

the whole, or nearly the whole, of the animal oxidation, is effected in the blood itself, and consequently that there must exist some provision by which chemical force set free inside a capillary is converted into mechanical work in the tissues outside of it.

This view of the nature of animal oxidation tends to define more clearly our knowledge of the functions of the blood. Nutrition is one of its functions. It carries with it in its course the appropriate *pabulum* for the repair of all the tissues of the body. Bones, nerves, glands, and muscles, all alike reproduce their elementary parts at the expense of material derived from its fertilizing stream. And as these elementary parts attain their term of life they decompose and liquefy, passing again into the blood, for the most part through the same lymphatic vessels which take back the excess of the nutritive fluid. In the lymphatic vessels and glands much of the lymph is once more organized into blood, but the products of the disintegration of tissue are probably incapable of this renewal, and, in the absence of evidence must be supposed to return into the blood in an enorganized condition.

Equally important with the foregoing is the function of oxidation, to which the force as well as the heat of the body is due. Nitrogenous as well as non-nitrogenous bodies are oxidized in the blood, and though we do not yet know the precise conditions of the precise mode in which the oxidation is effected, we are justified in inferring that it is by the direct agency of the corpuscles. There is on this view no ground for the assumption that either force or heat is due exclusively to the oxidation of one or the other class of organic compounds. Both are oxidized, and one is as likely as the other to be the motive power. Even the muscle itself, inasmuch as it is finally oxidized in the blood, may give rise to muscular work, and we must therefore conclude that Traube's hypothesis is as much an over-statement on the one side as Liebig's was on the other.

The changes effected by the blood in the exercise of its functions are subject, to a most remarkable extent, to the control of the nerves; and little as we know of this the most obscure region of physiology, we cannot avoid the conclusion that they are directly concerned in the transformation of chemical force into mechanical effect. The muscular currents of electricity, which have been so carefully studied by Du Bois-Reymond, Helmholtz, Heidenhain, and many others, are, no doubt, closely connected with this conversion; but I will abstain from speculations which are apt to degenerate into bare guesses. Dim foreshadowing of great discoveries lie before us, and it is better, after clearly stating to ourselves the truths already established, or made probable, to wait with humility, watching till diligent and patient search shall have been rewarded with fresh unveilings. If we can clear a point or two in the intricate forest of knowledge which lies before us, we shall have done truer work than by any amount of speculation. *Intellectual Observer.*

Monsieur Du Chaillu and the Gorilla.

Monsieur P. B. Du Chaillu, the famous traveller, has been lecturing to immense audiences in this city on the subject of his exploration in Equatorial Africa. He is an undersized, delicate looking man of middle age. The sun has left its tan upon his face, which is rather serious and thoughtful, and as he wears a white necktie and black coat, he has the appearance of a returned missionary. In glancing at his slender body, which bears the scars of poisoned arrows, and which has been often prostrated by fatigue and fever and exposure among savages in an inhospitable climate, one would not be impressed with the idea of great endurance, and perseverance that scorns obstacles, and physical courage, which faces danger with a soul of fire and nerves of steel.

Yet that small, quiet, modest man, with scarcely strength enough to hold a musket at arm's length, has spent eight years among the untutored natives of Africa, and penetrated regions which no other white man has ventured to visit. Under a tropical sun—in malarious districts—he has waded swamps, climbed mountains, threaded jungles and woods, crossed deserts, sometimes unattended, and sometimes accompanied by savages, and always

exposed to the dangers incident to the journey he made. This brave and intelligent explorer ran the risk of sickness, starvation, and death, that he might gratify a laudable ambition and add something to the stock of scientific discovery. We are indebted to him for the discovery of the "man ape," or the "gorilla," as it is more generally called.

Like all lion-hearted men, who have courage to strike out a path for themselves, our traveler met with opposition when he announced the result of his tour in Africa. There were wiseacres who said he was "a humbug," there were no such animals as apes of such gigantic stature." "He had seen ourang-outangs through the magnifying spectacles of fancy." Some learned men and naturalists disputed his reports, and reviewers took up the question until his book was impaled with criticism, so he carried the war into Africa a second time, and now returns in triumph to vindicate his former account of his wonderful discoveries.

What is this curious creature about which he writes and speaks with so much unction and interest. Is it half-human and half-brute? Is it a deteriorated savage waiting for the missionary and the light of civilization to bring it up to a higher standard? Has it a head to think, a heart to feel, a hand to execute, a tongue to explain, and a soul to save—a grand destiny to achieve?

Can science and culture and physical training sculpture it into better shape and bring it to a nearer approximation to an accountable and responsible being. The natives seem to be impressed with the idea that it is a beast animated with a human soul. It runs on all fours like a beast, it stands erect and fights like a man in self-defense. It is gallant, sleeping as a guard at the foot of a tree while its "wife and child," that is the language of the discoverer, sleep in the branches. It is gregarious often, going in companies of six or ten pairs. It is a vegetarian, eating berries, plantains, and the various fruits of the tropics. The Africans use as an argument why they should get drunk on palm and other wines, that the "gorilla drinks water." We may add here that this vegetarian and water-drinker affords a strong argument in favor of vegetable diet. Although it has canine teeth, it never uses them in tearing or masticating flesh, and its great physical strength shows that animal food is not absolutely necessary to great strength and vigor of body. This animal can bend a gun-barrel with its hands as though it were a piece of wire. It can knock down an ox with a blow of its fist. It is more than a match for a score of unarmed men. An adult gorilla has never been captured alive. This powerful creature sometimes attains the height of six feet, and a girth of six feet around the chest. It is an immense hairy monster, whose face and hands are intensely black, and when alarmed it beats its breast with its hands, so that it sounds like a drum, while it barks, growls, and roars as it approaches its assailant. Its eyes are of a grayish color and deeply sunken, and it looks you squarely in the face; its lips are sharply cut; its ears are smaller than those of a man, its nose is rather flat, although it has the beginning of a nose bone.

The gorilla differs from man in the following particulars: In the length of its arms, and the shortness of its legs; it moves on all fours, standing erect only when defending itself; man has twelve pair of ribs, the gorilla has thirteen; man has five lumbar vertebræ, the gorilla has three; man has five sacral vertebræ, the gorilla has six; the arms of a man reach to the middle of the thighs, the arms of the gorilla reach nearly to the knee; the shape and size of the head also differ from that of a man.

It is undoubtedly a mere animal, and incapable of intellectual improvement beyond that shown by the monkey in its imitations of the creatures about it. It is a dumb animal, incapable of speech, and the shape of its skull shows that it is not susceptible of mental growth and expansion.

Will some of our scientific men account for the facts, that notwithstanding its canine teeth it never eats animal food? or will they give up the argument, that canine teeth indicate a design on the part of the Creator that man should eat animal food?

Will those who oppose vegetarian diet account for the fact that the gorilla has such great muscular power? —*Exchange.*