

IN SEARCH OF ECONOMICS

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I.

CERTAIN forms of irritation, known to all who seek repose in field and wood, suggested that I was sitting well within the neutral zone of an ant hill. I found the pesky creatures had invaded my body territory with unconcern, and an abandon of their personal safety, that showed little recognition of their own littleness and the homo's majesty. It was easy to see there was method in their movements. They wanted no nuisances in the way of their industry; and they conveyed their opposition in language which even drowsy indolence would understand.

These were outpost guards, I surmised, for their little village was some yards off, on a hill peak where the sun exposure met the requirements of the ants' landscape engineers. They were a busy lot, and seemed to move about with a certain definiteness of purpose and eagerness of achievement, such as we ourselves used to know before the Depression. With only human intelligence, one could not match one's wits successfully with those of the more subtle ant as to the art, beauty and design of their abodes, streets, tunnels, transportation.

There was no unemployment. The winter's frost and spring's thaws had made a bad mess of their little kingdom, and every worker was on the job of clearing up débris, opening roads and other ways of communication, and, in general, restoring order and placing industry on a normal basis. They were too busy to spend much time in adorning their bodies. The drowsy drone of the bee-planes overhead, coming and going from a nearby hive, apparently evoked no great curiosity, nor did it engender any sense of inferiority regarding their own more primitive form of locomotion. They used such organs as they possessed for the purpose for which these were designed; their social customs and habits were those best suited to their comfort and independence. They ruled their own kingdom so that the interest of the individual and that of the state were one. The bees they admired for their diligence and industry; their aristocratic pretences were a theme for lighter moments. It fitted their kindly, if exclusive neighbours, the bees, to affect forms and social distinctions, and even to live in gilded houses, because their individual natural accomplishments were toned to

such activities. Being to this manner born, therefore, they had not only the right but the duty to live their lives in their own way. That in the general cosmos they were on any higher plane, or that their more shapely bodies and more refined tastes and public acclaim implied any superiority over themselves, the ants would very definitely deny; that is, if they took the trouble to discuss a subject they would ordinarily consider unimportant and verging on toadyism.

In the practical concerns of government, provision was made only for surpluses. They had a cold winter ahead, and there must be no one hungry. A deficit meant failure, and maybe extinction of their country and their institutions. Production must be ample, and its distribution so planned that no worthy ant should die of starvation in the shadow of a mountain of food. Being only ants, they had a simple and direct economic system. Their statutes, expressed in the terse ant tongue, left no doubt of their meaning; they avoid the weakness of human lawmakers who so often have to appoint wearisome and expensive committees to tell them what they really meant when they framed a certain law. Having but a tiny brain, they used it all, and seemed content to leave the joys of circumlocution and endless verbiage to the lords of creation.

A way-faring ant reported that in his ramblings he once found himself on the floor of a chamber where men with delegated power were making laws for the benefit of their people. He found the ant philosophy of strict adherence to essential things to be sadly impeded by what the majestic human beings called rhetoric, partyism, and jockeying for personal gain. He didn't like it, and told the assembled ants so. They resolved that big brains were not so desirable as they had supposed. They also resolved that community life, or what men called democracy, while difficult, was quite attainable under such a system as their own. All employable ants must work if they are to eat, but it is the system's job so to arrange and distribute production that the worker gets the full value of his labour, in its relation to the whole economy; and while this value would vary with its importance, it must never fall below a standard which would permit a self-respecting ant to maintain himself in independence and respectability.

They resented the suggestion that the ants' life was a drab business, of the earth earthy, selfish and inhospitable. They had to be cruel sometimes in order to be kind. Ants were like many denizens of the earth: they could easily fall into the habit of thinking that because they were born and reared without will or effort on their part, they should go forever with no individual labour or con-

cern. Consequently, the strong hand of wise and practical authority had to be brought down in places where such fallacies were current. In the ant philosophy, the course of happiness winds through valleys and hills made fertile and prolific by the hand of labour, and by the vision and courage of a guiding sense. The learned call it instinct in the ants, and among men and women, when present, reason.

They distinguish between acts of charity and those that only encourage indolence and wrong theories of individual rights. A long time back an ambitious reporter, looking for sensational copy, wrote an entirely misleading article on their alleged treatment of a destitute cricket. The cricket, the ants said, was arrogant and demonstrative and, instead of asking for help, demanded it as his inherent right to take from the accumulations of industry his requirements, even though he contributed nothing to their production. The world owed him a living, and so long as some laboured and produced food he must be fed, so that he could enjoy repose and song and the gay white way. The ants did not see it in this way, but might have forgiven his eccentricities and ecstatic conceptions of life, had he not persisted in making a long speech in which he threatened, if assistance were not forthcoming, to stir up all the crickets to revolt against this wicked capitalistic gang, and, to this end, to make common cause with the hornets and the underworld of spiders and gnats. Even hospitality has nerve centres, and there is a point beyond which antian stoicism may not extend. The cricket was promptly ejected, and warned not to return. If he came back with his threatened revolt against organized society, they, the ants, would deal with him and his followers according to their code. Whereupon the sob-sisters and the blithering brethren of the insect world wrung out reams of dripping resolutions from a brackish pool of water, presented them by a neighboring colony of crocodiles, and many of the daily clotheslines in the communities about gave of their space that the public might see, know, and perhaps tremble at these demonstrations of the violated sense of righteousness of so large a bulk of "estimable citizens".

My reflections were here broken by the arrival of a smart looking party of capped and gowned professors of economics from many universities. They sat themselves about the ant hill, intent on observing their tiny brothers and sisters of this insect kingdom. They had come down from the realm of intellect, of syllogism and of fine spun theories of political economy. From the depressing decay of old codes and conventions, withering in the unhealthy glare of a world's depression, they came to see how silent nature was con-

ducting its business, even among the lesser things of creation. Perhaps history might repeat itself once more, and wisdom again reveal itself in lowly places. Across the vast void of centuries one could catch the whispers of Solomon's proverb—"Go to the ant, thou sluggard, consider her ways, and be wise". Which although she hath no guide, nor captain, nor master, provideth her meat for herself in the summer, and gathereth her food in the harvest.

Their observations of the economics of the ant world completed, the professors resolved to look further into Nature's ways of doing business. They chose no less a field of study than man himself. What keeps this wonderful being going? Whence cometh his power of body and mind? Do the varied activities of his bodily kingdom obey economic laws? Should man's knowledge, like the virtue of charity, begin with himself?

II.

To my friends, the Professors of Economics, I offered my services as a guide. Having travelled somewhat extensively in the world of the living body of man, one comes to know something of the way his tissues conduct themselves. The surgeon may exhibit some skill in moving around in the narrow spaces about which the units of life itself swarm in seemingly endless traffic. These units are the body cells. They are the inhabitants of the man's bodily empire; and because they have brought it, both structurally and economically, well on the way to perfection, it easily merits Hamlet's estimate: "The paragon of animals, the glory of the universe".

The kingdom of man is his body and soul. Since the earth, and its fullness, and the million units of the solar system seem to exist for the benefit of this rather unpretentious biped, it seems elementary to suggest that the world of men should know how the unit, man, governs his own bodily kingdom; what system or systems of economics may be in vogue; how defence is maintained, production and distribution controlled, war, efficiency, happiness.

I proposed to the learned men from the universities that we look behind the ramparts of man's bodily empire to observe how such important economic functions are being maintained. We should have time for observing only a few things, because the system of government in the body of man is of all systems the most comprehensive. Every part of its amazing structures is finely adjusted and designed to perform some needed function, and the sum total of these parts, working in co-operative harmony, is the highest achievement of the creative act.

There are still unknown regions in our inner world. The heights on whose summits the fires of consciousness burn with unceasing flame are but partly explored. And there are others too. We know those hinterlands exist; we know the currents of life flow through their remotest nooks and bring to the dark and sedgy places purifying and energizing oxygen from the body's atmosphere in the lungs. Everything needed for the life and activities of the cell-inhabitants of these regions is dropped at their doors, prepared and ready for use. That there is important production in these obscure regions, is beyond doubt; but, while waiting for science to find the appropriate label, it is sufficient to know that, in the general economy of man's world these unknown workers are doing an allotted part. Man's economic organism notes of course that colonies of known and unknown function may become so corrupt and dangerous to the whole structure that their elimination, in whole or part, becomes the better course. Surgery may do for organic man what we once hoped a World's League would do to protect itself from a pestiferous and fulminating nation.

In the world of men and women, governmental and economic systems are presumably planned and operated for the good of the individual. In the world of man's body these same systems are planned and operated for the good of a very tiny individual called the cell. The former are the product of men's reason, their passions, their genius and their fallibility; the latter are designed and evolved so that life itself may be preserved and continued on this earth. Without life, stagnation and oblivion; with life, all things as we know, and don't know them. Surely, the system that holds the fate of our very existence is worth knowing about.

There are many more millions of these cell-inhabitants in one human body than there are people in the world. Like the earth's inhabitants, they are of different shades of colour, size, and individuality. They have great functional resource. They build, fight, pray and think. They are the active performers in all the joys and sorrows of sense, and their operations pierce the diminishing clouds that cover the face of consciousness itself. Everything else in man's body is but environment, fashioned and moulded to the will of these resourceful individuals. They are not tenants, but the proprietors and lords of the whole structure we call man. They are the living cells, and life, as we know it, has no existence apart from them.

Like the world's people, they spring from one original stem. This cell springs into being on the fusion of elements of male and female origin. In size, it is microscopic, but its potentialities are

immeasurable. It contains the whole man, with all his parts of body and mind. He never takes on in the whole span of life anything this cell embryo does not contain. And its endowments are as variable and uncertain as nature can make them. Chemistry is less confident on the threshold of the embryonic cell, and stumbles helplessly mid the magic maze of structures that reach back to the unknown wilderness of heredity, and hold in essence everything that future development will present in the form of greatness, mediocrity and the still lesser grades of human life. The embryonic Mussolini was as much of an uncertainty to the biochemist as the most impotent Ethiopian of the same age, though doubtless the militant Fascist would not sanction even this poor semblance of equality.

All the fluids, humors and mineral fillings of man's body obey the will of the cell. They are created by it and furnish the machinery of transportation, of distribution and structural strength. They are the machines in a machine age coeval with the creation of man. More intimately, they provide the rich clothing of the vast millions of cell-inhabitants and receive, as all other material agencies, a measure of transmitted life—"that that which is mortal may be swallowed up of life". (*II Cor. v., 4*)

We must observe some of these million cell citizens of the world, Man. We must see them alive and performing their respective functions. We have no reason to think that their methods of labour and their systems of development and economic control have altered fundamentally since the time the phenomena of life and the first living cell appeared upon this earth. We are, therefore, close to a source of knowledge of stupendous significance, when we humbly creep amid the pillars of the human frame to observe inspired nature engaged in the various activities of its greatest kingdom.

We must break through a sort of armour or wall before active cell industry may be observed. This barrier is the outer layer of skin, composed of cells that have dried and flattened themselves into a kind of tiling or shingling, and form a covering for the ends of the innumerable nerves that link the brain and the whole inner man with the outside world. With the rest of the skin structures, including the internal skin, or mucous membrane, the bodily empire is protected from its natural enemies, the vast hordes of invisible germs. Undamaged, this wall provides a better protection to its cell civilization than history accords Hadrian's efforts to protect Roman institutions from the maurading Caledonians, or the more colossal barrier an ancient Chinese civilization wove about its boundaries for similar protective purposes. Once through this skin

barrier, we are well in the stream of life, in the very middle of events, a progressive activity governed by automatic control derived from the brain, spinal cord and their prolongations, the nerves. The cell does not need to stop to ask what should be done next. The information is constantly ticking through from its monitor located often a considerable distance off in the form of another cell, or group, that has been highly specialized, educated and co-ordinated for a function of mighty importance. The labouring cell has, too, a vital part to play in the general economy, but its usefulness is the measure of its response to the orders of the foreman, or boss, who may be responsible for the successful working of the part or the whole of an organ.

There are gradations plenty in the functional status of the cells. But the aim of economic and social perfection in the entire organization permits no discriminations, and the superbly wrought cells in that part of the brain that interprets the glories of the sense of sight are not "high-hatting" their epithelial cousins in more menial positions. The flattened platelet-cell of the outer skin has none of the structural elegance or grace of those that stand at the gateway of consciousness; or, garbed in the robes of state, direct the throbbing waves of thought from the parliament of the Brain on their mission of governing their own citadel, and of sending across a disturbed world their contribution to the general fund of knowledge. Perhaps Dr. Oliver Wendell Holmes had this mental background when, apropos of the state, he wrote,—“they who think must govern them that toil”.

If it were possible to employ mankind in the sort of work each unit is best fitted to do, we should be well on the way to perfection in world economics. Tennyson's federation and his parliament of man would be logical sequences. The problem of unemployment goes deep into the spiritual and physical man. In the last five years, it has defied the conventional economics of the world's specialists. When we pass from the Depression, and we now seem to be on the way, our precious possession will be the fact, and not the flood of explanations detailing how it all happened. Perhaps the causes lie deeply hidden in nature's holds, and are as difficult to appraise and correct as some that affect the industry of vast groups of body cells, which may, when functionally deranged, profoundly damage the whole living organism and even destroy it altogether. Doctors admit that the causes of certain diseases are still unknown, and only their symptoms can be treated. With equal modesty economists and politicians, were they so disposed, might easily confess to similar defects in fundamental knowledge.

The system of transportation in the world of man's body is a marvellous achievement. Every living cell of the multiple billions of population must receive its full quota of food and oxygen in order that it may do its work in the body economic. The waste products of the cell must be gathered up and carried away to the special organs of elimination; otherwise it suffocates and dies as a goldfish in dirty water. It has also to be supplied with certain substances that modify its growth and activity under certain circumstances—to make it more resourceful perhaps, and to stimulate its initiative and enhance its perspective among its kind. These important elements come from a number of gland industries in certain parts of the body, and are known as endocrines. Besides, the cell must look to its defences against its natural enemy, the germs of disease; and so the transports supply it with arms and ammunition in the shape of antibodies. These are substances that suggest the preparedness of a nation surrounded by envious and aggressive neighbours. They are a sort of a reserve, which can be rapidly developed into a formidable fighting force in the presence of the enemy.

The cells and their governing bodies located in the brain and spinal cord are on terms of the most intimate understanding. Searching observation has not discovered in human physiology any cell groups corresponding to go-between delegations, commissions and what-not in our ordinary political and national life. Translated to practical public economics, the cell system would work out somewhat like this. The government decides that for the general good certain public works should be undertaken. Immediately, every citizen in any way concerned in the projected operations knows what is going forward and what he is expected to do. Every worker falls automatically into the group where he is most effective. No one remains idle. Implements of labour, increased food supplies, construction material, etc., arrive as by magic, and each foreman finds himself with everything needed for his men and the job. The supply of workers and material is ample for the present, but provision prevails whereby on the shortest notice extra help joins up. There are no wage disputes, no strikes, no murmurings, for each one knows in advance the exact value of his service in its relation to the whole undertaking; and as life itself rests on such service, there is little cause for inhibitions and discontent. We can easily picture the joy of the employer and the employed, could so efficient and harmonious a system prevail throughout the world. Yet such divisions of labour and economic perfection among the units of life itself, the cells, call up to the full

perfection of his being the individual, man, and implant the wish to use the powers of his brain and body to train all other life and forces of nature that they may harmonize for the welfare of himself and his kind. He calls this achievement civilization. It is a mighty structure. But the living cells do rather a better job. The poet was not likely thinking in terms of biology when he wrote that the proper study of mankind is man. He could have done worse, however.

There is little comfort for the pacifist in the well known fighting character of the body cells. Here indeed is an empire which survives because it fights, as it works, with the most intimate cooperation of its far-flung and varied parts. To its fighting power it owes its present high estate. From obscure and humble beginnings, it strove through untold ages, obeying its inherent need for development, pushing aside "lesser breeds" on the way. At a high level of greatness it is still the same restless, ambitious, striving, resourceful, noble and vicious vital entity it always was. It has now a great military machine, and it is worth observing how this highly wrought instrument operates.

The human body, like the body politic, may be attacked from within or from without. From within, it has to fear the actual hostility at times of groups of its own inhabitants, the cells. One of them, for causes yet unknown, may break away from the well disciplined society of its kind and become a law unto itself. In a short time it gathers about it a large number of followers, and they proceed with the villainous task of tearing down and destroying the highly wrought society that gave them life and being, and still continues to supply their rebel hordes with sustenance. The loyal cells come to the scene of attack, and, depending upon the resource and malignance of the attackers, may succeed in throwing up barriers about their armies so as to confine them permanently to a region by themselves where they are allowed to carry on a sort of low-brow community life of their own; the only compromise being the privilege of obtaining certain food supplies from the body's stores. The cell denizens of such communities are not permitted to cross their boundaries, and their economic status in the bodily organism is that of the inmates of our penitentiaries, whom the State isolates and guards for its own protection. In the world of surgery such irregular cell communities are known as benign tumors.

If, however, the rebel cell is endowed with sufficient virulent resource, things are not so good. The loyalist armies of the body cells are rendered ineffective, probably by a sort of poison gas created by the malignant rebels. The defence breaks down, and

from that on the siege is one of passive endurance, until the whole structure of man's highly organized body comes tottering down. The malignant kingdom the rebel cells have established goes to destruction with the rest. They dragged down the noble temple where immortality itself was lodged, and are themselves engulfed in the general ruin. Known to the surgeon as cancer, it is the one malign enemy of man against which his body defences avail but little. How or why the first rebel cell breaks away from its dutiful community brothers and becomes a monster of destruction, is unknown. Whoever unlocks this secret shall find, probably, the solution of the mystery of cancer.

The real invaders of the body empire come from without. Their numbers exceed all calculations. They vary in size and shape and colour; in prowess, resource and viciousness. Here, the body cells are not called upon to fight rebellious combinations of their own kin, but foreign enemies; the same as they fought through ages and ages, with casualties that strew the trail of time but, nevertheless, with a good measure of success. They have now great walls built up against them, and internal defences which are a marvel of military competence, of subtlety, of courageous and resourceful magnificence. Despite their fortifications (skin and mucous membranes) the enemy sometimes gets through. It may be through a break in the outer walls, or through some structural or inherent weak spot, and, once in, the battle for supremacy is on and the goal of the defenders is to save the life of the whole bodily organization.

The contest now joined is as real as anything can be. To the scientist looking into the tissues from a vantage point, the war of the invading germs and the cells fairly bristles with reality, and he can write down his observations with as much precision as that of a military expert who sees the ebb and flow of a great battle. The invaders no sooner break through than their presence is flashed along a marvellous network of communications to every interpreting and controlling nerve centre in the body, and at once the whole military mechanism throbs into action. There are no war office tangles to unravel, no summoning of parliament to find out whether we want to defend ourselves or not, no conscientious objectors to be supplied with white scrupulous plumes and competent military protection. If the germ invasion be confined to so small an area as the tip of one finger, the whole body is automatically at war. The fighting cells of the blood, the leucocytes, are rushed to the part by increased volume and more rapid transit of the blood currents. Arriving on the scene of conflict, the leucocytes are

poured out of the transporting vessels like the human cargoes of freighted ships of war. They attack the invaders, and at the same time, with the aid of other groups of cells, the engineers, build up tissue walls designed to circumvent the enemy and prevent their escaping along the numerous lines of communication, and setting up trouble elsewhere. At the same time, the whole body is at work strengthening its reserves of antibodies and antitoxins, so as to poison the enemies' wells and, in general, make life in the human terrain a misjudged and tragic adventure. When the cells win, the débris of war, including dead bodies of attackers and defenders, are quickly cleared away and a *status quo ante* established. When the invading germs win, there is damage of a permanent kind, which may or may not affect seriously the whole body. When the fighting forces of the body are completely overcome in the contest, death results.

How are all those bodily activities maintained? By supplying the whole cell population with the necessaries of life. They are peerless in craftsmanship, and can supply themselves with the varied structures needed for body building. They create their environment and weave for themselves outer and inner garments of delicate but durable textures. With much variation in size, shape and function, they differ in the beauty of their art; but, on the whole, "Solomon's glory" and "the lilies of the fields" drop to second place. The energy to do their work and the material to work with are supplied in food and oxygen, both of which come from the world without. Food covers a range of practically all the fruits of the earth, including water and minerals. Oxygen, taken with its mixtures in the air, is separated, refined and bountifully stored up in two great tanks, the lungs. It is there on tap for the cells' needs, from the infant's first-drawn breath to the last gasp of expiring old age.

The great food emporium is the stomach, where the preparation of the cells' diet is begun. Next to it is the intestine, where the preparation is completed. The process is one of the greatest complexity, for the cell appetite is capricious enough and can tolerate no blunders in culinary art. All nourishment must be brought to the cell table in liquid form and in correct quantities. There are special cells whose job it is to store food, such as prevail in the liver, where glucose is stored up; but the average working cell seems to need so much and no more. The red cells of the blood are entrusted with the job of bringing the oxygen to the cell, and of course there is perfect harmony in the manner and time of serving, as one is useless without the other. The well fed cell creates the

chemical and vital force that not only runs the bodily machines, but is as well the power unit of the gigantic structure we call civilization. For a monument of the living cells' work, since man first appeared upon this earth, you may indeed look about you.

My friends, the Professors of Economics, here interposed the remark that one of their greatest problems was that of transportation, and adequate distribution of the world's supplies. In the world of man's living body, the system approaches perfection. It is based on the unchangeable principle that every group or body of cells, in other words, every organ or part of the body, being essential to the life and welfare of the whole, must be fed and cared for. In everyday speech, they earn their living, and were any organ left in want, a general depression would result throughout the body, and even the legislative activity of the great brain parliament would be seriously retarded. The problem simplifies itself to this extent, that the agents of transportation know in advance what each and every part is to receive. The knowledge comes through an automatic nerve-wire system of communication that, except in disease, never blunders. The medium of transportation is the blood, which, driven out by a great power organ, the heart, flows through every nook and cranny in the body. The blood is too thick and heavy to move comfortably among the cells to carry on exchanges of food and wastes, so it frees from itself a watery fluid which fills a system of canals between the cells, and thus supplies float in in perfect condition, and other material out to join the returning transports of the blood.

So great and varied an empire as man's living body requires strong central and local powers of government. Even the fleeting glances we have taken at the activities and amazing achievements of the cells, their responsibility for the continuance of life itself, and their far-flung distribution and specialized functions, seem enough to suggest a government machinery of the greatest integrity and resourceful brilliance. Such an institution has in truth a very real existence, and may be said to represent the highest measure of perfection in organic life. The central government is the brain and spinal cord, and it is housed in a magnificent structure of bone that, in architectural beauty and utility, is one of Design's best models. It is the most democratic of all governments, and its parliament the most representative of every interest in the body. Its cabinet ministers sit in the gray chambers of the brain and, remote from the furore and the strife, govern their own empire; and, from the rich and partly unappraised resources they control, flash across the world the light that ever has led stumbling mankind on its way.

This parliament draws its power from the character and strength of its representatives, and, when they weaken and become corrupt, the bodily empire totters and is in danger of complete disintegration. In the economic history of nations are examples in plenty of similar disasters. The blood currents bring the delegate bodies to the brain parliament. Those reaching there from a diseased organ produce a depressing effect on the assembly's functions.

Whoever has attempted mental work with a badly deranged liver can amplify the situation for himself. The thyroid gland, whose representation in the central government is of great importance, may cause most serious inefficiency there if, through disease or otherwise, it can not take its part; similarly with many other organs.

Beside the central administration are many small assemblies of governing cells. They are the provincial and municipal governments of the body. They are linked with the central body, from which they derive their power. In the sphere of duty allotted to some of them, their executive independence is great. They have a lot to do with keeping the actual bodily machinery running. No one by taking thought can stop his heart beats, any more than he can add to his stature one cubit. Nevertheless, there is a measure of obedience to the gray chamber wisdom of the higher government powers.

My friends, the Professors, having begun a discussion on the advisability of adding some of the biological sciences to the preliminary requirements of their students, we decided to discontinue our observations until a future date.