails; but it has enough hydrogen gas to fill a balloon that would actually lift the owner into the clouds.

The human body also contains enough carbon to make about three thousand lead pencils, or in the form of a hod of coal enough to keep a blazing fire going for an hour or two. That, as a matter of fact, is just what the body does with its carbon,—uses it for fuel. And the energy derived from the carbon, or coal, does for the human body just what it does for the steam engine,—it keeps the body warm and gives it energy to move.

A full grown man should weigh one hundred and fifty pounds, which should be divided as follows: muscles and their appendages, eighty-one pounds; bones, twenty-two pounds; fat, eighteen pounds; skin, seven pounds; brain, three pounds; internal organs, twelve pounds; blood, seven pounds. The body contains about seven-eighths water; and so the man would contain about seventeen gallons, or more than half a barrel of it.

As to food, he would consume every day five thousand grains of lean meat, eight thousand grains of bread, seven thousand grains of milk, three thousand grains of potatoes, six hundred grains of butter, thirty-three thousand grains of water. This makes a total of food and drink equal nearly to eight pounds.

The matter thus taken into the body is normally balanced by an equal quantity of waste thrown off. For the escape of this waste there are four avenues: the lungs, which throw off twenty thousand grains daily; the skin, which excretes ten thousand grains; and the kidneys and intestines, which eliminate twenty-four thousand and twenty-six hundred grains respectively. Of the water taken, the lungs and skin together carry off just about one-half, the kidneys about forty-four per cent., and the intestines the rest.

All this means that there passes through the body within the course of a year almost a ton and a half of solid and liquid matter. The body rebuilds itself with a portion of this each day, discarding a corresponding quantity of waste. Thus we see that the body is constantly changing,—constantly breaking down and at the same time being rebuilt. We speak of "my body" as if we had to-day the same body we have always had. As a matter of fact, however, we build an entirely new body every few months. It is like a cataract. We see to-day the same Niagara Falls that men looked at five thousand years ago; but the water that forms the falls is always changing,—is never the same for one second. So with the body.

The human body is a prodigious worker,—the most compact and powerful engine known. In a single day the body of a healthy man does work equal to lifting a weight of thirty-six hundred tons one foot from the ground. A man at hard labor, a longshoreman, for instance, helping to load a ship, will do a work of two hundred to two hundred and fifty foot-tons a day. So it will be understood that the body in its general activity does the work of fourteen or fifteen men. This is many times what any man made engine can do.

### Marvels of the Heart

IN order to make this more clear, let us for a moment glance at the work of the heart. The heart is merely a hollow muscle, consisting of two pumps, one of which sends blood to the lungs, the other pumping blood through the tissues. Each side of the heart holds two ounces of blood; and as the heart contracts about seventy-five times a minute, this means that one hundred and fifty ounces, or about one and one-sixth gallons, of blood passes through each side of the heart every minute. That is, about seventy gallons every hour, sixteen hundred and eighty gallons every day, six hundred and three thousand gallons in a year, is pumped by each of the ventricles, making the total work of the heart for the year one million two hundred and six thousand gallons. Think of the work done by the heart in ten years, in twenty, or in a lifetime! And the heart weighs about half a pound!

The stream of blood leaving the heart travels six hundred and twenty-one feet a minute, seven miles an hour, one hundred and sixty-eight miles a day, sixty-one thousand miles a year. No man probably has ever traveled so far as his own blood has. For the blood to make the entire double circuit from heart to lungs, then back to the heart, thence to the tissues, and finally back to the heart again, requires in the adult about twenty-three seconds. In the smaller body of the child the circuit is made much more rapidly, and the heart beats correspondingly faster. For instance, at birth, the heart beats at about one hundred and thirty-six to the minute, and the blood stream makes its entire figure-eight circuit in about twelve seconds. At three years old the heart rate is one hundred and eight, and the blood stream makes its journey in about fifteen seconds; at five the pulse is eighty-eight, and the blood circuit requires eighteen seconds.

The blood is the great river of life, a stupendous waterway, the most populous that can be imagined, teeming with traffic. Laborers, soldiers, carriers, countless millions of millions of busy workers, crowd it coming and going, each with his special duty to attend to. In a cubic inch of blood there are twelve thousand millions of one class of these tiny laborers. There are nearly two gallons of blood in the human body, and a gallon contains two hundred and thirty-one cubic inches. So, by multiplying twelve thousand millions by two hundred and thirty-one, we shall get approximately the number of the erythrocytes, the red oxygen-carbondioxid carriers, in the blood. If these little carriers could be spread in a layer, they would cover a surface of twenty-eight thousand square feet.

The red carriers are not the only workers embarked in the great intersomatic waterway, the blood stream. There are others less numerous, more intelligent, more adaptable, more versatile. Their duties are various and important; in fact, they are the real feeders, the faithful guardians, and the efficient repairers of the body.

### What the Lungs Do

NOTHING is more interesting than the body's methods of economy. For instance, in its work of taking in oxygen and throwing off carbondioxid, it needs space, surface. And so there has been evolved a method by which in the lungs the inhaled air reaches a surface of sixteen hundred square feet. The peculiar little openings, or vesicles, by which this economy of space is gained are six hundred millions in number. There passes into and out of the lungs in one day no less than four hundred cubic feet of air. Each outgoing breath contains two cubic inches of carbondioxid, and contaminates five thousand cubic inches, about half a barrel of air. The lungs exhale every day an amount of carbon that if caught and solidified would about equal a lump of coal weighing half a pound.

The air breathed out is moving at a speed of forty-three inches a second, and is inhaled at a speed of fifty-two inches a second. In a sudden intake of breath, as in a sob or gasp of surprise, the speed of the inhalation may be much greater,—ten or even twenty feet a second.

The external surface of the body has an area of about twenty square feet, and contains seven million minute openings, perspiratory glands, out through which the blood pushes certain of its poisonous ingredients.

The skin has a respiratory as well as a perspiratory function. Through a healthy skin we take in about one-sixth as much oxygen as through the lungs.

### Curiosities About the Hair

THE average number of hairs on the human head is one hundred and twenty thousand. The hair, particularly of blonds, has a very high tensile

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