

Socialism and Science

By J. E. COHEN

MAN is not the product of social conditions alone. He is a human being, and traces of the lower animals are still very decided in him. As a human being, albeit endowed with considerably more mentality than the other animals, he has tried to explain the physical universe about him with mingled fear, wonder and perplexity. He has worshipped the sun, moon, other animals, his own organs and idols. He has imagined his gods to inhabit everything that grows, the elements, and the vast firmament that transcends his powers of conception. He celebrates by fast or feast such perennial phenomena as the coming of the seasons. He greets sunrise and sunset with prayer and is in the throes of the problem of immortality. And these things exert no little influence in shaping customs, traditions and traits of character; they make no little impression upon social arrangements.

Progress along this line is made by finding a natural explanation for what was formerly deemed supernatural. Science replaces faith. Knowledge ousts superstition.

"Science," say the scientists, "is general knowledge systematized." Science consists of properly arranged facts and theories and laws in regard to what passes about us.

The workingman does something like this at his bench or machine. Thus, before weaving, it is necessary to sort the cotton from the wool, material of one texture from that of another, that of one color from that of a different color, and that of expensive dye from that of an inferior grade. In like manner, science takes facts that are generally known, or should be generally known, and sorts them out according to the points of resemblance and distinction.

Science regards nothing as stationary. Everything is in a condition of flow; in the moment that it is one thing, it is becoming something else. "The present is the child of the past, but it is the parent of the future." As so often has been said, the only thing constant in nature is the law of perpetual change.

This law of perpetual change we see in operation all about us. Mother Earth shrugs her shoulders and mountain ranges rise or fall; she puckers up her lips, and ocean currents swerve around the continents. When she is cramped for room and stretches herself, there is likely to be an earthquake and perhaps tens of thousands of lives are lost and cities are demolished in a twinkling. Volcanoes remain to warn man of the restlessness of nature.

But while everything changes its form, nothing is ever lost. Life and death are companions throughout existence, the crest and trough of the wave of time. One makes way for the other. What perishes fertilizes what is about to be born; the dead, by giving life to the living, becomes the substance of the living. Shakespeare uses this idea in one of his plays:

"Hamlet: A man may fish with the worm that hath eat of a king, and eat of the fish that hath fed of that worm."

King: What dost thou mean by this?

Hamlet: Nothing but to show you how a king may go a process through the guts of a beggar."

In proof that we are related to all about us, Moore declares that more than two-thirds of the weight of the human body is made up of oxygen, a gas which forms one-fifth of the weight of the air, more than eight-ninths of that of the sea, and forty-seven per cent. of the superficial solids of the earth.

Nothing is constant. Everything changes. But that is all it does. Matter may be shifted about, but it cannot be lost. And however much force may be brought into play, only its form is altered. It is not destroyed. So far as we can see, the matter and force about us have always been and will always be.

There was no beginning, and there will be no end. They are everlasting.

This old earth of ours has been changing for quite a while. Boelsche thinks it is a million years old. And there is no telling how many millions of times the stuff of which our world is made was the stuff of other worlds or stars. We know ours was not the first or the last formed. Fitch declares that it is only a millionth part in bulk of the solar system—our sun, planets and their moons—and we know that the solar system is probably only a millionth part of the dust of the heavens. So that our ball of toil and trouble is only a grain in the celestial sandstorm. And the earth were here for the greater part of its million years before the being we call man arrived. Again quoting Moore: "Man is not the end, he is but an incident, of the infinite elaborations of Time and Space."

It may be accepted for a certainty that man was not created as man. He is the outcome of animals lower in the scale, which fact Darwin first dwelt upon. Evidence is plentiful on this score. Huxley, in "Man's Place in Nature," tells of the ties between man and the manlike apes, man's next of kin. Thus, there is greater difference among men's brains than there is between those of man and the gorilla. The difference in skull and skeleton between man and the gorilla are of smaller value than that between the gorilla and some other apes. The same is true of the dentition. Man in the embryonic stage is nearer to the ape than the ape is to the dog. Bebel declares that monkeys are the only beings, besides man, in whom the sexual impulse is not fixed to certain periods.

The process of the human embryo, from egg to ego, has the appearance of a panorama of the biological scale. Dr. Weisler, in his work on "Embryology," tells us that at the twenty-fifth day the embryo presents a well-developed tail. While maternal influences cease at the second week, up to the fourth week the heart of the human embryo is that which is the permanent condition of fishes. The nails begin in claw-like projections. In the seventh month, the lanugo, or embryonic down, makes its appearance, covers the surface of practically the whole body, and disappears in the eighth month. This is a relic of the days when what is now man was a hair-covered animal. Fitch gives a list of rudimentary organs, which were once useful in the animal ancestors of man, but are now rather harmful. Such is the vermiform appendix. Boelsche declares that the blood of the chimpanzee may be mixed with that of man without harm, which is the severest test, as bloods of different species act as poisons toward each other. Boelsche follows the clues from man, step by step, down to the very beginning of life, the primordial cell.

All of man's organs and their functions hark back to the remote past. "Life was born blind, just as many animals are to this day, but it was gradually prepared for sight," says Dr. Meyer. Scientists go even further. Franke declared: "The plant possesses everything that distinguishes a living creature—movement, sensation, the most violent reaction against abuse, and most ardent gratitude for favors—if we will but take sufficient time to wait with loving patience for its sweet and gentle answers to our storm questions." While rooted to the ground it nevertheless has power, in a measure, to adapt itself to external agencies. It feels "light-hunger," not unlike the light-hunger in man which Ibsen makes the climax of his great morbid play "Ghosts." Again, more than five hundred varieties of plants devour insects. Plants also have a refined sense of smell, taste and location; there is the beginning of a nervous system, and a tendency toward division of labor, instinct, and perception.

So France concludes: "Even if all our hopes are not realized, we have brought away a mighty knowledge that reaches down into the very depth of all beings the certainty that the life of the plants is one with that of animals, and with that of ourselves."

It is difficult to draw a sharp line between man and the other animals. Grant Allen, in the "New Hedonism," thinks that what elevates man above his fellow creatures is ethics, intellect and the sense of beauty. Yet it is quite certain that many birds find considerable enjoyment in a harmonious color scheme, while savages are not very far superior to the ingenious animals, such as the ant, in ethics and intellect. Franklin called man the tool-using animal. And while Kautsky declares that, "Neither as a thinking nor as a moral being is man essentially different from the animals," he goes on to say that "what, however, alone distinguishes the former is the production of tools, which serve for production, for defense or attack. . . . With the production of the means of production, the animal man begins to become the human man; with that he breaks away from the animal world to found his own empire, an empire with its own kind of development, which is wholly unknown in the rest of nature, and to which nothing similar is to be found there."

Everything changes. Man has evolved out of lower animals, and the plants are likely his distant relatives. Arthur Morrow Lewis sketches the modern theories of organic transformation in this wise: "Lamarck was the first to present the theory of evolution in a thoroughly scientific manner. Then Darwin discovered the great principle which rules the evolution of organisms; the principle of 'natural selection.' Then Weismann repudiated current ideas as to how the fittest 'arrived,' or 'originated,' and presented in their place a theory of his own, which is still under discussion. De Vries raised the question as to whether new species 'arrive' by a gradual accumulation of tiny changes, or by sudden leaps—mutations—and demonstrated the latter by his experiments with the evening primrose."

Darwin's theory, regarded as epoch-making in science, is: Natural selection by the survival of the fittest in the struggle for existence. Or, as it is commonly put, nature performs her wonders through the desire for food and offspring, hunger and love. It is the special merit of Darwin that his theory was the first satisfactory attempt to interpret the activity of organic beings, and to explain why they change. And Lester F. Ward tells us: "Science is mainly interpretation."

The question if interpretation is a very broad one. It flows out of many things. Thus Darwin acknowledges he was influenced by the now discredited theory of Malthus that more human beings are born than sustenance can be provided for. Both Darwin and Malthus, in turn, were influenced in their interpretation by such circumstances as the condition of England of the time. So that, today, the Malthusian theory is practically abandoned, while the Darwinian theory has been amplified in many directions. Thus, Kropotkin shows the importance of "mutual aid" in the struggle for existence, repudiating the notion that it is a struggle of each against all.

Herbert Spencer first formulated a theory of evolution that embraced the many fields covered by science. He declares evolution to consist of the "integration of matter and concomitant dissipation of motion; during which the matter passes from an indefinite incoherent homogeneity to a definite coherent heterogeneity; and during which the retained motion undergoes a parallel transformation." This is all-inclusive, but gives no hint of the particular laws of development governing one science as