

government the soviet régime in Russia and our encouragement and support of white guards against red guards differ from the attitude of the Church against the Albigenses. Do we practically make war against the soviet government because we desire to free the Russian people from the tyranny of a minority, or because we fear the soviet system, or lack of system, of industrial society? It seems that every thoughtful person must answer that the latter counts for most in our purpose. The Bolsheviki are industrial heretics, and as such must be put down, in the interest and for the protection, of our modern religion.

The dividing line between liberty and license is now, as it always has been, the line between those things toward which we are comparatively indifferent and those which we regard of supreme importance. We are all in favor of liberty in non-essentials. Very few of us can look upon any opinion on what is to us the really essential as anything but damnable heresy, and its advocate as anything but a monster of iniquity for whom no punishment can be too severe.

SCIENCE AND THE MORAL WORLD.¹

BY JAKOB KUNZ.

A. THE SCIENTIFIC ASPECT OF THE WORLD.

WE shall at first consider the world as revealed by the various sciences, the oldest of which is astronomy. Astronomy has widened the horizon of man. The material heaven, in which the gods of the ancient nations lived, has disappeared. Instead of the crystalline spheres with their melodies, we find the immensity of stars, similar to the sun, which are scarcely scattered through the sky. Our earth is a small part of the solar system, the solar system like a particle of dust in the system of the Milky Way. The earth moves around the sun according to well-defined laws of mathematical precision, under the influence of gravity, a law which embraces all material bodies.

Physics and chemistry, since Galileo, Newton, and Lavoisier, teach that all material processes are governed by natural laws, which are sometimes of a simple, sometimes of a complicated mathematical form. Nature appears as a mechanism built up of small

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particles which are charged with large amounts of energy, endowed with manifold motion, which act upon each other according to well-defined laws; nature looks like a gigantic clock, with an immense number of wheels, driven and driving, beating time throughout eternity and through all space. In the physical sciences of astronomy, physics, chemistry, mineralogy, physiology, there is no room for freedom, for God and heaven, for spiritual and moral forces, for conscious intentions and purposes, in short for the moral world. A mechanism without soul, nature is indifferent toward all moral and religious feelings.

Moreover, like every other clock, the clock of the universe wound up in a certain beginning, runs down until the whole mechanism comes to a standstill, the physical death, where every ordered motion and life itself vanishes. The universe has therefore no purpose, no deeper meaning; life of mankind—which is only a small part of the natural mechanism on the surface of an insignificant planet—has no content, no significance nor purpose. Moreover, the fraction of matter which is drawn in the vortex of life on the surface of the earth, is an insignificant part and has no influence on the destiny of the earth as a planet—much less on the solar system. The suns and stars, colossal systems roll down into infinite space and time, without soul or purpose, intention or design.

If we find a watch in the desert we conclude that there was somewhere a watchmaker. If we find a much more complicated mechanism such as a living cell or a plant or an animal, we would conclude—and ancient thinkers have concluded—that there was and is a supreme genius or architect who built this mechanism with infinite wisdom. But against such a consideration the theories of evolution protest with a thousand and one arguments. Here we enter the field of the second group of sciences, the biological sciences, which involve bacteriology, zoology, botany, paleontology, anatomy, embryology, etc. The various theories of evolution agree that life is unity, that the various forms of life have not been created independently of each other but that they are connected with each other, and that the more complicated forms have been evolved by natural movements and processes from the more simple forms.

At the end of this series of evolution, after endless cruelties and brutalities, appears man, still subject to the same process of evolution, which leads through an endless battlefield of life, which recognizes no moral law. Darwin's theory of evolution especially, with its struggle for existence, the natural selection, the survival of the fittest, the adaptation to the environment, is in hopeless conflict

with the moral world. Eat or be eaten—such is the law of life, my professors of biology taught; exploit or be exploited, is at the root of modern commerce and industry. And, indeed, it requires little experience in the world of animals and man and plants, to see the incessant struggle for existence, going on in contradiction to the moral requirements. The functions of the organs of plants, animals, and men are measured according to their success in the struggle for existence, a struggle which is omnipotent and absolutely pitiless, and which goes on inside the individuals of the same species, which fights for food, space, and the opportunity to propagate. The enormous overproduction due to natural propagation in geometric progression makes the struggle as cruel as possible, and weapons of all possible description are used continuously—poison, teeth, claws, horns, etc. Then there is a struggle for existence between the different species; each living being struggles constantly against the rigors of climate, the dangers of floods, storms, fires, drought, cold, heat, etc. Man has largely succeeded in this struggle for existence by a new and invisible weapon, his intelligence. He invents tricks and traps by means of which he subjugates and catches the other animals which are superior to him in many other ways. He uses a thousand crafts, clever and cunning methods, which he receives from the sciences, to fool, exploit, and kill his own neighbor. It is true that biology recognizes ameliorating and moderating factors in the different phases of the struggle for existence. Besides mutual destruction we find mutual aid in many instances—symbiosis, for example, in the largest measure between plants and animals; but here again it is essentially man who destroys this symbiosis by building enormous cities where there is no room nor thought for the fundamental life of plants, and strangely enough, by burning his body, a method recommended often by naturalists, instead of giving it back to nature and to the plants.

Other theories of evolution besides that of Darwin have been proposed, notably that of Lamarck, emphasizing the inheritance of acquired characteristics, or the theory of orthogenesis, or the theory of mutations, all of which contain some contact with facts, and none of which is in itself satisfactory or purely physico-chemical. A purely physico-chemical theory of life would be the most satisfactory from a scientific point of view. All the phenomena of life, propagation, inheritance, variation, etc., will finally be reduced to chemical properties of one or more chemical compounds. But whatever may be the final theory of evolution, the struggle for existence exists, cruel, ruthless to the bitter end, a violent and fatal compe-

tition. We seem to find the same struggle for existence among men, tribes, nations, and corporations. Indeed, the greater part of what is usually told as human history is a story of battles and most all the historic valleys have been crimsoned by human blood.

The relation between various sciences is unsatisfactory. If the biological sciences can be reduced to physics and chemistry, and if psychology and sociology can be reduced to biological sciences, then clearly we have only one science, the physical sciences with their various derived branches. But it is possible to think that the various sciences represent a progress in the sense that the physical sciences study dead matter; the biological sciences, life; and the psychological sciences, mind; and that matter, life, and mind represent three progressive units, which cannot be deduced one from the other; in this case we would have at least three, if not more, fundamental sciences, where, of course, each higher one would use the results of the previous science for her own purposes. However this may be, it seems clear that as far as psychology is behaviorism, based on observation and experiment, it is a branch of biological sciences; but many, if not the majority of the psychologists, maintain that the principal method of psychology is introspection, and the object of their science mind or consciousness. As far as psychology is a science like physics and chemistry, there is no room for the moral world. The psychologist and physiologist as scientists do not consider the origin of good and evil, justice and injustice, right and wrong, etc. The physicist, when entering a psychological laboratory, feels quite at home, but when entering upon discussion with the psychologist, feels rather bewildered.

The aim of physical sciences is the determination of the physical realities of the universe. Between our sense-experience and the physical realities we wish to establish a one-to-one correspondence. An electric current when passing through a filament produces light; when acting on a wet hand, produces a shock; when acting on the retina of the eye, produces the impression of light; when acting on the tongue, produces the sensation sour. These sensations cannot be compared with each other, they do not resemble each other in the least, and they are not similar at all to a stream of electrons passing through a wire. We observe a green leaf of a plant. We have the impression green. What is the underlying physical reality? Electric charges in vibration and electric and magnetic forces oscillating 10^{15} per second. Between this physical reality and the impression green there is no resemblance. Again, between the sensations of a symphony concert and the vibrations in the air there is

not the least resemblance. If therefore physical sciences succeed in detecting the physical realities—and physics and chemistry have so far been, with little aberrations, a triumphant and uniform approach to these physical realities—then with every step taken by physics and chemistry, the requirement of a different element in our sensations, namely mind, becomes the more urgent. The charm of the red rose resides not in the rose but in our mind.

Finally, for the purpose of logical order, we should consider sociological sciences, which, however, are in a rather embryological state. The results of this new and promising science resemble the results of physics and chemistry little in definiteness; it is even difficult in the complexity of the situation to detach well-defined problems. Nevertheless, sociology possesses already a considerable stock of definite knowledge of a statistical nature. For instance, in 1910, the income of the inhabitants of the United States amounted to thirty billion dollars for ninety-two million inhabitants, or 330 dollars for each inhabitant, and this income was distributed so that eleven million families got seven hundred dollars per year or less, which is the minimum for existence without the possibility of enjoying some of the things which raise the human existence above that of the animal. Seven hundred dollars income in 1910 represented the upper margin of poverty; a little accident or sickness would throw these people into poverty. In the same year probably five billion dollars were income from properties or investments, earned without any effort. According to an estimate of 1896, seven eighths of the families held but one eighth of the national wealth, while 1 per cent. of the families held more than 99 per cent. One eighth of the families in America receive more than one half of the aggregate income, and 1 per cent. receives a larger income than the poorest 50 per cent. In England it was concluded that four fifths of the property of England was held by one sixty-seventh of the adult population of England. The concentration of income in the hands of the very rich proceeds in recent years chiefly at the expense of the middle class which is the principal sufferer. Our whole industrial machinery tends to split human society into two classes, rich and supposedly comfortable on the one side, poor and miserable on the other. In this mad scramble to accumulate wealth 500,000 people in the United States are injured and 5000 killed in one year of industrial work, or as many as in one year of war between England and the Boers, and Russia and Japan added together.

Another fact of sociological importance is the impoverishment

of the soil in the United States where agriculture has been largely robbery. If we add to this spectacle the exhaustion of our forests and mines then we get a fair picture of the boasted progress of our civilization. As far as pure unapplied sociology is concerned, it is sufficient to state the fact that human society is going to the dogs, just as physics and chemistry state that the available energy of the universe is running down to zero. But in sociology much more than in physics and in chemistry do we feel an appeal to our moral sense, and, indeed, sociology will be of value in the ethical reconstruction of human society.

B. THE REQUIREMENTS OF ETHICS.

Ethics is not satisfied with the present condition of our life. Our thoughts, words, and deeds are good or bad, just or unjust, cruel or kind, right or wrong. Ethics is concerned not so much with the existing world of experience, described by science, as with the world which ought to be. Ethics demands duty and virtue, justice, truthfulness, severity toward ourselves, sympathy for others, faithfulness and devotion for our family, friends and relatives, our nation and mankind, generosity, self-sacrifice, and heroism in our deeds and words. The highest command of ethics is love, and the fundamental requirement of religion is humility.

If we inquire as to the historical origin of the ethical requirements, we find in the majority of cases that they arise from religion. Moses among the Israelites taught justice and gave the laws to the ancient traveling tribes. Moses with the law and the following prophets, who always insisted on justice, were the guides of the Jews through centuries of persecutions by other people. Christ expressed the religious and moral laws in the simple words: Thou shalt love God with all thy heart, and thy neighbor as thyself; and thou shalt be perfect as our father in heaven is perfect. Socrates and Plato also based their moral commands on religion; so did Mohammed, Buddha and Krishna, the prophets of the Brahmins and of the Buddhists. All these religions have touched a vital spot in the human heart; they have directed events in human history, they have produced martyrs, heroes, saints and poets and men of the deepest sincerity, moral earnestness, and unswerving reliability and faithfulness. But since the time of the Reformation, religious feeling has become colder and colder proportionately as science has increased, and the conflict between science and religion has at times become very acute, with the result that the churches have become more and more empty. This is true in all Christian countries,

especially in France and Germany, to a lesser degree in England and America. Very often scientists, or at least professors of universities, have used most severe accusations against religion and even ethics, and many attempts have been made to find new bases for ethics. There is a group of thinkers who remind us of the old Stoa and of Confucius, who insist that a man should practice the good for its own sake, virtue for the sake of virtue, justice for the sake of justice. There is considerable dignity, bravery, and defiance of men and destiny in this philosophical ethics; but it has never warmed the hearts of any number of men, it lacks that triumphant joy and humility which have only been inspired by a consciousness of the Divine. Moreover, why not the bad for the love of the bad's sake, vice for the vice? It seems to me just as logical as the good for the love of the good. Every boy knows that stolen cherries taste better than father's cherries.

Another school of ethical theory maintains that we should follow the moral law for our private advantage; but what is the private advantage of a warrior who, deceived by his government, dies on the battlefield for the fatherland? Other men try to make happiness the basis of moral behavior, but when we go to the laboratory or to the workshop or to a lecture, we do not seek happiness for happiness's sake, we accept it if it comes, gladly, but we accept disappointments also. Who laughs for the pleasure of laughing? A very modern attempt at an explanation of the moral law makes the human society the idol for which we should live as moral beings. But the human society, with its divisions into castes, into nations into religious sects, and political parties, with its intrigues and superficialities, its deceit and hypocrisy, its diplomacy and its spies, its hatred and envy and pride and greed, its craft and contempt of nobility of the human soul, can never claim moral authority. Human society again and again degenerates to such degrees that it becomes the moral duty of men to speak and act against their own advantage and against the given society. Revolutions again and again have become necessary. Savonarola, Huss, Luther, Zwingli, Calvin, Cromwell, Massini, Schiller (in *Wilhelm Tell*), Washington, Carlyle, Tolstoy, Bebel, Jaurès, wrote and acted against the majority of their respective societies.

Some modern scientists, especially sociologists, maintain that sociology will furnish us the basis of ethics, which we as a modern and scientific generation have lost. Well, it may be that sociology discovers some human societies in the past or present which realize in their social life moral principles. Such societies, however, like

the early Christians, the Moravian Brethren, the Persian Sufis, some Hindus and Buddhists, the Quakers, the Bahaists, based their ethical life on religion. So sociology may discover religion again some day. But if sociology takes a cross-section of the present-day social life of Chicago, New York, London, or Paris, it will never be able to say with a good conscience: Thus thou shalt live—this is the highest form of life, the powerhouse of moral actions.

There is a very serious logical objection to any science as a basis of ethics. Science is based on experience of the existing world as it is conveyed through our senses and our experiments. Ethics requires a transformation of the world and of society: it projects into the present state a future vision. The future will rule and control the present. The human conscience is far deeper than the human sciences. To take an example. Men and nations have most always been fighting, yet the best human conscience requires peace among men and nations. Competition, ruthless and fatal, has ruled the actions of most men and nations, yet the prophets of the race and the human conscience require cooperation or competition for mutual help and service, not selfishness. Science is based on facts, ethics on the inspirations of the prophets. In a different way we may distinguish between science and ethics. Science is not satisfied with facts, it wants relations; indeed, a modern mathematician and philosopher of science insists with almost annoying emphasis that we only know relations, and these relations are mathematical or causal. Physical phenomena, chemical reactions, are well determined by the conditions under which they are observed. The law of causality rules supremely. There is no room for freedom in the field of the accurate sciences and if once sociology, scientific but not practical, has emerged from the present chaos, it must show an aspect like physics and chemistry: well-defined facts, their relations and fundamental principles and theories. Well, nobody would claim that ethics is based on physics and chemistry, nor can it be based on sociology, conceived as an accurate or mathematical science. Moreover, historically speaking, the moral world has been discovered by the prophets of the race at least 3000 years before sociology came into existence. And sociology is still more a hope of a science than an established science. What is right and wrong, I know independently of any sociological study. And I am convinced that the law, Love thy neighbor, is as absolutely true as the "law" of gravity, in spite of the possibility that sociology and history may show statistically that most men and nations do not observe the moral law. The moral principles do not depend on the progress of sociol-

ogy, nor do the mathematical theorems depend on physical sciences. Science rests on necessity, ethics on freedom. Unless there is a genuine choice between good and bad, justice and injustice, right and wrong, kindness and cruelty, ethics must vanish.

There seems to be a hopeless conflict between science and conscience, freedom and necessity, the material and the moral world. From the scientific aspect the world is a machine without plan or purpose, a roaring factory which produces nothing, a chain linked to nothing, a scuffle which nobody started leading to general defeat. In such a mechanical world there is not only no room for moral ideals, God, soul, immortality, freedom, there is even no room for newness, surprise, originality, individuality, genius, personality. Against such a world my conscience revolts with elementary power. In my consciousness I experience not only necessity, but freedom, and I am at least as sure of my genuine freedom as I am convinced in science of the chain of necessities, causes and effects. And the more I am restricted to myself, the more insignificant my position in public life, the greater my freedom, the purer my soul. Self-consciousness involves self-determination, activeness, free will; freedom and necessity reside in my consciousness, not in nature. The more nature as a whole is represented as a machine, the more my logic requires a universal engineer, a supreme architect, or the machine, life, and science themselves become nonsense. The genius cannot be explained scientifically by surroundings, by ancestors, etc.; he represents something new, just as a new idea of a scientist cannot be explained or deduced from his brain activities. The scientist throws the net of causality over nature in order to capture and use her for scientific and practical purposes. As I distinguish between subject and object, beginning and end, cause and effect, independent and dependent, in the same way I distinguish between free and necessary. Let the banner of freedom float over the rocks of necessity.

Without freedom no guilt and no responsibility. If the life of man and mankind is only a link in the machinery of nature, if cause and effect rule pitilessly, then nobody can be blamed or praised for any act. If the history of mankind is only a continuation of the purely mechanical evolution of life, then nobody is guilty of this or any previous war. If war is a natural phenomenon like hail in a thunderstorm, then it would be just as wise to punish the clouds as the immediate originators of the war. Freedom, justice, right, become empty words. Against such a scientific interpretation of human history my conscience protests. No, man is still about

to realize the full freedom of his soul, not only independence from Germany, but independence from every tyrant, such as capitalism, public opinion, religious, political, national, and university prejudice.

Science cannot be the basis of ethics. On the other hand, the human conscience requires that science shall be universal, just and without selfish interest. An ethical presupposition of science is open-mindedness, detachment of our personal or national selfish interest from the objects under investigation.

We declare religion as basis of the moral ideals and requirements. It is unfortunately true that the Church has not always kept alive the fire of the moral world. If, before the Civil War in America the Church of the Southern States was in favor of slavery, it was not because of, but in spite of, religion. If multimillionaires in churches in New York receive the collection, it is not because of, but against, the command of the prophet. Religion is one for the whole human race, even though the Church may be broken up in an unfortunate number of sects. Religion is longing for knowledge even though church officials may have opposed science.

We should clearly distinguish between origin and test of ethical ideals. The physical sciences presuppose mathematical principles not based on sense-experience, so for our social life we need guiding principles, moral ideals, which will be tested in the course of time. Without mathematical theorems, no accurate physical experience—without moral principles, no social progress.

The test of a moral principle may require thousands of years. "He that loseth his life for my sake shall find it." The so-called Christian world may have acted against this principle and against the law, Do not resist evil, yet the moral requirement remains the same as it ever was. Here clearly the average evidence of 2000 years of experience is against the moral laws, yet in my conscience these are stars of moral life. The human world may perish before learning to apply the moral principles, yet these principles exist as certain as many mathematical theorems remain true even though they may never have been applied. Yea, the test of mathematical theorems in physics and engineering is always only approximate, and the test of moral principles in the life of the human society is fragmentary. We are true only in solitude; public life moves over the surface.

The prophets are the discoverers of the moral law, which they receive not by long sociological experience and historical study, but by divine inspiration.

Who is judge in the moral world? It is ultimately our con-

science in communion with the divine judge, under the leadership of the prophet.

So far I have only considered pure science as an achieved and ideal work of scientists. A different question would be that of the moral world and the scientists, or the universities and ethics. Nobody will deny that there is a vast difference between the prophets of mankind and the professors of ethics and philosophy. No professor could say to his students, Follow me, and I will give you peace, that peace which passes understanding. When we take a course in ethics we feel at the end very little inspired and uplifted, because everybody knows that the professor hardly tries to realize the moral principles which he discusses with the same impersonal interest with which another professor teaches mathematics or chemistry. That science and philosophy can not, or do not, guide a people on the ethical path, is sadly shown by the Germans, who, on an average, before the war were better trained than any other nation. Yet they committed innumerable crimes, and ninety-three scientists in a public proclamation supported the government in its criminal attempt to subject the rest of the world to the German rule. Some German professors even used Darwin's theory as justification of the war. According to their writings many German scientists lived in an insane asylum before and during the war. Their science had become foolishness, their diplomacy stupidity. Yet before and in the beginning of the war German science and organization had been highly praised at least in England and America. And only a few months before the beginning of the war the German ambassador in Washington was called upon to give the Commencement address in our own university.

The bulk of science and research only requires accuracy of observation, careful experiments, logical deduction, and a rascal can perform these requirements as well as an honest man. It is perhaps to be wondered at that in the armies of professors which fill the present universities and which are drawn from the average human society there are not more rascals than there actually are. It is probably still the effect of a past civilization which was more moral and religious that among the professors there is still so much decency, good will, helpfulness and justice and even friendship. According to my feeling, the whole white race, not only the Germans, has made regress in the moral realm, man has more and more lost religion, the only basis of ethics, he has become more and more absorbed by material cares, and the spirit of materialism, pragmatism, agnosticism, utilitarianism, fills a large part of professors and students.

There is a marked difference between American and European universities, in favor of the American institutions. Manual labor is absolutely despised in the European universities, while a student in America may during his study earn his living and be respected in the same way as any other student. On the whole the universities have been visited by well-to-do people; in Europe the universities have been and still are aristocratic and exclusive institutions; they have taken little part in any progressive movement of mankind. In the Reformation and in the French Revolution the universities were onlookers. They were onlookers in Europe and in America in the increasing hostility of capitalists and laborers. In Europe, students go to the universities to become doctors of medicine, lawyers, preachers, administrators, engineers, in order to be able to enjoy the privileges of the better classes, in order to get rid of drudgery, of dull and dreary dirty labor, and to exploit their fellow-men by the knowledge acquired in the universities. The universities in Europe and America stand altogether too much under the Prussian system of organization, the administrators are autocratic, the president of the council of the Polytechnicum in Zurich was practically inaccessible to me as an assistant and private lecturer; the spirit of genuine democracy is not yet at home in the universities, the universities are not the seats of liberal and just thinking in the field of social relations. A liberal thinker is regarded with suspicion. While the professors and instructors on the whole belong to a decent middle-class, many students and instructors look forward to a day when they also will be rich. Granting many exceptions, the universities are still schools of selfishness. In Germany the scientific intellect seems to be militarized; it is commercialized in the European and American universities, especially in the graduate schools. The proper scientific spirit, free from selfishness, pure joy of science for science's sake, is on a decline. If it is an aim of education to produce men of independent judgment, of freedom, generosity, and character, in the noblest sense of the word, I am afraid the universities make a poor show.

In the physical sciences a commercial spirit prevails more and more, in the social and historical sciences patriotism drives out truth; the spirit of freedom is not at home in the universities; and truth, truth in spite of all, in spite of patriotism, selfishness, and class distinctions, truth too is threatening to leave the universities. Often in recent years I have heard from university professors that they do not know what truth means. But everybody understands interest.

Pure unapplied sciences are neutral with respect to ethics. Science as such has nothing to do with ethical requirements or ideals. But let us now turn to the question of applied sciences. The present civilization consists almost entirely of applied sciences—railways, telephone, telegraph, with and without wire, steam-engines, electric engines, flying-machines, submarines, etc.; all the chemical, electrical, mechanical industries are so many applications of science. The last war owes much of its horrors and destructiveness to the most recent progress of science; the poisonous, tears- and blisters-producing gases and smokes as well as high explosives, are a recent triumph of chemistry. It was a war of science against science, and the German science lost in spite of the long thought-out scientific preparations. In the military schools there will be taught the science of war, and scientific generals will parade with military generals. This unfortunate war has given an immense impulse to applied science, so much so that the public at large, the administrators and even the professors of the universities, are tempted to consider only sciences applied to practical purposes. Science is threatened with the danger of becoming mere business, the universities, factories, if not weapons, in the hands of national governments. By progress is very often meant the increase of modern machinery. For my personal concept of life and world, this means no progress unless it involves moral progress. And a soldier fighting submarines, flying-machines, poisonous gases, shells of every caliber, will probably little appreciate these advances of modern science. Let us consider the printing-machine and the manufacture of paper as applied sciences. Now, if the press spreads good literature, true science, the simple truth about the public and political life of the world, it will be a means of moral progress. But if the newspapers become a tool in the hands of the capitalists, the imperialists, ruthless rulers and narrow professors of science, then they become a great danger to the nation and to the world at large. Outside capitalism there is no greater enemy to the American people than the present newspapers. The motto of an American newspaper of the middle West, which claims the widest circulation, is this: "Our country! In her intercourse with foreign nations may she always be in the right; but our country, right or wrong." It reminds us of "Rule Britannia" or "Deutschland, Deutschland über alles," different expressions of national selfishness and arrogance.

Railroads are a very good thing if they help us to see and enjoy the wonders of the world, to visit different people, to carry

goods from one place to another, where they are most needed. But what about the 26,000 military trains which, loaded with soldiers and artillery, crossed the Rhine in six days in the beginning of the war, bringing death and destruction to Belgium and northern France? In a word: Applied science and industry are a blessing to mankind, if they promote moral principles, and they are a curse if they act without or against the moral progress of mankind. Our schools of commerce and economics are a good thing, if they further social justice within a nation and among the various peoples, but if they become a tool in the hands of capitalists and imperialists, if the most ruthless brokers of large cities are employed as professors to teach the students all the clever tricks and traps of modern business, and to exploit the commonwealth which supports them in their study, then it would be wiser to burn those places of learning and labor.

Psychology may be a good and interesting science, and applied psychology may be very useful in schools, hospitals, and so on, but if she employs methods of mental testing by which the most shrewd salesmen win in the competition with decent men, then applied psychology becomes a very serious menace to the people. Recently, such a mental tester of a Western university told me that in a commercial examination he gave the highest mark to a university man who had a short practice as a salesman. This man passed an excellent examination in the hands of a mental tester who confessed he trembled at the thought that the salesman with the highest mark of excellency should ever pass over the threshold of his own house. The professor was afraid he might lose all his earthly goods in a few minutes for something which he did not want. He confessed at the same time that the mental testers have no methods as yet for the test of moral qualities such as sincerity, honesty, etc. On the other hand, they have such wonderful tests by means of which a fool can measure the greatest genius in a few minutes.

Many thinkers like Comte, Renan, Negri, and others in the last century expected salvation for mankind from science. But science has not saved mankind from this terrible war, nor has her science saved Germany from military and moral defeat. Applied science has made war more cruel than it ever was before, and the scientists of the opposing countries are filled with the same hatred toward each other as the general public. The old Greek philosophers and artists had an inkling of the danger of science when they endowed Pallas Athene, the deity of science and war, with the owl, sword, and serpents.

Applied sciences have increased the moral problem of mankind

enormously. The war came to an end with gas as the most efficient weapon. If one country alone can produce over 200 tons of liquids for gas warfare in one week, then in the next war large armies, cities, and whole populations will be wiped out in a few hours so completely that not an animal escapes the general death. If mankind does not stop resolutely and once for all war, then indeed the hour of the race has struck. The ax of applied science strikes at the very root of the tree of life.

Tantum possumus, quantum scimus. Applied science leads to power. The nations and corporations have accumulated enormous power through the application of science. Armies, navies, huge industries owned by capitalists, are expressions of power. Now it requires powerful men to manage these gigantic machines. These men, emperors, prime ministers, kings of industries and wealth, are under a constant temptation to misuse these powers, which drive them gradually insane. Mankind will either be at the mercy of the gamblers in human history, or it must resolutely decide to abolish war once for all, and decentralize and democratize the industries. The national war debts become by and by so colossal that life through competition becomes a continuous nightmare, in peace and war alike.

Our present life at large as compared with that of past times, perhaps only of thirty or forty years ago, seems to be so much more complicated. Life is more and more interested in material things. We have heard little of a recent great philosopher or poet in France, Italy, Germany, England, or the United States. Everywhere man is fighting for his own advantage. Mankind, especially in Europe and America, is morally sick. We live in a moral desert. Recently a class of student-soldiers told me that they would be very glad to go to France and lay down their lives for America but if they are to stay on this side of the Atlantic then they will fight and fight, make money, gain influence, reputation. Everybody for himself and the devil get the hindmost. A chemist, once a professor and Sunday-school teacher, told me in a factory, that if a certain operation yields good results, they sell the dies in the United States, and if it fails they send the goods to India or China. Cutthroat methods are used almost everywhere, and our industries are largely an object of gambling with the result of a division of society into two irreconcilable camps: the capitalists on one side, the laborers on the other; the tyranny of capital opposed by the tyranny of labor unions, arrogant wealth on one side, miserable poverty on the other. Everybody, even the professors of univer-

sities, deadly afraid of poverty which is despised everywhere. Our social condition is utterly unstable. The specter of revolution appears behind the black clouds of the war. The poor says to the rich: What belongs to you belongs to me. Again, the struggle turns about property.

In America it has so far been possible by strenuous work and thrift to arrive at a condition worth living, but in Europe this chance has vanished long ago for large groups of people. Even in America we shall gradually arrive at the same condition as in Europe; then our natural resources will largely be exhausted and colossal fortunes will have accumulated in the hands of very few men. America will then be the property of a few Wall Street tyrants. The luxuries have become inconceivable. They are shown at certain occasions, for instance, on New Year's eve in the first-class hotels of the large cities, with overwhelming bestiality. Outside the battlefield man shows nowhere his beast nature so openly as in those exhibitions of luxuries, of dress, and tables laden with the most exquisite foods, with the largest varieties of finest drinks. What a degeneration of mankind, what a waste, what a spur to revolution in the breast of servants. Life seems a festival for the fortunate, slavery for the unfortunate. If the problem of property, of capital and labor, cannot be solved by good will and intelligent council, then a bloody revolution must follow. For myself, I know no method which permits a man of moral principles to become rich. Let us suppose:

1. That a man after some search finds a block of gold. He might be given some reward for his effort in the search, the gold does not belong to him, but to human society. If he claims the block of gold, and he is legally justified, then he has taken it away from human society. In the same way a man might go and discover in the prairies of Illinois a rich university and claim it as his own. And conquerors have done just this same thing over and over again.

2. Suppose a man goes south and buys one thousand acres of fresh land at \$10.00 an acre. He will get a few scientific experts in forestry and agriculture and develop the land, and after a few years sell it at a high price, making a large fortune. But this land belonged to human society.

3. Or a man may make an invention, which should bring him some benefit, but if he earns a million or more, then again he exploits human society.

But these are efforts which have at least some personal merit; but if a man by business administration and exploitation alone be-

comes a multimillionaire, then he exploits merely a stupid community. A man who, with a family, cannot live decently on a fortune of \$100-000 is a danger to human society. We build large institutions and corporations. We say: the administrators, directors, presidents, of these institutions have a large responsibility, and this responsibility is paid or measured by large salaries. But if the ministry of the State is overthrown by change of political parties, or if a bank director is replaced by another one, he keeps his money, eventually even receives a pension, and the responsibility is evaporated. A corporation or trust company says to the director: We pay you an enormous salary but we want results, you understand, if you apply decent methods, all right, but results.

We live in a sick human world. Without revolution by fire and sword, we may hope to transform the present sick civilization of selfishness into a moral and sound humanity by various methods of national and international legislation designed to promote human welfare all over the world. As a few points of a progressive program I may mention:

1. Reduction of armaments to the lowest point consistent with domestic safety.
2. Abolition of standing armies and navies.
3. An international police.
4. Freedom of the seas.
5. National ownership of all gun and ammunition factories.
6. No colonies for national exploitation.
7. International administration of tropical Africa.
8. International protection of endangered people, such as the Armenians.
9. A genuine league of nations, with a court of arbitration and an international legislature.
10. No secret diplomacy: open treaties.
11. Home rule to India.
12. Open door in international commerce; custom duties being restricted to revenue purposes, no economic war and discrimination against foreign countries.
13. Public ownership of railroads, telephone, telegraph, mines, principal industries, without throwing the burden of administration on the government.
14. Upper limit of the fortune of the individual, progressive income and inheritance tax.
15. Exchange of foodstuffs, raw materials, merchant shipping between different nations.

16. Prevention of unemployment.
17. Compulsory insurance against accidents, sickness, old age.
18. Public construction of roads and railways; the reclamation of land; the erection of schools, working-class dwellings by a working army.
19. Restoration and reparation of devastated territory by a just and open and lasting peace, in which the working class of the largest nations concerned should be represented.

To these points may be added the following of a more general character:

20. Exchange of professors and students between different nations.
21. Creation of funds in the American universities for foreign students.
22. Higher and moral education of all classes of peoples.
23. Appreciation of the best art, literature, and music of foreign countries, etc.
24. The spirit of selfishness and exploitation shall be replaced by the spirit of cooperation.
25. The autocratic administration shall give way to a more democratic system.
26. Defeat of commercialism; return to idealism and religion.
27. The spirit of freedom and truth shall be readmitted.

Much can be accomplished by such legislation and by abundant international good will.

The human heart, though harder than rock, still is not inflexible. When God's holy spirit began to breathe through the early Christians, the chains of the cruelty of Greek and Roman civilization broke. God's holy spirit will appear again in a new prophet of mankind. Christ will come back again to break the chains of modern materialism, capitalism, and commercialism. As in the volcano the hidden heat of the earth appears, so the fire of the love of God appears in the prophet who brings divine and universal healing to a sick human world, who builds a celestial civilization on our material systems, who will save man from war, hatred, and all moral defects.

A pure heart, a keen intelligence, a comprehensive insight, will dwell in the same breast. The open mind of science and the warm heart of religion will live in harmony. The power of the love of God will unite mankind.

A Persian philosopher says: "Religion and science are the two wings upon which man's intelligence can soar into the heights, with which the human soul can progress. It is not possible to fly with

one wing alone. Should a man try to fly with the wing of religion alone, he would quickly fall into the quagmire of superstition, while on the other hand, with the wing of science he would also make no progress, but fall into the despairing slough of materialism."

If in mountain regions, for instance in Switzerland, we climb a mountain in winter, the whole country is covered with thick dark impenetrable fog, which rises to a certain height and suddenly reaches a limit, so that, seen from above, it spreads out like a quiet ocean. In a given moment the body may stand in the fog, while the eye discovers the region of golden sunshine. Above the ocean of fog, crystalline castles of the high mountains rise, flooded by the rosy light of the sun, in holy majesty, in radiant purity, in eternal exultation. The material world has disappeared below us, heaven is round about us.

In this study the world seems to break up into two sides: the material world, in which science is interested, and the moral and spiritual world of religion. There is still at least one more fundamental side of the world; the esthetic world of art in the highest sense. Finally, we have with the world a direct bond of connection which is personal, every human language being an anthropomorphism on a large scale. But in spite of these different aspects of the world, a calm and quiet voice in our conscience whispers the unity of the world, the harmony of science and religion, the oneness of mankind.

THE CHARACTER AND ETHICS OF PARACELSUS.¹

BY JOHN MAXSON STILLMAN.

THE period of the late Renaissance and the Protestant Reformation is from many points of view of great human interest. Many influences were active in bringing about a re-adaptation of the spirit of man to changing conditions, a readjustment all the more violent as the bonds of tradition and authority had so long held the minds of men in the fetters of accepted dogmas. In art, literature, philosophy, politics, theology, many strong and bold thinkers arose. Men were becoming aroused to a new consciousness of their powers. Reacting from the medieval mental slavery the spirit of man became more independent and self-assertive. The

¹ [The following article contains two chapters of a book on Paracelsus which we intend to publish in the spring.—Ed.]