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THE DAY AFTER TO-MORROW
WHAT IS GOING TO HAPPEN TO THE WORLD?

By Sir Philip Gibbs

THE ROMANCE OF EMPIRE
KNOWLEDGE IS POWER
TEN YEARS AFTER
FACTS AND IDEAS

Novels

THE MIDDLE OF THE ROAD
THE STREET OF ADVENTURE
UNCHANGING QUEST
YOUNG ANARCHY
ETC.

THE DAY AFTER TO-MORROW

WHAT IS GOING TO HAPPEN
TO THE WORLD?

by
PHILIP GIBBS

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THE SEARCH OF SCIENCE FOR THE POWERS OF LIFE

DURING the past hundred years human life over great areas of the world's surface has been changed more radically in its social habits than in six thousand years, perhaps, of previous history. Now it rather looks as though during the next fifty years or less there are going to be even greater changes—more startling, more tremendous—and in this article and others I am going to suggest some of the things that may happen the Day after To-morrow, using that term rather vaguely, not in the prophetic spirit of H. G. Wells, whose imagination leaps lightly to the future with easy phantasy, but as a humble reporter of the facts and plans of the latest science, as far as I can discover and understand them.

IN QUIET LABORATORIES

The scientists of to-day want watching by men in the street, of whom I am one, because it is our

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life with which they are experimenting in quiet laboratories which we are not allowed to enter. We are the patients upon whom they are operating, though we are mostly unaware of their operations, and of plans for our future way of life. These cloistered gentlemen, removed from the roar and bustle of everyday humanity, gazing mildly through their spectacles or microscopes at organic and inorganic life in test-tubes and retorts, studying the chemical reactions of various combinations of elements, watching the life-history of tadpoles, and rats, and guinea-pigs, and disease germs, or fingering little instruments sensitive to light or sound, are not just busy with research for its own sake. The results of their experiments are going to make a lot of difference to the habits and home life of the ordinary mass of men and women who know nothing or very little of what these quiet gentlemen have in store for them.

Not that they are secretive. They want the world to know. Lately they have been writing little books to tell the man-in-the-street something of what he may expect in the near or distant future, what new powers are coming to him. When I present my card, timidly, because of my ignorance, they are delighted to communicate their knowledge to me in words of three syllables which seem quite easy to them though their simplicity reveals high mysteries which I find difficult, perplexing, and sometimes—I must confess—alarming.

SEARCH FOR THE POWERS OF LIFE n

So far from being secretive or suspicious of publicity, they are anxious to reveal their new discoveries and tell us just what they are driving at. But the man-in-the-street, busy with his day's job and looking forward to a quiet evening at the "movies," or the woman in the street doing her morning's shopping and making her afternoon calls, will hardly be bothered with the ideas of scientific gentlemen. Yet these ideas and experiments will certainly reconstruct civilisation so profoundly in some Day after To-morrow that most of the work that men are now doing will be thrown on the scrap-heap of old rubbish and the ways of women will be different, and the very street of life itself may lead to another kind of world.

We really ought to watch those scientists! Because it is no longer the philosopher and idealist, still less the statesman and politician, who are responsible for the great social changes in the world. Those men of abstract thought or political theories seem to make very little difference to the life of the ordinary man or to his relations with his fellow-man, apart from a few supreme minds who in the past have altered the course of history, or, in the present, like Lenin and his followers, have dragged a nation down to ruin for a time. The men who first discovered the use of fire, the man who invented the wheel, did more for human evolution than any philosopher, at least in the material aspect of life—which is rather important to people who want to

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live. During the past hundred years it is the chemist and engineer who have altered the face of the world, created the actions and reactions between great groups of humanity, and changed the conditions of life for the individual man by putting new power into his hands.

THE COMING OF MACHINE POWER

As everyone knows, the whole conditions of social life in certain countries were altered prodigiously about a century ago by a few men—mostly humble and obscure—who studied the power of steam in exerting pressure in confined spaces. The result of their experiments substituted machine-power for man-power. It created the industrial era with its teeming cities and smoke-belching factories. It annihilated almost completely in certain countries the slow old methods of handicraft, the slow old ways of human labour. It speeded up the rhythm of life after thousands of years during which men—apart from seafarers, traders, scholars and rulers—had mostly bent their backs over mother earth, had mostly laboured with sweat of body for simple needs which they found hard to get, had mostly lived and died in a very limited society, bounded by their farmstead and village—at most their nation—with its narrow range of ideas and its slow means of communication with the outside world.

" To increase and multiply one man-power/" says one of the greatest of English scientists, " is

the object of all social systems from time immemorial/'

The record of the last hundred years, and especially of the last fifty, has been the enormous multiplication of one man-power by newly discovered methods of harnessing natural energy to labour-saving machines. Steam, electricity, water-power, and oil fuel have been the means by which man has liberated himself from the curse—or was it a blessing in disguise ?—which befell Adam our ancestor.

" Cursed is the ground for thy sake :

In the sweat of thy face shalt thou eat bread/'

One little man—Henry Ford by name—in one great country—the United States—has in his own lifetime, by means of his own organisation of labour, added to the world nearly 300 million mobile horse-power, or about ninety-seven times the potential horse-power of the Niagara Falls. The whole world uses only 23 million stationary horse-power, of which the United States uses more than 9 million.

Has it added any human happiness to Ufe as well as mechanical power ? That raises an immense argument with which we shall have to deal presently when we see what the scientists have in store for us. Henry Ford thinks it does. He thinks the Chinese coolie working through long hours for a few cents a day is not happier than the American workman with his own home and automobile.

"Go to the labourer in the street car," he says. "He will tell you that just a few years ago he came home so tired that he had no time to change his clothes—just got his supper and went to bed. Now he changes his clothes at the shop, goes home by daylight and takes the family out for a drive. He will tell you that the killing pressure has let up. A man may have to be a little more businesslike on the job than formerly, but the old, endless, exhausting drive has 'quit.' "

Well, that is the judgment of a great business man, a great modern mind, upon the use of power in human values, and I put it at the forefront of what I have to say because the scientists of to-day are preparing to give mankind enormously increased power with which the achievements of the past are hardly comparable.

It is, I find, chiefly in the speed of communication between one mind and another and one group of people and another that the line of advance is taking place, while new sources of energy are being discovered and tested.

"Transport and communication," says Professor Haldane—one of our younger and most brilliant scientific minds—"are limited only by the velocity of light. We are working towards a condition when any two persons on earth may be completely present to each other in $\frac{1}{24}$ th of a second. We shall never reach it, but that is the limit we shall approach indefinitely."

THE DAWN OF THE AIR AGE

As regards transport—the conveying of people or goods from one part of the earth's surface to another—the next twenty-five years, or less, will alter all our methods of commercial and social intercourse. We are only at the Dawn of the Air Age.

It is less than twenty years ago that I watched the pioneers of flight make their first feeble and fatal efforts to rise above the earth in heavier-than-air machines. I saw some of them kill themselves and almost doubted the possibility of this conquest of the air, until I saw a man named Cody bring out a machine which he had made himself, roughly, with heavy struts, and a petrol tank weighing half a ton. We called it the " Crystal Palace " and the " Family Omnibus/" and other satirical names, never believing that he could make it fly, until one morning he went aloft and flew round the aerodrome as lightly as a butterfly three times before he crashed and was dragged out by us, bleeding, but very joyous because he had " done the trick." Quickly after that we saw that the victory of flight had been achieved—just in time for that world war when youthful mastery of this wonderful power which man had gained after age-long dreams was used to increase the slaughter of fellow-men and add to the terrors of human conflict.

What startled one into something like prophecy was the ease with which youth handled his flying machine, and did not take long to learn. A friend

of mine—a Frenchman—was on a desert island in the South Indian ocean when he learnt from a passing ship that the Germans were marching on Paris. It was his first news of the world war. The ship took him back to France, and within two weeks of landing he was flying over the German lines. Under the terrific impulse of war, when all risks were taken and science devised new power for killing, the speed and weight-carrying capacity of aircraft were vastly increased, until air scouts flew at a hundred miles an hour, and more, and the bombing planes could drop a ton of explosives. Now—for how long?—we are adapting this new means of transport for the ways of peace.

In France, Germany, England, and other countries air lines are linking up all great European cities with services as regular and punctual as trains. The last time I came back from Switzerland I breakfasted in Basle, lunched in Paris, took tea in Croydon, and was home two hours before dinner in a country house seven miles from the railway station. It took me seven hours instead of thirty-six by train and boat. Switzerland is five times nearer my country village. It is as near to London as Edinburgh used to be before the aeroplane, and as near as Dover used to be before the steam-engine. Other countries much farther away have been brought close to the centres of western energy. Great Britain is drawing her outposts of empire nearer by this aerial traffic and intercourse.

Every year, every week almost, establishes a new record of long flight and fast flight. At the beginning of 1927, Sir Samuel Hoare, the British Secretary of State for Air, accompanied by his wife, flew to India in eleven days at a steady pace of a hundred miles an hour, without any accident or hitch, and then back again—without carrying any spare part! The record non-stop flight up to the end of March of this year, 1927, was that of Lieutenant Coste and Captain Rignot, two French airmen, who flew from Paris to Jask, in Persia, a distance of 3390 miles in thirty-two hours. Now a British aeroplane, the Horsely bomber, fitted with a Rolls-Royce Condor engine of 650 horse-power, is preparing to make a non-stop flight of 4000 miles across Persia to Karachi and India. India in two days !

THE AEROPLANE IN AUSTRALIA

These are only demonstrations of speed and endurance, and each record will be beaten before long. But that is not what matters enormously to the ordinary man. It is not the record but the regular service and the multiplication of flights which is going to alter his ways of life. It will be a revolutionary form of transport to under-populated countries. Already in Australia life is being changed for settlers who live solitary lives cut off by great distances from other communities. Now letters, packages and friends are brought to them by air. Solitude has been broken down in their minds

because they can escape from it. An Australian writer says that the commercial air pilots have already moved the hands of the clock forward at least a hundred years for the bush dwellers of Australia. They began as ex-airmen of the war who bought up their old planes after their service in France and Palestine, and gave "joy rides" at five pounds a time to the folks at home. Then they began carrying packages and passengers over long distances and so gradually developed commercial services, criss-crossing the great continent, 1500 miles over wild country from Perth to Derby in West Australia, 480 miles from Adelaide to Melbourne, 500 miles from Melbourne to Sydney, and 500 miles from Sydney to Brisbane.

"What cannot be carried in these mail planes," writes Mr. H. J. Cantwell, "hasn't been discovered. Two or three passengers, several sides of beef or carcasses of mutton, several hundredweights of mail, a coffin slung underneath, women's hats and glassware—all these have been packed in at one time and rushed a thousand miles through the air without breaking an eggshell or wrenching a lampshade."

In Queensland, where single individuals own cattle-runs larger than England, squatters are beginning to use aeroplanes to inspect their herds—some of them running to 200,000 head of cattle—and not long ago an old man of seventy flew 1200 miles in one day, whereas previously it had taken him six weeks to make the same journey on horse-

back. A sick woman living in a remote farm was carried back 850 miles from *hospital* a week after an operation, strapped on to a stretcher, and none the worse for her flight. *Scouting planes* are sent out to search for lonely gold diggers dying of thirst after losing their bearings, or to bring rescue to men needing surgical aid. In parts of Australia where water will boil if left in the sun, the boon of getting fresh food and iced drinks by air mail is beyond the imagination of those who live in the heart of civilisation. When the men of a little town in the north-west corner of Queensland saw ice for the first time by this means, they stared at it with joy and wonderment, and the black fellows who touched the ice blocks and found their fingers tingling could not understand it at all. "All same glass, all same water, all same fire!" they exclaimed.

Safety and certainty are being added to speed. The Queensland service, says Mr. Cantwell, has flown over 4,000,000 miles without so much as scratching the finger of a passenger, pilot, or mechanic, and it has one pilot who taught himself to fly and another who has flown for ten years over rough country without a crash.

All this gives a hint of the development that will take place very soon in countries of great distances and sparse populations like Australia and Africa, while every country in Europe is intensifying its aerial activity.

Germany is already first in the field of civil

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aviation, and has established a clear supremacy in the carrying of passenger traffic from one end of Europe to the other. The Italian Government has recently voted a great sum of money for the development of aircraft. Even Russia is buying and building many machines.

THE WORLD IN THE AIR

Still, we are only at the *dawn* of the air age. The full meaning of this new era in human life will only become manifest to the ordinary man when he also takes to the air as now he gets into a motor-car, and when the aerial highways are crowded with the traffic of tourists, trippers, and traders, and persons paying social visits to friends and families hundreds of miles away but very close in time values. Is there any doubt now that this is going to happen quite soon? I think there is none. The scientists have only to devise a cheap aeroplane, rather more fool-proof than at present, with a slightly increased margin of safety, and turned out by mass production, before the world takes to the air "not in single spies but in battalions." Then will be fulfilled the dream of an early pioneer of mechanical flight, an English engineer and inventor named Sir George Cayley, who a hundred years ago discovered the inclined plane as the first principle of aerial navigation and foretold the day when it would be possible to voyage through "that uninterrupted navigable **ocean** which comes to every man's door."

In London now one can stroll down Bond Street and buy an aeroplane as easily as a toothpick. It is a "Moth" machine for £730. Its wings fold back so that it can be put into a small garage. It needs only a small landing space. There are eight aerodromes in which one can learn to fly it. In March of this year a boy of fifteen and a man of sixty-five qualified as pilots of the "Moth" after a short period of tuition. When such a machine as that is produced at £150, payable by instalments, and when the risk of flight is not quite so perilous to the beginner, the sky will be crowded with butterflies as well as moths, and the flappers of the future will spread their wings to do a morning's shopping. In less than twenty-five years from now it will happen, if we can believe the prophets of civil aviation.

When that happens the motor-car will be obsolete, because the aeroplane will run along the ground as well as fly over it. It will relieve the pressure of road transport. It will make a mockery of national frontiers. It will alter the architecture of cities which will have landing places on their roofs and aerodromes at their centres of activity. Every thickly congested country like England or Germany will distribute its human life over wider areas instead of crowding its masses into great cities. The business man will be able to live a hundred miles away from his office and get to his job as quickly as now by the tube train from an outer suburb.

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As yet no plans have been made for traffic congestion in the air or the difficulty of many machines landing in the same locality. Undoubtedly there will have to be a rule of the air and " speed cops " in the clouds. Space will have to be cleared for safe landing in industrial and populated areas.

These are material changes, startling and interesting if one's mind dwells upon them. But the beginning of the air age will lead to more important alterations in the relations between one tribe of men and another. Can we keep up the old customs barrier, even the sense of separate nationality, the mental frontiers, and dividing ambitions and hatreds, when the sky is free and we are all alighting in each other's back yards ? Will it not unify larger areas of the world, at least as far as free industrial exchange, freedom of intercourse, general laws, some common language which all can understand as well as their national speech, and co-operation in producing and distributing the necessities and comforts of life ? There is, of course, an unpleasant alternative. It may be that the sky will *not* be free. It may be that the dawn of the air age will be the beginning of the end of this civilisation of ours. Because if war happens again between nations who have taken to the air there will be no pretty flappers doing their morning's shopping, and the business man instead of going to his office will go into some hole in the ground from which he will hardly dare to emerge when there are fighting squadrons overhead. It

depends on man himself, and that is no great security in his present state of mental and moral quality. He is not advancing intellectually and morally at the pace of the power which the scientists are putting into his hands.

THE SOURCES OF POWER

More power is coming to him. Those scientists with whom I have been talking, and whose books I have been reading, are exploring many new sources of power, or rather, the eternal sources of power newly revealed. They have been getting anxious, I find, about the present reserves of energy in common use which are likely to give out at some future date. They will last out our time all right, but science looks ahead and plans for posterity. They are anxious about the world supplies of coal and oil and food.

"We are spending improvidently in a year," says Professor Soddy (one of the great explorers of radio-activity), "the physical means of life that would have sufficed our ancestors for a century, and the exhaustion of the available supplies of energy upon which the present era of the world relies is no longer a remotely distant prospect."

Professor J. B. S. Haldane, the most acute scientific brain in England to-day, agrees with him on this point.

"The exhaustion of our coal and oil fields," he says, "is a matter of centuries only."

As regards food the balance between the industrial

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groups of men and the agricultural groups who provide the food of the world is no longer regulated with a margin of safety. Cities are becoming more crowded with people escaping from the fields. Urban civilisation with its mental lures tends to absorb the enormous increase of population in some countries due to the activity of scientists who make life easy for the unfit as well as for the fit. By checking or extirpating the old epidemic diseases, they are keeping babies alive when formerly an enormous percentage of them would have died, and they are increasing the chance of adult life by defeating Nature's cruel old way of relieving the pressure of population. Motor-cars, gramophones, all the manufactured articles of industrial civilisation, are being poured out at an ever-increasing rate of production, but unless the people who make them can exchange them for food, they will die, or sink back to the fields to scrape a bare Ufe out of the earth which cannot feed adequately so vast a multitude as will crowd the world of the future.

It is possible, and some of our scientists seem to think it probable, that one result of our new knowledge will be to replace the dwindling processes of agriculture by synthetic food made in the chemist's shop. This chemical food will contain the vital fuel required by the human machine, and its actions and reactions will be precisely similar to that of the chemical elements introduced into the body by what we now eat. Many scientists are studying this new

chemistry of diet and one of them, in a light-hearted mood, has broken into poetry on the subject:

" There was a young lady of Pinner
Who got thinner and thinner and thinner,
Although three art silk frocks,
And six pairs of socks
Were all made into soup for her dinner."

More daring still are certain physiologists and chemists who foretell the day when man will go straight to the vital force which is the origin of life derived from the sun, and stored up in the atoms. By attaching himself to some electrical machine he may draw into himself from central power stations the vital fuel necessary for his day's job. That, however, seems to be advancing into the fantastic realm of H. G. Wells, and need not be considered with reference to the Day after To-morrow. What is more probable in the near future as regards the food supplies of the world is the intensification of production by chemical action on the soil and plants, and by the protection of crops from natural pests or the severities of climate. Artificial fogs, invented for the use of smoke clouds in time of war, are being used in Norway to protect crops from frost, by covering the plants with a warm vapour. It is likely that in the near future many new types of fruits and vegetables will be produced by scientific grafting, and the same plant will be made to grow different kinds of food at the same time. That sounds like fairy-tale stuff, but Professor Lucien

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Daniel of Rennes in France has produced a hybrid successfully growing tomatoes above ground and potatoes below!

Such freak processes, however, may do very little to keep pace with the vast needs of mechanicalised humanity for the natural needs of life, and it is, as I have said, a fear of the future which is the urge driving on our scientists to discover new sources of power which may be converted into life-giving energy, and, if need be, food itself. In any case, I think they would not cease in this quest for new power because of their insatiable curiosity to tear apart the secrets of life and get to the very origin of vital energy. As far as the future is concerned it seems to be a race between the scientists and the exhaustion of supplies which would lead us back to barbarism and so to death. But they are already on the track of inexhaustible supplies of energy.

"The quarry is in full view/" says one of them, "and by numerous routes the investigators are starting off in hot pursuit."

"Mankind," says a great chemist, "still lives solely on the energy derived from the sun. . . . Everything that moves, or has in it the potentiality of movement, possesses energy, and if we trace this energy to its source we find that in almost every case it comes from the sun. Trains and ships bear their burdens across sea and land; living creatures run or swim or fly by virtue of energy that comes to us from the sun in the form of radiation that is

light and heat. In the processes of agriculture this radiant energy is converted into the potential energy of food and so is utilised by life. But the steam and oil engine also work by virtue of the energy of the sun which in bygone times was stored up by great masses of vegetation and is now preserved in coal and fuel." (Professor Soddy.)

RADIO-ACTIVE ENERGY

The sun's energy, some part of universal energy, is stored up in the very atoms which go to make up what men call matter. That is a new revelation which is going to have incalculable results. It was the discovery of radium by a woman scientist—Madame Curie—which has set all the scientists searching for some means of liberating and harnessing that inexhaustible supply of energy which is revealed by radio-activity. Beautiful experiments, marvelously delicate in their investigation and measurement, by British, American, French and German scientists—like Sir William Ramsay, Rutherford of McGill University, Professor Richards of Harvard, Becquerel in Paris, Dr. Giesel, the German chemist—have revealed the terrific and unimaginable power stored up, and to some extent given out, by radio-active substances whose individual atoms are discharging electrical energy and changing one form of matter into another—or one kind of mineral into another kind of mineral. This force has been at work for countless millions of years, but the amount

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of energy released by the disintegration of the atom continues without apparent loss in the parent substance, which gives out a steady and continuous emission of radiation.

Says Professor Soddy in his *Science and Life*:

"The very existence of radium, a substance capable of giving off spontaneously powerful radiations which can be transformed into light and heat, and indeed, not only capable of doing this, but so far as we know incapable of not doing it, ran counter to every principle of physical science. For whence comes the energy that is given out in the process? So soon as pure radium compounds became available, the amount of energy was measured and it was found to be sufficient to heat a quantity of water equal to the weight of the radium from the freezing point to the boiling point every three-quarters of an hour. . . . Radium, weight for weight, gives out as much heat as the best fuel every three days, and in the fifteen years that have elapsed since it was first isolated a quantity of energy nearly two thousand times as much as is obtainable from fuel has been given out by the radium and the supply as yet shows no sign of exhaustion."

Radium heat, we are now told, is a third of a million times as great as the same amount of coal combustion. A pound weight could be made to do the work of 150 tons of dynamite. There is an unceasing supply of this energy in the matter that

lies around us. If the scientists can get hold of it, liberate and utilise that atomic force—some of them think they are getting close to the secret—mankind will be put into possession of power so illimitable that all previous forms of energy such as coal and oil and water will become negligible and man himself will be the master of the very source and origin of power.

THE HARNESSING OF POWER

Meanwhile, not a year passes without some new method of replacing or intensifying present forms of energy being tried out by the scientists. The chemists are at work on different forms of fuel which may be substitutes for coal and oil. Two Frenchmen, Proudhomme and Houdry, are, it seems, very near the industrial production of artificial petroleum by a chemical synthesis from lignite (or Brown Coal) which France possesses in large areas, both at home and in her colonies. Other experiments are being made by engineers to utilise one of the oldest forms of power in terms of modern industry. The wind may be used again to drive the wheels, and Haldane foretells the day when the country will be covered with rows of metallic windmills working electric motors, which in their turn supply current at a very high voltage to great electric mains. Their surplus power will be used for the electrolyc decomposition of water into oxygen and hydrogen—liquid hydrogen, he says, being the most efficient known method of storing energy.

The rotor ship is a new device to chain the wind furies and make them industrious slaves of man, working more intensively than when they blew upon the sails of ships or mills. It was a German named Flettner who listened to a howling gale and said to himself "What waste of energy!" He thought out the principle of a cylinder revolving in the wind and exerting a force at right angles to itself. The attention of the German Government was attracted by his ingenious plans for driving a ship without fuel and yet without sails, and a 3000-ton wind ship was built and launched. Experiments are now being made to use the rotor principle for driving engines to supply light and heat at a very cheap cost in countries where fuel is scarce. Meanwhile a professor in Petrograd claims that he has invented a machine driven by direct solar energy. It is perhaps an elaboration of laboratory experiments by Dr. W. W. Coblentz of the United States Bureau of Standards, who has produced a small amount of electrical power by exposing certain chemical elements to sunshine through coloured glass, according to one account I have seen.

The object of all this search for energy is the old object of multiplying one man-power and replacing still more rapidly and economically the burden of man's physical toil by mechanical means, so that he may produce and distribute the wealth of Ufe more easily and quickly, have more leisure to enjoy it, and get more closely and swiftly into touch with other

groups of **human** beings. It is for the speeding up of physical human intercourse, and again one must ask whether all this multiplication of mechanical power is actually making for the happiness of mankind and whether it is relieving the pressure of the struggle for existence or only intensifying it and increasing the desperate competition between the machine-workers of the world.

THE MESSAGES OF THE MIND

This rapidity of physical intercourse which is going on apace, so that transport and communication between all parts of the world are overcoming distance, is being accompanied by an even greater development in the facilities of mental communication between all branches of the human family. Here again the scientists have presented new opportunities to humanity which will surely alter their scheme of life, their habits of mind, their social customs and pleasures, almost as much as the alteration of material conditions which are now awaiting them. Again we stand only on the threshold of a new age, and yet already we are conscious of newly revealed wonders which in the old days would have been thought miraculous and are indeed taking us into a region beyond mere matter, into the sanctuaries of eternal force.

Perhaps those are high words to use about an invention which is called wireless or radio, so common now, after a few years of use, that most of us have a

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wireless aerial over our chimney-pots and get bored at times, or even angry, with the vulgarities and blare that proceed from a loud speaker in the sitting-room. And yet here is the power that is going to change the mind of man if anything can. Here is one manifestation of new forms of energy which are going to give man a mastery over life beyond all previous dreams, if he takes advantage of them. It is another form of that atomic energy, that eternal dance of electrons, that radiation of energy which the chemists are exploring in more material spheres.

To many ignorant people it has already opened up new vistas of knowledge, given them wider sympathies in life, put them into touch with other countries and other minds. One must not under-rate the effect even now on the human mind caused by this broadcasting habit which has taken hold of life. One may only hope that it will be less vulgarised by some of its transmitters.

As yet it is not the sound that comes out of the loud speaker, not the intelligence making the sound that is the great marvel. It is the revelation that we are in touch with a means of thought-transmission and close to mysteries, as they still seem, which endow the human creature with almost transcendental powers, beyond the reach of the ordinary material world as formerly we believed we knew matter and its limitations.

We are still at the beginning of this new knowledge. The scientists are already preparing developments

which arise out of this method of using the vibration of atoms. Heat, light and sound vibrations are to break down time and distance. Marconi's beam system of wireless telephony is already past its experimental stages. It is now possible to focus the ordinary wireless rays upon a particular locality with such direction that when sent from England to Canada or Australia they may be received only over an area of something like fifty square miles, thus avoiding the world-wide distribution of ordinary waves while using less power and obtaining more certain transmission. That at least is how it has been explained to me. The managing director of the Marconi Company says that there is no technical difficulty whatever in establishing a wireless telephonic system this year between Great Britain, Canada and other British Dominions. Recent tests of the beam wireless between Grimsby, England, and Melbourne, Australia, have given extremely good results. Men and women in all parts of the Empire will soon be able to converse with each other as easily and clearly as they now telephone to each other in the same town or village. When that happens in the British Empire it will happen in the United States and other countries of the world, which will become one universal telephone exchange with millions of conversations crossing each other through space in every direction. Already by ordinary wireless waves men are talking to each other between the United States and England.

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So far, as the cynics point out, nobody on either side has said anything worth saying at the price. There again the instrument is more remarkable than the human intelligence which uses it. But is human intelligence going to stand at its present level? Is not human character itself going to develop under the influence of all these communications between mind and mind, nation and nation? One day somebody may say something worth saying, which all the world will hear with new hope in human destiny, or at least with some new sense of wisdom. Let us hope that it will not be a warning of impending doom!

THE COMING OF TELEVISION

Swiftly upon the invention of hearing at a distance comes the promise of seeing at a distance—television. It will be synchronised with the broadcasting of speech. One will see and hear simultaneously, and for that power one scientific observer has invented the word Aurivison.

"Twenty-five years hence," say Mr. Chattan, "aurivision sets will be standardised into a practical apparatus which will be a recognised fitting in most houses. The receiving set will be centrally located in the house, with concealed loud speakers in the living rooms. These loud speakers will produce all the wide range of audible frequencies without distortion, at any desired strength. The television, worked directly from the common receiver, will

faithfully record in natural colours the living scenes, films, pictures, etc., on a specially prepared transparent screen, artistically set as a panel in the wall, which will be brought into operation as required. Thus we can have audition, television, or both, as desired."

This will be more than a toy. It will bring the visible world into our back parlours. It will be possible to see and hear the acts and words of men as they are performed and spoken thousands of miles away. Time and space indeed will be altered in all their values, and it is no prophecy of far distant things but just awaiting the industry of scientists and the results of experiments now being made.

Senator Marconi made the startling announcement at his last General Meeting that successful results have been made by his research department with a system of facsimile transmission developed by Mr. G. M. Wright. This system will enable ordinary writing, typewritten or printed sheets and pictures to be flashed across space, thereby enabling a much smaller staff of operators to send and receive long messages, without spelling out each word.

Mr. Baird, who is the pioneer of television in England, is already demonstrating privately that he can transmit pictures instantaneously.

It was Dr. E. W. Alexanderson who invented the telephotograph which is already in use for transmitting a still picture. But the television works twenty thousand times as fast, thereby making possible the reproduction of a moving scene. **The**

startling discovery has been made that pictures can be translated into sound. Every visible object has a sound of its own when vibrations from it reach the diaphragm of a microphone. Some human faces, we are told, when translated into sound make distinctly unpleasant noises. It is what one might expect! Others are agreeable to the human ear. It seems possible, according to Mr. Baird, to make a gramophone record of a face by storing up its vibrations on the wax and then to translate it back to visibility so that it is reproduced on the televisior.

This discovery will revolutionise the film industry, and in the near future the audience of cinema theatres will watch and hear the scenes of contemporary history as they are being enacted thousands of miles away. It will restrict and alter the production of newspapers, because by turning to the screen in one's own study or drawing-room, one will see and hear the news of the world as it is happening. Newspapers will only be useful as a permanent handy record and reminder of things already seen and heard, with comments and interpretations.

Even that power of the written word may pass. It seems to me likely that the ordinary man, crowding more into his life by all these new opportunities of physical and mental communications with the world around him, will find his newspaper stale and superfluous at the breakfast table. We had some experience of that during the General Strike in England in 1925. At first, when no newspapers were printed,

one's mind was overwhelmed by a sense of isolation, One seemed cut off from one's fellow-man. Desperate things might be happening and it seemed as though we should not know. Suddenly we were thrust back into primitive ignorance of the world's happenings. So it seemed, with a most desolating effect on one's mind, until a news service was established, rapidly and efficiently by the British Broadcasting Company. The loud speaker became the messenger of fate in every house with an aerial over the chimney-pots.

Now, when television comes and reaches its full development reading may become only the hobby of old-fashioned folk and great students. Perhaps it may destroy all of us writing men—novelists and newspaper writers—for who will have time to read us when life is speeded up to that extent, and the experience of a lifetime to our forefathers may now be crowded into an hour or two? Who will want to read novels or study history when one's mind may travel to new scenes quicker even than one's body, which is going to be very quick in getting around from one place to another? Perhaps the very knowledge of reading and writing may in time disappear from the world, when one can talk and listen so easily across great spaces. Perhaps these new inventions may destroy the inherited culture of the ages, so that we shall lose interest in the past with its literature and art, because the present will come crowding in upon us with a thousand new **interests**

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and amusements and curiosities and the future will hold more passionate excitement. It is happening already. Broadcasting is taking the place of reading in many households where formerly a family gathered over its books in winter evenings. The cinema is already the rival of the bookshop. It is so much easier to watch than to read. That abandonment of reading may happen altogether, if not the the Day after To-morrow, then in the not great distant future.

DARKNESS MADE VISIBLE

That man, Baird, in London, who is specialising on wireless possibilities, has been experimenting with the infra-red rays of low vibration which are outside our physical range of vision. He finds that specially prepared plates can be made sensitive to these radiations. Objects in complete darkness are made visible, thus recalling the strange prophetic words of Milton in *Paradise Lost*:

" Yet from these flames
No light, but rather, darkness made visible."

The infra-red rays penetrate fog as well as darkness, and they will be used by aviators and navigating officers to detect their whereabouts in time of fog. They will have other uses in time of war—if war it is to be—when an enemy's position will be located though he hides himself behind a smoke cloud. The scientists of war are already examining the possibili-

ties **of** wireless vibrations for directing their engines of destruction or putting their enemies' engines out of action.

" Undoubtedly," says Professor Low, " we shall see wireless controlled tanks, submarines, and torpedoes on land, air and water. . . . Even to-day it is possible for an aeroplane to operate a torpedo, to steer it properly, to slow it down; and for a pilot of an aeroplane many miles away to work his will upon it with a reasonable degree of accuracy/'

Marconi is convinced that the transmission of power by the beam system is not beyond the reach of possibility, at least over moderate distances, and this if true opens up a new vista of energy which may be used for mechanical purposes. It may be possible to broadcast power from great central stations which will be used by factories no longer dependent upon coal or oil or water. It would be a revolution in the economic life of the world.. At one stroke it would make a mockery of international competition for the sources of our present forms of dynamic energy, such as coal. It would shake to its foundations the whole elaborate structure of our civilisation based upon human labour, exchange of raw material and manufactured goods, industrial plants built up by the genius of engineering for the storage of our present means of power, and the distribution of wealth among those who own the present sources of energy. For a time at least millions of labourers would be thrown out of work. There

would be a financial convulsion in every **industrial** country. Human society would have to readjust itself to utterly new conditions of economic life. Those are some of the possibilities of this new acquaintance with atomic energy and the vibrations of the universe.

VIBRATIONS AND THE HUMAN MIND

There are others not lying in the material sphere of life as we have been accustomed to think of it but reaching out to the border-line between time and eternity. What is matter? What is time? Sir Oliver Lodge and others cannot answer those questions. Einstein, whom few of us can understand though some make wild shots to interpret his ideas, asserts that time must be taken into account in the relations of space between one moving object and another. At least that is the best shot I can make at his theory. These vibrations we are considering now, with new understanding and also great ignorance, are they not part of the eternal energy of the universe, and may not thought itself be a vibration reaching out to other minds (or even to the Great Mind), transmitted over far distances or wavelengths to which other intelligences may be tuned if properly sensitive? Thought vibrations also may be stored up, perhaps, recorded, set in motion again. They, too, like all atomic energy, may have almost imperishable force, existing somewhere after thousands of years. Does not that suggest a scientific

explanation for the old ghost stories, haunted houses, apparitions, and the like ? To me it seems possible that some passionate action, some intense emotional experience in the past, some appearance of personality, may continue by means of vibrations in old houses or elsewhere, which may be seen as they were visible hundreds of years ago when they were first set in motion by minds abnormally sensitive and receptive, like human microphones.

It may happen some day that we may listen in to the past and even see the vibrations of bodies long since " dead/" It is all very difficult. No man yet can dogmatise about these things, but even the man-in-the-street is dimly conscious that great mysteries are about him in these toys of broadcasting and television.

Quite recently I was startled by some words I received in a letter from a friend of mine who is not quite the ordinary man-in-the-street but a distinguished literary man in the United States.

" I remember a few months ago/" he wrote, " hearing some one say that the time will come when we will tune in and hear Lincoln's speech at Gettysburg. Shaving a couple of mornings ago, the thrilling thought came to me that, maybe, some day we could hear Christ's Sermon on the Mount."

Certainly a startling and daring thought, showing the length to which the imagination of men has reached under the stimulus of these new discoveries. But supposing we *did* hear the Sermon on the

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Mount spoken as it was first spoken with its message to humanity ? Should we, after our first emotion, pay any more attention to its precepts ? Should we be any meeker and kinder in our human relationships ? Should we be less greedy and passionate, and selfish and cruel ? We may still read the Sermon on the Mount, but it doesn't seem to make much difference to our way of life, taking this present state of Christendom. Would hearing it again change the moral standards of mankind ?

HIGH POWERS AND LOW MORALS

It raises the whole question of what men and women are going to do with these new powers which have come and are coming to them through the daring search of science. It is the weak link in all this chain of material development. The conditions of life are altering at a great pace. Mankind is being endowed with new and terrific instruments. The scientists are hot in chase of the very origin of energy. But man remains with all his frailties about him, neither rising in intelligence at the rate of his opportunities nor developing any new moral sense which will secure him from the evil use of those powers.

It is curious and distressing, that Man, so masterful over the powers of nature, has not exhibited any evolutionary force within himself since his early history was known. Neither physically nor morally, has he shown much development. In industrial communities he has actually degenerated, and even

in brain power he is not in advance of his ancestors. The Cro-Magnon man, I am told, living his cave-life, in the Early Stone Age, averaged six foot three, with one-sixth more brain than the modern European. His senses of sight, hearing and smell were more acutely developed. Without going so far back as that we must acknowledge humbly that the men of primitive civilisations, like the Greeks, at their best period, had intellectual qualities expressed in art and philosophy which compare favourably with our own. Our old instincts, appetites, passions, remain unaltered, and pounce out upon us if there is any letting up of the social code or if our religion—our spiritual law of life—loses its hold upon our habits. The Great War was a rather shocking revelation that men of our time and type—city clerks, intellectuals, highly educated young gentlemen—may be as cruel and ferocious, with a joyous cunning in human slaughter, ruthless in killing, as the tribes of savage men who advanced against each other with stone axes and bone-headed arrows.

This reflection is, I find, alarming the scientists themselves. They are afraid of entrusting their dangerous toys to the children of life. Those very men I have quoted as the modern explorers of matter and energy have lately expressed their fears. They are scared of their own success in revealing the secrets of nature.

" Physical force, the slave of science." says Soddy, the great chemist, "is it to be the servant or the

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master of man ? The cold logic of science shows without the possibility of escape that this question if not faced now can only have one miserable end."

" Human ideals," he says, " have not progressed to keep pace with the growth of science. *They are ideals that cannot exist with science without wrecking the world.*"

Professor Haldane voices the same dark warning.

" Has mankind," he says, " released from the womb of matter a Demagorgon which is already beginning to turn against him and may at any moment hurl him into the bottomless void ? "

" Men sometimes speak as though the progress of science must necessarily be a boon to mankind," says Bertrand Russell, " but that, I fear, is one of the comfortable nineteenth-century delusions which our more disillusioned age must discard. Science enables the holders of power to realise their purposes more fully than they otherwise could do. If their purposes are good, this is a gain : if they are evil, it is a loss. In the present age it seems that the purposes of the holders of power are in the main evil."

" There is little doubt that in the main," says Dr. Schiller, of Corpus Christi, Oxford, " humanity is still Yahoo-manity. Alike in mentality and *moral* man is still substantially identical with his paleolithic ancestors. He is still the irrational, emotional, foolish, destructive, credulous creature he always was. . . . Clearly it is risky to expose the inelastic nature of so stubbornly conservative a

creature to new conditions at a rapid rate. He may not be able to adapt himself quickly enough, and his old reactions which did little or no harm before may become extremely dangerous. . . . No wonder the more prescient are dismayed at the prospect of the old savage passions running amok in the full panoply of civilisation ! "

POWERS OF DESTRUCTION

We have seen that all these new powers released for men's mastery may be used for purposes of destruction as well as for social well-being and service. There are only two ways by which world catastrophe may be averted in that Day after To-morrow which is coming for our children and our children's children, and maybe for ourselves. It is either to check the progress of science and kill off the scientists or to alter the character of mankind by reforming man's moral and intellectual nature. Shall we kill off the scientists ? Some of them are pleasant fellows, I find, I should hate to see them killed. Nor, perhaps, would their death shut up the book of knowledge which they have bequeathed to us. Inquisitive minds would open it and carry on. There is only the reformation of man. Is that possible? Can we get sense into his head ? Can we improve his morality or raise his standard of intelligence, so that nation will no longer fight against nation, nor class against class ? It is all very difficult.

The human standard of intelligence is being

lowered by breeding from the unfit, says the advocate of birth control.

" Our civilisation carries within it the seeds of its own decay and destruction," says Dr. Schiller again. And this learned gentleman, with a pessimism which is quite terrible, declares that even if mankind can escape imperialist world-wars and class-wars and race-wars, the prospect will not really be much improved.

" The violent destruction of the human race by war," he says, " will only be more *dramatic*, it will not be more *fatal* than its gradual decay as its arts and sciences slowly fossilize or peter out in an overwhelming flood of feeble-mindedness."

All that is dreadfully gloomy. I do not endorse such a frightful warning except in relations to the dangers of another world-war with new and more terrible weapons. It is within the will-power of man to use science for his service rather than for his own destruction. He is not, I think, incapable of increased intelligence and higher social morality. He may kill the seeds of decay within his own civilised state, if they exist, which I doubt. He may use all these new instruments of power to increase his range of wisdom as well as knowledge, reaching out to the spiritual world and getting closer into touch with eternal truth. I believe that the Day after To-morrow—shall I say the generation after next ?—if we can only avert calamity till then, mankind may have cured itself of some of its social ill-health—

especially the deadly struggle between races and classes for the possession of wealth, and have a higher minimum of individual comfort if not of happiness. . . . Happiness ? It seems beyond the mind of man because he is always yearning for the unattainable and never satisfied with himself or this transient life, unless he has some spiritual vision or illusion which gives him comfort. It is, however, up to men themselves to avert the warnings of the scientists.

SPEEDING UP EVOLUTION

Because of that one alternative to catastrophe the scientists themselves are now turning their attention to the minds and bodies of men. They are in a hurry to reform him before their science may lead to his destruction and their own. " Man has not altered," they say, " since the beginning of time. Well, we will hurry up his evolution." There is a plot among the scientists to change him, willy-nilly. Why are some men kind and some cruel ? asks the physiologist Why are some men brave and others cowardly, or passionate instead of placid, or idiotic and mentally undeveloped, instead of highly intelligent and quick of apprehension ? It is all a question of internal secretions, says Dr. Louis Berman.

" Acuteness of perception, memory, logical thought, imagination, conception, emotional expression or inhibition, and the entire content of consciousness are influenced by these internal secretions."

, It seems therefore that to alter the character of a

man it is only necessary to intensify or diminish those physical secretions. The criminal will become a bland and benevolent member of society. The bootlegger will give up drink. The rake will be a reformed character. The homicidal maniac in uniform or civil clothes will become a gentle pacifist and a lover of little children. . . . So these gentlemen assert.

In future courts of law, if we carry these ideas to their logical conclusion, sentence not of death but of a minor and almost painless operation will be passed upon the naughty murderer, the habitual thief, the degenerate type of criminal whose intelligence—poor fellow !—is not equal to an honest way of living. After a week or less of convalescence the patient, provided with an entirely new character, will pass once more into civil life . . . to serve his fellow-men in sweet nobility of spirit. It sounds wonderful!

Another question is asked and answered by the biologists : " Why should man's life be limited to a miserable threescore and ten, so that he passes away in a senile state at the very time when his accumulated experience might lead to new leadership, wisdom, mastery of life, which he could hand down to his children ? Why not postpone this death, or at least increase the time of youth and joyous activity of body and mind ? " Why not, indeed ? " says Dr. Voronoff. " Send them round to my surgery and I will renew their youth."

Dr. Voronoff's method is considered a little old-

fashioned now. **Dr.** Steinach has appeared, **and** by a simple method of surgery claims to restore youth to old age.

Then there is the question of heredity and the propagation of children with feeble minds and bodies leading to national decay. That is a serious drawback to the human race, a threat, perhaps, to civilisation itself, in the opinion of gloomy prophets like Dr. Schiller. Here the biologist steps in again. Mr. Julian Huxley has something to say.

He can change the sex of tadpoles. He can make two tadpoles grow from a single cell divided into two at a critical moment. He has studied the laws of physical inheritance and the influence of pre-natal environment, and chemical changes upon living organisms. Here is a chance to speed up the evolution of man, to change his physical and mental characteristics, to establish a sound law of eugenics. And Professor Haldane has something to say also. He has something to say about almost everything. Having grown embryonic rats in serum for ten days in 1925, he has an idea that working on these experiments it will be possible the Day after Tomorrow, or perhaps not quite so soon as that—he suggests the date 1951—to produce artificial children, so to speak. He calls them ectogenic children, and conjures up a very humorous picture of an election three hundred years hence, when the slogans will be "Vote for Smith and more musicians ! " "Vote for O'Leary and more girls ! "

or perhaps finally, "Vote for Macpherson and a prehensile tail for your great-grandchildren!"

That, no doubt, is the little jest of a brilliant—and very daring—mind at work on the problems of biological science. But we should make a mistake if we thought that such ideas have not a serious foundation. Scientists are going to make the attempt, and are making the attempt now, to modify, alter and direct the normal physical life of man himself, as it has been lived since the beginning of humanity as far back as history records, and to operate upon his mind and body by chemical action, by psychological processes, by differences of food before and after birth, by surgical experiments, and by breaking down old moral laws and traditions of thought so that he may be given a longer spell of youth, a longer lease of life, and a different social code. Is all this likely to bring new happiness into the world? Or is it a new hell on earth that they are creating for us, so that indeed men will have to kill the scientists to be free of their villainy and masters of their own bodies and souls again?

In this article of mine I have touched lightly on some of the things that may happen, and of some that certainly will happen, the Day after To-morrow. They raise enormous problems affecting the welfare of the human race, and the happiness of the individual. It will be well to study them in more detail, and to get a little deeper into the plans of the scientists who are busy with our fate.

THE RE-MAKING OF MEN AND WOMEN

THE younger scientists have recently made a stupendous assertion about mankind of which most of us are profoundly and perhaps happily unconscious. It is that we are capable of improving ourselves ! . . . This means, in more scientific language, that Man has it within his power (and the same thing applies to the ladies) to develop his own evolution instead of having his fate shaped for him by the blind forces of natural selection.

Now that may leave my readers cold. Some of them may ask simply and blandly, " And then what ? " Others, like pretty ladies and self-satisfied youth, may regard the statement as an insult, seeing no reason for improvement as far as they are concerned. Others again, having some knowledge of science and history, may utterly repudiate the suggestion and affirm stoutly that human nature, as far as we know it in the past and present, has always been the same, and always will be, unaltered and unalterable, except in trivial adaptations to surrounding conditions.

On the other hand, the old-fashioned followers of Darwin and later evolutionists maintain that Man—

though he has progressed from the ape stage, and presumably is still progressing—has no control whatever over his own destiny, that he is subject to the iron laws of heredity which make Man exactly what he is because his grandfather drank too much port wine, and his great-grandmother ran away with a poet who suffered from anaemia, or with a politician who inherited criminal instincts from a pirate. The old-fashioned followers of Darwinism will say that the evolution of man from lower forms of life has followed the blind chance, the accidental history, of that struggle for existence which enabled certain forms of life, including ours, to get the better of other forms of life, and reach their present stage of development. But this view of our life-history is now out-of-date and abandoned by most modern scientists.

MECHANISTIC THEORIES OF LIFE

The assertion by our new school of biologists that Man can improve himself, if he likes, or in other words that he can control his own evolution, is a tremendous challenge to the later Darwinians who call themselves " Mechanists " because they believe that organic life obeys purely chemical and physical laws, and that there is no directing intelligence from within or without.

Bernard Shaw, in his brilliant preface to *Back to Methusaleh* which is a drama of the new biology, has told the story and tragedy of the human mind

under the influence of poor old Darwin's materialistic followers during the half century that preceded the World-War. " We all began going to the devil with the utmost cheerfulness," he says. Not only did men deny God, eager to escape from the old bogeys of a cruel Jehovah as presented to them by ignorant teachers, but " they actually regarded the banishment of mind from the universe as a glorious enlightenment and emancipation." The Darwinian theory of the struggle for existence, and progress, by Natural Selection, was adopted by greedy manufacturers as an excuse for grinding down their workers, and by militarists who thought that wars were jolly good for the human race according to the law of the survival of the fittest, and by free traders, profiteers and politicians who thought that all attempts to introduce human purpose and design into industrial and international chaos were contrary to the laws of political economy and the Darwinian theory of life. It is not too much to say—indeed, I think it is quite true—that the World War of 1914 onwards was due to the materialistic philosophy of the later Darwinians which blighted human intelligence and thrust mankind back into a brutal struggle for existence.

Some of my readers may ask what that has to do with the Day after To-morrow and the Re-making of Men and Women? But it has everything to do with it because, as I shall show, a new phase of thought has arrived which hopes to make con-

siderable alterations in human nature and human relationships. It began a few years ago with a new idea (or rather a very old idea re-discovered) called Creative Evolution, which was popularised by Mr. Bergson, who lectured to ladies in Paris drawing-rooms and made it all seem very nice and simple. It seemed to put God back again into the science of evolution. Because these creative evolutionists or " Vitalists," while not denying that man developed from the most primitive forms of life, asserted with a great deal of scientific evidence that the living cell, even in its earliest stage and through all its developments, is animated by something beyond mere chemical and mechanistic action by some unconscious spirit within itself—by some *elan vital*, or vital urge, as Henri Bergson says—and by some share of the universal intelligence and purpose, which seem to reveal God.

Now the latest school of biologists go further than that. They say that the human mind itself is in process of evolution which may be speeded up, and that this mind of ours can alter, modify, and reshape the condition of life. There is not only a struggle for existence, they say, but the development of man is due largely to *co-operation* as well as competition.

MAN AS HIS OWN ARCHITECT

Students of heredity are becoming a little doubtful of acquired characteristics inherited in a physical

way—old Grandfather John with his gout and his grumpiness is not so important as we thought he was—but they now see that tradition and accumulated experience, handed down by such means as the written word, amount to the same thing as "acquired characteristics." That is to say, man can actually control his own destiny by taking thought about it and learning from experience. He can study himself and say, "I'm not particularly pleased with the way I'm working out." He can search the secrets of his own body and brain and say, "I'm getting rather old-fashioned. I'm not moving with the times. Let's hurry things up a bit. Let's make a few structural alterations to suit our present environment and job in life. Let's develop certain physical and mental characteristics which will enable us to be more efficient—without the disharmonies which create unhappiness, and nerve strain, and foolish, unprofitable passions and stupidities. Let us speed up our own evolution which has been distressingly slow since the early cave man and his mate. . . . We are capable of improving ourselves." Man, in short, is to become his own architect, as an assistant to God.

I must warn those who ask, "Well, what about it?" as though it didn't matter anyhow, that this new phase of biological belief is a very serious matter indeed, and may lead to most radical changes in their own way of life so that their own mothers will hardly know them the Day after To-morrow.

Indeed, if the prophecies of the most daring scientists are fulfilled, Man, as we think we know him, and Woman, as we rather like her in our affectionate moods, will be strangely different creatures from those who pass us in the street to-day. We shall be able to control our own bodies, it seems, and create new human types for the special requirements of future society. Everything we do and think will be differently done and thought. That is to say, our whole view of life will be altered and we shall have, if we like—certainly (say these modernists), if we will—different faculties for thinking and understanding.

Imagine how utterly different life will become—they suggest, if we know—with a clear and all-revealing knowledge—the natural and physical causes of our actions, passions, stupidities, the chemical consequences of our bad tempers and our irritabilities, the influences of heredity upon our moral or immoral character, and the effect of food and environment, the lack, or over-abundance, of certain chemical properties, in the blood of our politicians and statesmen, our novelists and teachers. Yet the time may come—indeed, will come, if we wish it, say our leading young biologists—when if we suffer from wickedness—certain criminal and anti-social instincts—a slight operation or a few simple chemical combinations may restore us to virtue. If somebody insults me brutally so that I feel a rush of blood to the head and an increase of activity of my

suprarenal glands, leading to an excess of starch and homicidal desire, I may modify these symptoms by an immediate dose of chemically prepared benevolence which I shall hand gently to the man who insults me, thus altering his own objectionable character. Before we appoint a President, or even a representative politician, we shall insist upon having him examined by a Medical Board to assure us that his internal secretions are in perfect order so that he will not be likely to lead his nation into war or be tempted into corrupt practices for personal gain or be inclined to make injudicious, inflammatory, or foolish speeches. In election manifestos the chemical, physical, biological, and psychical tendencies of the would-be candidate will be advertised upon public hoardings, or broadcast with television pictures of his glandular system, proving as near as possible that John Smith is a man of harmonious make-up, with a normal, or super-normal, intelligence, according to the high standard of that Day after To-morrow, with all his chemical constituents functioning properly and with a very superior range of psychical and telepathic activity. Always, of course, there will be room for trickery. The candidates may nobble the biologists. But it will open a new phase of politics, which will be interesting and even exciting.

There will be in this science of the Day after To-morrow love-philtres which will increase the amorous propensities of a man for a maid, and

vice versa, even if, as seems very likely, the **man** is a young fellow of a hundred and twenty or so and the flapper of to-morrow is in the first blush of youth somewhere about a hundred summers.

If all these things come to pass, as modern science foretells, the human body will develop new faculties or senses, deliberately and intensively produced for the special functions of a man's job in life, or a woman's.

CHANGES IN PHYSICAL STRUCTURE

In Maeterlinck's *Life of the Termites* he shows that these ant-like creatures can produce different types—highly specialised—according to their needs—from the same embryonic life by different methods of feeding it, or by varying conditions of heat, moisture and chemical action. Thus they can produce soldiers with horned heads, or builders and labourers without horns, and other individuals specially adapted for particular avocations. Dr. Crew of Edinburgh has revealed recently that hens may be changed into cocks with fully developed cocks-combs—strutting and crowing, fighting and mating—by developing a disease of the ovaries. Steinach and others can feminize male guinea-pigs and vice versa. Now it is suggested that man may make many different adaptations of his physical structure to suit his own ideas.

So it is possible that the fighting man of the

future—if he is still wanted in a world made wise—will be the very devil of a fellow when he gets going, with enormous muscular power (if that is any good in chemical warfare), or with a vision that can pierce through the armour-plating of his enemies' mechanized battalions. The poet and the artist, it is hinted, will be made as well as born, produced by a system of state-directed Eugenics or chemical treatment. The labouring masses—if they are still needed in a world of machinery as slaves of the machines—will be carefully controlled organisms from which all revolutionary instincts will be eliminated by birth control or simple surgical operations, so that they will love their life of toil in the underworld, or be jolly well made to by the scientific statesmen responsible for their food supplies.

As I suggested in a previous page, the whole system of crime and punishment will be altered in accordance with the new knowledge of biology if their teaching is adopted. Our Judges will be medical men assisted by experts in chemistry, surgery, and mental suggestion. The "crook" will not be sentenced to a term of imprisonment during which he completes his studies of crookedness. His blood pressure will be taken. He will be subjected to chemical tests. If a very serious case, he may be handed over to a surgeon for a painless operation. If not organically diseased, he may get a week in a sanatorium on special diet. If a nervous

subject whose criminality is due to an over-sensitive or hysterical state of health, he may get off with a dose of psycho-analysis, a touch of hypnotism, or a sentence of compulsory vegetarianism with ultra-violet rays. . . .

All this sounds very fantastic. Let me admit at once that it is my own deduction from the claims put forward by some of the younger biologists and their more sensational interpreters. But if what is happening now, in private laboratories and surgeries, is developed much further, the things I have suggested will not be more startling and revolutionary than the changes in store for humanity. We have already to make up our minds whether we are going to allow these scientists to tinker about with the human body and experiment with the human mind. I for one see dangers ahead by which humanity may fall under a tyranny of science and lose its soul in trying to alter the natural laws of evolution, and the Design which some of us perceive.

Such a fear is scoffed at by our own younger scientists, and one of them rebukes old-fashioned minds who may shrink from their audacities: "The idea that the basis of living could be really and radically altered is outside most people's orbit," says Julian Huxley, "and if it is forced upon their notice they, as often as not, find it in some way immoral." But anxiety persists, in spite of this rebuke, in my own conservative intelligence.

THE PROLONGATION OF LIFE

Take this question of prolonging human life. Do we *want* to live longer? What will happen to the world the Day after To-morrow if men and women double the present span of years? We have to face up to it, whatever our doubts. There are people walking about now—quite elderly people of seventy or more—who claim to have been rejuvenated so that their sense of vitality has returned, and their sense of sight and hearing have been restored, and their memory has come back, and—more wonderful still, perhaps—they have regained a joyousness in life such as belongs to youth. It is uncertain yet whether they will live to an advanced age, for the experiments upon them are still fresh.

I do not forget that a few years ago when Dr. Voronoff first began his gland-grafting operations, one of his patients arranged to speak at the Albert Hall on "How I was rejuvenated," and there was a rush for tickets. But unfortunately the gentleman died before he could give his address!

One has still the right to be a little sceptical even when Dr. Voronoff asserts confidently, as he did recently, that there is no reason why the average healthy man or woman should not live for a hundred and forty years or so. One might ask "Why die then?" if the secret of life is solved and the renewal of vitality is so simple. But scientists do not like to be interrupted by impertinent questions of that kind.

It was the Russian biologist Metchnikoff, of the Pasteur Institute in Paris, who was the first of the modern scientists to study the causes of death and the possibility of postponing it. In his books, *The Nature of Man* and *The Prolongation of Life*, he opened the enquiry and suggested certain theories which he had no time to prove because his hope of prolonging life was also cut short by its abrupt ending in the usual way. But his enquiries led him to believe that senility and decay are partly caused by internal putrefaction which becomes the breeding place attacking the blood corpuscles. He advised simple food, therefore, and sanitary methods which would keep the system free as far as possible from this internal poison. He also observed that the "instinct of death" has become a mental habit which might make people die earlier perhaps than the vitality of their bodies made inevitable. On the other hand, "the will to live" might keep people alive. (I know several cases in which it has.) Nor did it escape him that passions and other "disharmonies" between man and his environment, or between mind and body, were injurious to the physical system. "Anger," he said, "is certainly very harmful to health and should be controlled in the interest of the bad-tempered person himself. Fits of rage are frequently followed by rupture of blood-vessels and by diabetes, and even cataracts have developed after some violent passion."

Metchnikoff was not unaware of the influence of

internal secretions from the glands upon **the vitality and** proper functioning of the human body, **but** it is only within more recent years that biologists **and** physiologists and chemists have concentrated **upon** those factors in our physical system with results which have led them to startling—and dangerous—experiments with life.

THE DUCTLESS GLANDS

Those glands ! They are the happy hunting-ground of the scientific gentlemen who have set their minds upon the re-making of men and women. In view of the things that may happen to us all, it may be well for the man-in-the-street to get a " close-up " view, as the movie makers say, of these remarkable parts of his own organism. It is quite likely that in the future, if we wish to retain our present personality and freedom from interference, we shall have to fight for our glands. There may be a Battle of the Thyroid more important to humanity than the Battle of Waterloo. There may be a religious war centring round the right to one's Supra-renal liberty more deadly in its effect upon the human race and involving more terrible passions than the religious wars of the sixteenth century.

It is hardly possible, it seems, from certain scientists of to-day, to exaggerate the importance of these vital elements. " Fifty years ago," says Sir E. A. Schafer, professor of physiology of

Edinburgh University, " the thyroid, the pituitary body and the supra-renal capsules were mere names. Little was known of their structure, nothing of their functions. The account which we are now able to give of these organs reads like a fairy-tale. That one of the smallest should by its secretion be able to influence the growth and stature of the body, rendering this man a giant, that man a dwarf, that another should produce a material without which the nervous system is not in a condition to perform its functions—were secrets of nature which were unrevealed fifty years ago."

" Our stature," says Dr. L. F. Barker of Columbia University, " the kind of faces we have, the quantity and location of our fat, the amount and distribution of hair on our bodies, the tonicity of our muscles, the sound of our voice, and the size of the larynx—all are to a certain extent conditioned by the productivity of our glands of internal secretion."

Well, all that is impressive to the unscientific man like myself, but the first question I asked when hearing of the wonder-working bits of life which may change the destiny of Man when the biologists really get going on them, is " What exactly is a gland, anyhow ? "

The answer seems simple, as far as I can make. " A gland," says Dr. Benjamin Harrow, of Columbia University (who knows all about them), "is an organ that has the power of taking certain raw materials from the blood and manufacturing from

them a product which plays a part in the activity of the body."

There are two kinds of glands, I find. There are glands that have tubes or ducts connected with an outer surface like the mouth or stomach into which they pass their secretions such as the saliva or the bile. But the other kind are without tubes or ducts and pass their chemical products directly into the blood stream. Hence they are called ductless glands or glands of internal secretion. It is these ductless glands about which all the fuss is being made, because they seem to be vastly important in their action upon mind and body.

These internal secretions, which seem to be fairly simple in their chemical elements, contain certain agents called *hormons*, or chemical messengers, which set up or check certain actions in the blood and nervous system according as they are increased or reduced, and they are all intimately related with each other and send messages to one another when a physical or mental crisis happens in the body and brain, or to prevent such a crisis occurring.

THAT REMARKABLE THYROID

The thyroid gland, situated in the neck, has extraordinary influence upon the human body and brain. When it becomes atrophied, or if it is artificially removed, many of the characteristics of old age are produced. According to Dr. Lewis Berman the hair withers, the teeth drop out, there is a dry

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and wrinkled skin, a decrease of mental power, and the entire nervous system becomes tired and inactive. On the other hand, says Dr. Harrow, when there is too much thyroid patients instead of being dull and apathetic become restless, anxious, and highly nervous.

" The human brain," says Dr. Voronoff, " cannot manifest its intellectual and psychic functions unless its cells are stimulated by the secretion which comes from the thyroid gland. Do away with it and the brain cells cease to function. The subject will become an idiot, just as children born without this gland are idiots and remain idiots."

In 1919 Professor Loeb discovered by experiment that thyroid feeding speeds up the metamorphosis of frogs. By feeding very young tadpoles with this substance frogs not larger than a fly can be produced. If a young tadpole is deprived of its thyroid gland it is unable ever to become a frog, though it continues its tadpole life.

THE PITUITARY AND OTHER GLANDS

Another gland about the size of a pea and lying at the base of the skull has even more amazing influence upon our human nature. It is called the pituitary gland and has been studied profoundly by Professor Cushing of Harvard and other biologists who have discovered that over-development or some improper functioning of this agent leads to an enlargement of the head, hands, and feet, and is probably the

cause of abnormal people commonly called giants. Complete removal causes death, partial removal produces the same symptoms as lack of thyroid—that is to say stupidity and premature old age. Pituitary extract acts somewhat like the "Food of the Gods" as described by H. G. Wells upon the egg-producing power of chickens, and experiments on a batch of hens by a certain Dr. Clark showed that they laid 233 eggs before being dosed with this extract and 352 eggs on four succeeding days after being dosed.

Other glands, called the suprarenal or adrenal, because they are situated above the kidneys, influence the character as well as the body of a human being. The emotions or passions of a man cause an increase of secretion from these glands. "Pain and excitement, especially fear and rage," says Dr. Berman, "will bring about its discharge from the gland. With its entry into the blood there is a tremendous heightening of the tone, a *tensing* of the nervous system. The nerve cells become more sensitive to stimuli, more sugar is poured into the blood from the liver. . . . The heart beats more strongly, the eye sees more clearly, the ear hears more distinctly, and the breathing is more rapid. The temperature rises, the hair of the head and body becomes erect, the skin gets moist and greasy. It will help a fatigued muscle to regain its normal tone." It is suggested that we may control human passions and emotions, alter human character itself, by using this knowledge.

Curiously also a decay of the suprarenal glands leads to a pigmentation or bronzing of the skin as well as to a general indolence.

That fact reminds me that the first time I ever heard of these glands was in a London drawing-room a year or so ago when a conversation was in progress on the future of civilisation and the supremacy of the white races. Suddenly we were startled by a quiet voice breaking in with alarming dogmatism and saying " It is all a question of the suprarenal glands/ "

Following a stupefied silence the quiet voice continued :

" The future of the world will be decided by the peoples who maintain their suprarenal activities. In hot countries there can be no progress of the human race because the suprarenal glands are weakened and lead to inactivity, indolence, and moral degeneration. It is beyond all argument/ "

I took the gentleman on one side and enquired into the matter further, feeling that the foundations of my philosophy had been undermined. . . .

Then there are the interstitial glands connected with the sex instinct. They are perhaps the most important of all, if there is any relative importance between these internal secretions which seem to decide our fate one way or the other. Dr. Serge Voronoff has much to say about them:

" Suppress in a young man the two interstitial

glands ; the role of which is to furnish the stimulant indispensable not only to one organ or another but to the whole body, the stimulant which makes for clear thinking, which makes the muscles firmer and the arteries more supple, which increases vigour, tones up courage, and floods our organism with sprightliness, a feeling of well-being and plenitude of faculties ; suppress these marvellous sources of vital energy and you transform a young man into a prematurely old one. His hair will become white, his skin will become wrinkled, the heart's beat will be retarded, the muscles will become atrophied, the arteries will lose their resiliency, the memory will begin to fail and life will be curtailed."

THE GLAND OF YOUTH

There is one more gland which I have to mention, not because I can find out much about it, but because it seems to be attracting the attention of those highly inquisitive gentlemen who are plotting to alter human nature and hurry up man's control of his own evolution. It is called the thymus gland, and according to two doctors—Williams and Hoag—it is a little ductless gland which is well developed at birth, remains active in early years of life, and dwindles away as childhood passes.

" There is good reason for believing," they write, " that it is indeed the gland of childhood, the gland which keeps children childish, and sometimes makes children out of grown-ups. At least we find this to

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be true: the peculiar type of individuals who retain their childish characteristics throughout life retain also their thymus glands which should have shrivelled up at puberty."

There is something rather attractive about that description of the thymus gland. It makes one want to retain it after boyhood. It would be nice to know that one could increase its functioning so that one could develop the characteristics of such charming people as those grown-up folk of the world who are still fanciful and simple and lively and playful. "Unless ye become as little children, ye shall not enter the kingdom of heaven." But somehow it is impossible to believe, and one would not like to believe that one's chance of entering the kingdom of heaven depends upon the increase or decrease of secretion in a little gland at the bottom of the throat.

There is also a snag about it. It appears on good evidence that a high percentage of criminals retain their thymus glands after maturity, which seems to suggest that criminal characteristics are but childish tendencies wrongly applied. The gun-man, it is suggested, is merely a grown-up boy who forgets that the game of Robin Hood must not be played in the streets of Chicago. The hooligans who hold up a bank are, perhaps, still playing the game of pirates and Red Indians because their thymus glands have kept them young and playful.

It is easy to understand that these revelations about the ductless glands based upon many experi-

ments and investigations by patient biologists have led to daring theories about the possibility of altering or modifying their operation in order to effect changes in the human body or even in the character of men and women. Some of the *hormons* or chemical messengers in the secretions they produce have been chemically analysed and found to be fairly simple. Iodine, for instance, is the main element in the composition of the thyroid gland. They can be reproduced in the chemist's shop. Friends of mine are taking doses of them. Quack doctors are already advertising them.

FANTASTIC THEORIES

It opens up a vista alarming to the ordinary man and woman but exciting to the experimental scientists who hope to exert control upon physical and mental development by playing about with human glands as a pianist plays about with his combinations of notes. A little more thyroid, or a little less, an extra discharge from the thymus, or a slight decrease or increase in the chemical action of the pituitary, a few spare parts from monkeys or goats to replace one of the sex-glands, or a chemical composition which will restore their activity, and there you get your fingers on the instrument of life to change old men into young, to make giants or dwarfs, to extend the youth of senile folk, to increase the imagination of poets and painters, to speed up the activity of manual workers, to change criminals into saints

(if we want saints), or to change saints into criminals (if we prefer the criminal type for the wholesale slaughter of our enemies, or to raise hell in other people's hunting grounds), to calm our passions or intensify them, to make special kinds of men and women for special jobs and callings.

The idea sounds ridiculous. It cannot happen, we say, thrusting the thing away from us as a fantastic and rather frightful dream. And yet it is happening, as regards the postponement of death, or at least the rejuvenation of senile animals including ourselves. By grafting fresh glands affecting the reproductive organs into old goats and sheep, Dr. Voronoff has restored them to the vigour of youth. What is more astounding is that their progeny weigh more, produce better wool, and are superior in health and vigour to other animals of their kind whose parents have not been so treated. It seems to be a jump in evolution.

What has happened to sheep and goats, rats and guinea-pigs, has been tried upon men and women by Serge Voronoff who has carried out, he says, many hundreds of grafting operations, while his disciples in France, Italy, Russia, Spain, the United States, and other countries have imitated his method and gathered a considerable accumulation of evidence.

" They all agree," says Voronoff, " that the grafting of a young gland fortifies the body, improves the memory, stimulates the mind, combats arterial

sclerosis and imparts fresh energy to all the organs. The majority of those who have undergone the operation are brain workers, such as university professors, doctors, men of letters, and engineers, and their word cannot be doubted."

THE STEINACH OPERATION

Then there is Doctor Steinach, Director of the Biological Institute, Vienna. His method is different from that of Voronoff. He does not graft on a new gland but ties off one of the reproductive agents separating the two interstitial glands. This gives rise to an increase of the interstitial cells and to the *hormons*, or chemical agents, produced by them. What that means may not be clear to the man-in-the-street, and is certainly not very clear to me, but the results claimed by Steinach are startling.

"The appearance of the patients," he says, "becomes youngish and fresh. Their bodily strength increases, the tremor of their hands disappears, memory and will-power return."

One of Steinach's earliest human subjects was a man of 71 who suffered from all the signs of old age, tiredness, shakiness, lack of appetite, failure of sight and memory. Some months after the operation "his appetite had come back, his spells of depression had given way to a new joy in life, his memory returned, he became fresh in looks and elastic in body, he could think clearly."

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" The operation/' says Steinach, " is a very simple one. Absolutely painless. Quite free from any risk. Takes no longer than fifteen minutes to perform."

Well now, what are we to make of all that ? Is it a gigantic hoax that is being put upon the world ? Are all these people who are allowing themselves to be operated on just receiving some temporary or imagined benefit from which they will lapse suddenly into old age again and death ? The evidence as far as I have been able to gather it does not point that way. One eminent medical man, with whom I discussed the subject, told me that in the near future it will not only be possible to restore vigour to old age and prolong the life of elderly folk, but what, in his opinion, is more important and wonderful, it may be possible to lengthen the period of youth so that a lovely girl of twenty will be able to retain all her charm and beauty for forty or fifty years.

THE GATEWAY OF THE UNKNOWN

Have they gone mad, these scientists ? Are they dreaming, wildly ? What we must not forget is that, so far, all this knowledge regarding the chemistry of the human body has not been co-ordinated. These biologists who have been studying internal secretions know very little about the exact and delicate balance between them. It will need many years of experience yet before they can know the definite effects of

increasing or decreasing the activity of this or that gland in relation to other organs and chemical agents in the human body. Still less do they know of the effect of these glands upon the human brain or rather, the influence of the brain upon the glands themselves—the delicate and mysterious interactions of mind and body. At the present time they are only at the gateway of the Unknown, and all their experiments and deductions must be received with the greatest caution and a good deal of healthy scepticism.

Two searching questions must be put and answered. First of all, is it good for men and women to let the scientists experiment like this with their bodies and brains ? Will it not lead to great dangers, and be an outrage against some divine law in nature which will lead us to a new form of hell, here or hereafter ? Will it not put our very souls into the hands of the scientists who in the future may be evil men—as some are now—who may be the paid servants of some frightful scientific State which has control over the bodies of men and women, or maybe the actual dictators of that State ? Secondly, as I have already asked, do we *want* to live much longer, even if we have the power to prolong our life ? How terrible it would be to live to the age of a hundred and fifty—and why stop at that ?—if we could not find happiness all that time but continued in horrible disharmony with our environment, in some new form of " civilisation " which we found intolerable, with an agony in our soul, stretched over that longer period! How

we should cry out like Francis of Assisi for "our lady Death," but could not die !

And yet in the end death would come. It is only postponing it, and its great riddle would remain unanswered. Perhaps all this new knowledge that is coming to us, these new powers which are being put into our hands, will not, after all, lead to new happiness, but to new anxiety. What guarantee of mental happiness have we in this mastery of mechanical things ? Old Metchnikoff himself has said that "It is only when the highest stage of development is reached that man—being convinced of the futility of his hopes—arrives at a pessimistic conception of the universe." Certainly without some spiritual faith, denied by many of the scientists, man will never be happy, or satisfied with his earthly condition. It is, perhaps, better not to eat this fruit of the Tree of Knowledge. We may be getting to know too much, or think we know everything when we know very little.

"No animals feel the pain in the world/' said Max Nordau, "and our own ancestor, the contemporary of the cave bear, was certainly free from all anxiety regarding the destiny of the human race." Can we be free of that ? Is not all this new knowledge increasing our anxiety about the future of the human race ? These powers that are coming to us from the engineers and chemists, this scientific control of our own evolution—or its attempt—are they not a dangerous game which may lead to our own destruc-

tion, moral, mental, and, physical? And yet, that promised gift of longer life, and still more of longer youth, is very tempting. Who of us will be able to resist it if it becomes the fashion? I for one—I confess it frankly—should be very tempted, if those whom I love and like could be made younger with me.

VITAMINS AND LIFE

There are other ways in which the scientists are experimenting with the old laws of life, and suggesting strange ways in which the body may be made a better, or a different kind of machine. They are busy enquiring into the nature and chemistry of food. They have discovered the vitamin which seems to act very similarly to the *hormon* of the internal secretions as an agent which accelerates chemical activity. "Without vitamins/" says Dr. Haller, "there can be no life." For some years now scientists in many countries, including the Lister Institute in London, which has done some very valuable work in this direction, have been searching for these vital elements in animal and vegetable food and have succeeded in classifying them. There are Vitamins A, B, C, D, which act as body builders—energy makers—nerve restorers, essential, in proper proportions, to human life and health.

I remember that after the war when under-nourishment, if not actual starvation, was a prevalent form of disease in countries like Austria and Germany,

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a lady friend of mine named Dr. Chick, from the Lister Institute, was engaged in research work in Vienna and helped to prove that certain vitamins had the effect of curing rickets. They were found richly contained in cod liver oil. But quite lately it has been found that a substance called chloresteryl, which is a solid alcohol with a wax-like appearance, has the strange power of forming, when exposed to sunlight or ultra-violet rays, the most important of the vitamins—namely, vitamin D—which is found naturally in cod liver oil. This chloresteryl is light-sensitive (like a photographic plate) and light-storing. It is a constituent of almost all living tissue. Two Englishmen, Rozenheim and Webster, of the National Institute for Medical Research in London, now claim to have produced a substance based on chloresteryl which contains even more of this light-storing quality, and they call it ergosterol. It can be prepared from the fat of certain plants, including yeast, and contains the pure vitamin D. According to the reports I have seen, a rat needs about one-thousandth of a milligramme of this stuff each day to keep it in health. The amount a human being would require from birth to death would be something under one ounce ! One wonders what would happen if one were to take the whole half ounce at one gulp ! I seem to remember a story by Stephen Leacock suggestive of the awful consequences. Did not he write of a baby who swallowed a pill which caused it to shoot up to full growth, through youth and

maturity, until its hair became white, its face became wrinkled, and death arrived—in twenty-four hours !

SYNTHETIC FOOD

It is possible that this discovery may lead to far-reaching results not only upon the health of human beings but upon their economic and social life. Why raise vast herds of cattle and enormous flocks of sheep, why employ millions of men in slaughter-yards and all the processes of providing a meat diet for humanity, if chemistry may provide the vital fuel ? There will be no restaurants in the Day after To-morrow, no public banquets with seventeen courses to poison their guests, no butchers' shops, no anxieties for the young married wife who has been advised to " feed the brute," no elaborate *cuisine* in the scientific household of the future. There will be a few bottles of Vitamins A, B, C, and D on the mantles shelf from which the family and friends will help themselves—just a drop or two on a dry biscuit—when their intellectual activities seem to call for a little refreshment or when their rejuvenated bodies require nourishment. The ghost of Dr. Johnson will be perturbed, for in his opinion " the greatest joy in life, sir, is a good dinner in a good inn."

With an optimi which is not yet justified, some of our scientists seriously prophesy that synthetic food is likely to be produced from plant life which will

entirely displace old-fashioned forms of agriculture **and** tend to make the agricultural labourer and the cattle drover disappear in favour of the factory worker and the dweller in cities.

"Synthetic food," says Mr. J. B. S. Haldane, "will substitute the flower garden and the factory for the dunghill and the slaughterhouse and make the city at last self-sufficient." He does not regret the possibility, believing that "human progress in historical time has been the progress of cities dragging a reluctant countryside in its wake." Personally I prefer the countryside to the city though, like most other men and women who are flesh-eaters, I turn my eyes with cowardice away from the slaughterhouse, and try to forget its bloodiness. . . .

All these experiments belong to the future in any case. They are not going to happen to-morrow, and that Day after To-morrow which I have adopted as my title is intended to be rather vague in its time limit. We are considering possible lines of development from present knowledge and investigations rather than immediate probabilities. Meanwhile, we must try and keep ourselves alive and in good health and try to improve our minds and morals without surgical or chemical aid, except in so far as medical knowledge at present allows. In spite of all these amazing revelations and gropings of the younger scientists, has medical knowledge any great control over our physical well-being? There are many defeats as well as many victories to record. We cannot

forget that ten million people died of influenza in the great epidemic after the war. We cannot say **that** medical science has wrested the secrets of disease from the malignant agents who prey upon our bodies, so long as it is entirely ignorant of the cause and cure of cancer. Indeed, all of us are uncertain, and some of us very sceptical, of this science which talks in high terms regarding biological possibilities but does not cure us of the stomach-ache or trivial ailments which cause discomfort and disharmony in our everyday lives. Those specialists are marvellous fellows at diagnosing a disease. They receive one in their consulting-rooms and say, " My dear sir, you are suffering from this, that, or the other malady which will probably kill you unless you are very careful/' but after they have pocketed our guineas, many of these specialists hand one over to the general practitioner—dear kind gentleman—and leave it at that.

Although there has been a general improvement in the health of many peoples, due largely to soap and water and an efficient drainage system (for which we must thank the engineers), there are many competent observers at the present time who believe that the human race is not improving its physical health or the mentality that depends so much on the healthy body, but in many countries, and especially those who believe themselves to be most " civilised," is falling back and weakening. Civilisation is producing its own diseases. In stature and

even in weight of brain we are not equal, as I observed in a previous page, to the Cro-Magnon type of man who dwelt in a cave some twenty thousand years ago. Writers like Lathrop Stoddard, Dean Inge, and men of more expert knowledge, believe that this modern civilisation of ours is doomed because the white races in industrial countries are largely engaged in breeding from the unfit and eliminating their best types. All this care of the weak and feeble, they say, all this pauperisation of ne'er-do-weels, all this humanitarian sentiment which keeps alive mental defectives, imbeciles, persons tainted with hereditary disease, is tending to produce populations of half-wits or at the best a second grade mass of humanity. Hence the propaganda of the Eugenists who are in a hurry to develop a state system of birth control and scientific mating which will prevent the propagation of undesirable weaklings and produce the noblest types of manhood and womanhood. It is their pet scheme of re-making men and women and controlling the evolutionary progress of mankind.

EUGENICS AND THE HUMAN RACE

Personally, without much scientific evidence beyond general observation of human life, I think there is not much in this eugenic business. In the first place, I think it is largely unworkable because men and women will revolt against any police

supervision of their loves and passions, and will utterly refuse to be treated like cattle by scientific overseers. Secondly, I believe that environment is as important as heredity in determining health and character. The latest investigations of biologists tend to show that there is a much greater variety in inherited characteristics than was believed possible by disciples of Mendel. Or rather, the fulfilment of inherited characteristics depends upon the opportunities of environment.

According to Professor Jennings of the John Hopkins University, "No single thing that the organism does depends alone on heredity or alone on environment. Always both have to be taken into account." It is certainly true that there is such a thing as good breeding which justifies a certain snobbishness in family pedigrees. Facial types, physical characteristics, persist from generation to generation. But they are of little influence without environment, I imagine. Education, comfort, good food, plenty of fresh air and sunlight are necessary to preserve the aristocratic type of humanity—and even then one notices a falling off in such places as the House of Lords, in England ! The combinations of qualities caused by inheritance from two human beings are so infinite that they can never be calculated in advance.

"Fools will produce wise men/' says Professor Jennings, "and wise men will produce fools ; who mounts will fall, who falls will mount, and all kinds

of problems presented by society by the turn of the invisible wheel will remain "—whatever the eugenic measures attempted by " scientific " laws.

Besides, do we *want* to produce a race of standardised types, perfectly healthy, perfectly free from nervous disorder, perfect according to some standard of a National Board of Health ?

" Among tuberculous people," says Metchnikoff, " and those with a weak constitution,—that is to say among so-called degenerates—there have been individuals who have had a large share in the advancement of the human race/" He instances the names of Schumann, Weber, and Chopin, and one might add the names of many poets, philosophers and artists. In the perfectly controlled Eugenic State, entirely populated by healthy human animals, the cry might go up from a multitude starved of imagination and genius, " Give us back our imbeciles! "

It is not upon the science of Eugenics but upon the improvement of environment that the progress of humanity is to be expected, so far as health of body and mind may counteract the evil influences at work in our industrial civilisation. Instead of continuing to breed from the unfit in the underworld, all the people of to-morrow may be raised to the status of the " fit " because the underworld has been removed and light has shone in dark places. That surely is the line of progress marked out by modern research, not adventuring so far as those

experimentalists in biology and chemistry who are in a hurry to revolutionise our human characteristics and play the part of God.

THE ERA OF LIGHT

Even in this limited field, science has great adventures ahead which are likely to alter many things in social life the Day after To-morrow. The era of Light is beginning. Perhaps one should say it is coming back again after a period of industrial civilisation which has created many maladies of mind and body, called " Diseases of Darkness " by a friend of mine named Dr. Saleeby, who has been one of the chief propagandists in Europe of the sunlight cure and the life-giving value of ultra-violet rays.

As we have seen, the light of the sun is the source of all Ufe and energy. The physicists who are studying new sources of power find it in stored-up energy which came originally from the sun. The vital elements of food come from the effect of sunlight on plant life translated into animal life. Ultra-violet rays can cure rickets as well as chlorestrol. For years we have been shutting off the very origin of vitality by living in dark houses behind window-panes which keep out the ultra-violet rays, by dwelling in cities beneath a pall of smoke which cannot be penetrated by those life-giving vibrations, by dressing ourselves in clothes which keep the sunlight from our bodies, by adopting ideas

and social habits which keep the sunlight from our souls. These modern Sun-worshippers, like Dr. Saleeby, and Dr. Leonard Hill, and Dr. Rollier of Leysin, have produced wonderful evidence showing the effect of light, natural and artificial, on such diseases of darkness as tuberculosis, rickets, lupus, and lung diseases. They are now engaged in attacking darkness in all its lairs. London and other English cities lose something like 50 per cent of rural sunlight owing to smoky chimneys, and the death-rate moves up steadily during the dark months of the year. In Chicago and many American cities there is to some extent the same cause of mortality and disease, though New York gives a lead to the world in the abolition of soot.

"The City of the Future," says Dr. Saleeby, "will be a city of light." The new forms of power which are coming to us—and those which we already possess—will be used more and more to replace dirty coal-driven plants and open fires by electricity or some other clean sources of energy. Night and its gloom will be banished from city streets, which will be flooded by artificial sunlight. If men still have to sit in offices, as almost certainly they will, they will sit in rooms with large windows made of "vita-glass" which allows the passage of ultra-violet rays, and their houses will be very largely glass houses, from which they mustn't throw stones. Already I have been given estimates of this "vita-glass" which is not very expensive, and a scientific builder

has presented his card with plans for a sunlight house in my own garden—which is a proof that these ideas are beginning to move in the business world. The city man who sits at these "vita-glass" windows will not wear a tight linen collar round his neck, or black clothes which keep light from the pores of his skin. He will not wear any clothes at all indoors, because his rooms will be warmed—with enough moisture to keep him from being dried up as he is being now in his present conditions of central heating which is sapping the vitality of many people—and his costume will be light, airy, and elegant, like a Greek philosopher without his cloak. Women will go on "casting their clouts" as they are already doing by some unconscious and healthy instinct of vital progress which has nothing to do with the decrees of fashion. I am firmly convinced that the skirt will be abandoned altogether, at least for all forms of exercise and outdoor life, as it has already dwindled to insignificance. We shall not be so easily shocked by the sight of the human form, and personally I have no sympathy with those who stand outside church doors measuring the length of women's frocks with the eye of scandal. Modesty may be preserved with very little aid from the dressmaker or the fashion artists, and the purity of the mind increased thereby.

Whatever happens to agriculture because of new forms of food, whatever the development of machinery by new means of power, it is certain, I

think, that human society will demand more light under the open sky, more leisure to walk in woods and fields, more contact with the vital rays which are now known to be the origin of all organic life. There will be a revolt against industry if it denies this boon to men. It has already begun, and indeed the history of industrial reform for the past fifty years—since the terrible conditions of factory life in the first and worst period of the industrial era—has been the unconscious demand of the workers for the light of life in their factories, in their leisure, and in their homes.

In London there are still 150,000 families living in one room per family, huddled together, regardless of age and sex. They are denied the light of life. They are the victims of darkness in the minds of those who support the old theory of the struggle for existence. They dwell in the breeding-ground of mental defectives who provide the text of birth control enthusiasts. Not by Eugenics but by sunlight shall the future race be improved in health of mind and body and the evolutionary "progress" of man be quickened, by going backwards to more natural conditions,

RETURN TO SIMPLICITY

Apart from this return to nature—this breaking down of much that we have built up, badly, I see no assurance that Man will be any happier when that Day after To-morrow comes to us with its

astounding possibilities. Even the health of the body is not everything, though it is a great deal. New luxuries, greater speed in the rhythm of life, new power over machines, control over the chemistry of life, will not increase human happiness unless the mind and spirit of men and women are satisfied and relieved of fear, anxiety and strain, with some hopeful vision of a future life and some spiritual joy in the present.

"The European talks of progress," said Disraeli, "because by the aid of a few scientific discoveries he has established a society which has mistaken comfort for civilisation/'

That is the sneer of a cynical philosopher, but there is some truth in it. None of these things which the scientists foreshadow as the promise of the future will assure the happiness of man. Many of them may lead to frightful dangers—freaks, and monstrosities from surgical laboratories, a machine-like system of life enslaving the workers, powers put into the hands of the human race for its own destruction. Unless the mentality and morality of men and women reach higher standards so that they can control this modern science and use it for good instead of evil, then the Day after To-morrow may come with new miseries rather than with wonder-working gifts. Is the human mind itself capable of an evolution quick enough to adapt itself to all this new knowledge? Is the mind of man advancing to attain mastery of its own instruments?

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Everything depends on that, for otherwise we ourselves may be mastered by the monstrous forces that have been unleashed in the secret places of science and our progress will be towards evil, and very swiftly. The world is waiting for a spiritual understanding of these material powers, and cannot afford to wait very long.

III

THE COMING STRUGGLE FOR EXISTENCE

IT seems to most of us in our cheery moods that civilisation, as we know it and rather like it (in spite of occasional cynicism and a few doubts), is increasing its spheres of influence year by year and decade by decade, at an ever-increasing pace. We are securing better sanitation for backward countries, the elimination of disease, faster communication between one country and another, better machinery for the world's workers, a higher standard of life in some countries for greater masses of people. Perhaps we are getting even a higher standard of morality here and there in spite of wars, murders, cruelties and all manner of crimes and vices which are disconcerting at times to the world's optimists. Looking at life largely and sanely quite reasonable men and women are inclined to believe that we are moving along the road slowly but steadily to a new era of human well-being.

" Whatever overstress and maladjustment the complexity of modern civilisation has brought with it," says my friend Julian Huxley, the biologist, " it has certainly made it easier for more men and women to realise their potentialities now than a thousand

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years ago, and far more than a hundred thousand." That is not a very rapid rate of progression! Still, we seem to be moving in the right direction.

Science promises us longer life—a considerable postponement of that uncertain change called Death—new opportunities of intelligent co-operation, wonderful new playthings like television, and the glory of the Air Age. How good to be born in this year 1928 ! . . . What a chance for those babes in yesterday's cradles who will live much longer than their forefathers (shall we take that for granted ?) and who will see the great adventure of that Day after To-morrow, even a hundred years hence, and all its marvellous changes in the life of the human family!

THE CHILDREN OF PROGRESS

The other day I looked down a list of new arrivals in the column of the London *Times* and indulged in a moment's day-dream of what will happen to these lucky little ladies and gentlemen just born into this changing world. They will be the Children of Progress. Science, it seems, is going to give them a better chance than we had.

There will be more light in their lives.

Their minds will move more freely, reaching out perhaps more closely to the Universal Intelligence, which is God—according to the latest faith of scientific philosophy which has abandoned its old

materialism and sees a spiritual power moving in the process of evolution.

They will have more control of their bodily and mental functions, we are told, getting rid of some of those " disharmonies " which cause unhappiness because at present our mental and physical processes are not perfectly adjusted, nor perfectly adapted to our environment.

They will not suffer so much perhaps from the limitations and wretchedness of life caused by social injustice, evil conditions of labour, the denial of decent reward for honest toil, anxieties due to the insecurities of old age.

Surely these new-born babes will live to see more reasonable co-operation between classes and nations beginning to understand that life is not, or need not be, a savage struggle for existence, but that evolution itself has happened through co-operation as well as competition, and that man may control his own destiny—as the biologists tell us—by intelligent design, helping God as it were. How wonderful to be born in 1928 !

These children of to-day and to-morrow will surely escape from the fetters of a traditional education which is already being abandoned by forward-thinking minds here and there. They will not be herded in old-fashioned institutions which exist for the prevention of thought and the killing of intelligence in favour of producing standardised character, caste snobbishness and national prejudice.

They will play about with chemistry and physics—so it is hoped by my scientific friends—instead of with leaden soldiers and Teddy Bears. Their fairy tales will include the wonders of natural science. They will be awakened very quickly to the great adventure of knowledge, instead of having it thrust upon them as a dull damned thing. They will learn mostly what they like and not what they hate. How good to be a schoolboy in 1940—if such things may be!

Perhaps even the youth of to-morrow will rid themselves of the disharmonies of sex which create such conflict and discomfort in young minds. There may be earlier matings, or better still, an easier comradeship between boys and girls not so obsessed as their forefathers with secret and unsatisfied desires, because they will be endowed with a more spiritual or mental control of instinct and a greater sympathy around them from older understanding minds. It is happening already to some extent in England and America and other countries, this comradeship of boys and girls, rather free and splendid on the whole, though with failures and tragedies now and then. But those of to-morrow may be greatly helped by a new knowledge of psychology and the influence of the mind over the body. There is hope of that to harmonise the most distressful cause of young unhappiness. How good to be born in 1928 ! . . .

Unfortunately, these new-born babes are going to

face risks which will increase the ordinary perils of youth in the world to-day. In my day-dream I admitted that. Not all of them will live as long as the scientists predict or hope. There will be accidents to defeat Messrs. Steinach and Voronoff and the rejuvenators. There will be many crashes from the sky when all the world is on the wing. Before we get a fool-proof aeroplane—not yet invented—many nice boys and girls are going to break themselves to bits on week-end jaunts from England to India or on dance engagements between Chicago and Palm Beach.

THE DANGERS OF EUROPE

Those young gentlemen in the column of births in the London *Times* may face other dangers likely to interfere with their golden chances of continued youth. It was there that my day-dream about them began to get a little sombre. These baby Englishmen, will they be dragged into another world-war by the time they have stopped playing the game of "Peter Pan" in Kensington Gardens, or into any of those little wars which will happen in Europe if present portents are fulfilled? Surely not! Surely we have got beyond all that stupidity and have learnt our lesson! Surely to God we Europeans have awakened to the fact that we must stop killing each other and stand together to defend ourselves from grave danger of catastrophe.

I remembered some words spoken by Mussolini in

the beginning of last year. " Italy must expand or burst/" And I remembered with a sudden chill certain things I had seen and heard down in the South of France in the early spring of last year when the first carnations were blooming in the terraced gardens above Mentone. I saw a battalion of French tanks moving towards the Italian frontier. There were fifty thousand French in these Alpes Maritimes, guarding the passes from Italy after riotous scenes there. I saw a French naval demonstration in Villefranche Bay. Italy, suffering from an " inferiority complex " after being juggled out of " the fruits of victory " by her Allies in the Great War, is now excited by the fever of expansion and France has a restless neighbour. Not altogether reassuring as a sign of a new mentality in Europe I¹

One can't be quite sure that these babes of 1928 are going to be so very lucky after all in their inheritance of the promises which science holds out to them. There are things happening in Europe which makes it just a little doubtful. Italy has made alliances with Hungary, Albania and other countries which are dissatisfied with present conditions. Jugo-Slavia, which used to be Serbia, is not happy with that Italian influence in Albania—on her flank. France has made other alliances, making a ring round Germany but with weak links. Germany is getting strong and before another ten

¹ This was written before friendly overtures were made recently between Italy and France.

years have passed will be a monarchy beyond all doubt. What is going to happen in Europe when the Treaty of Versailles can no longer be enforced by France with her dwindling population and not at all certain of her Black and Brown Armies, whom she has armed and trained with modern weapons ? Those little baby Englishmen now cooing in their cradles—will they be able to keep out of military expeditions, perhaps the conscription of the whole nation when Europe is aflame again and when there may be risings against British rule in India, Egypt, and South Africa ?

There is always the League of Nations ! Yes, it is still there at Geneva. Politicians pay lip-service to this educational assembly and hide their cynical smiles. There is always, of course, the chance and hope that mankind will refuse to go mad again and will, with all this new knowledge that is coming to us, these glorious prospects of a more perfect world, find some new philosophy of co-operation and international arrangement. We must go on hoping. We must believe that it is possible to get a little more sense into the heads of a lot of people, and cure democracies as well as autocracies of that disease which comes from poisonous ignorance and passionate prejudice, inherited through old traditions of hate and fear which have become instinctive.

" One can't destroy a thousand years of tradition by ten years of education," said a German to me a

few days before I wrote these words. " There must be a monarchy in Germany because it is rooted in the instincts of the people. As for your hopes of the ' Wandervoegel' and anti-militarist groups, my dear sir, they will all do the goose-step again at the first beat of the war-drums in Europe/'

Words like that make one uneasy, although I for one believe that the present Government and people in Germany are willing to co-operate in world peace. There is uneasiness in the mind of Europe, and elsewhere in the world.

That very morning—last year—when I glanced at the list of new births in *The Times*, trying to guess the future of those babes born to inherit such good chances of long life and happiness, as I tried to believe, my eyes fell upon the headings of that day's news. They were mainly devoted to the Crisis in China—British troops defending Shanghai, American marines rescuing their missionaries from howling mobs, Japanese shelling Hankow, French troops—natives of Annam—strengthening the defences of their concessions, Italians landing with their guns, Russian Communists stirring up yellow hatred of the white races.

THE YELLOW PERIL

I discussed the matter with a scientific friend of mine in a little house in Chelsea, and he smiled grimly and said : " The yellow peril—that old bogey !—is coming unpleasantly near !"

" It's still a long way from China to Chelsea," I said hopefully.

My friend seemed to think that I exaggerated the distance. He pointed to his wireless set in the corner of the room.

" In a little while," he said, " we may be listening in to China—and hearing strange noises. The yellow men coming nearer to the Western world by way of Russia. Presently we shall have television. They won't be pretty little pictures when the outposts of the white race are falling back in a fighting retreat from yellow people, black people, brown people, in Asia, India, Egypt and Africa."

I didn't like that picture of a " fighting retreat." It made my blood run cold for a moment.

" Oh Lord ! " I exclaimed. " The rising tide of colour—Lathrop Stoddart, and all that ? "

My friend mentioned a man named Gregory, professor of geology at Glasgow University. He had written a book—highly scientific—called *The Menace of Colour*. It was rather disturbing to the fathers of boys.

" You see," said my friend thoughtfully, " he points out a few facts we are rather apt to ignore. For instance, our white domination of the world which we take as God's command—the white man's burden and all that—is rather recent. A thousand years ago the white race didn't even hold the whole of Europe. Four hundred years ago we had secured Europe, or most of it, but the coloured races ruled

the rest of the world. Now, since the industrial era and the invention of explosives, one-third of the inhabitants of the world—the whites—rule eight-ninths of the world inhabited by the coloured peoples. Do you think it's going to last ? "

" Why not ? " I asked—in order to get his answer.

" Rather a mistake teaching them to use modern weapons, isn't it ? " he said quietly. " Rather short-sighted to sell our old war stocks to them and provide them with surplus ammunition, don't you think ? Do you remember what happened in the war we called Great ? "

Yes, I remembered. I remembered the Indians we brought over to fight in Flanders—those Sikhs and Pathans and Ghurkas who stood in the wet trenches when the German artillery was stronger than ours and fired twenty shells to our one. Some of their letters home, read to me by their interpreters, said: " *The white races are tearing themselves to pieces. There is no love among them.*" . . . I remembered the French Senegalese, used as gun-fodder, poor wretches, and Algerian Arabs riding through Dunkirk, and Moroccans in Rhineland cities after Armistice. Rather indiscreet all that! I remembered the Chinese coolies, an enormous army of labour, brought over to handle our shells and watch our little ways of war. They thought it all very funny. They laughed heartily at our tanks and big guns. Staff officers struck them as being enormously comic, and they bought brass hats and red hat-bands

to **put** round their own head-gear and were highly amused. I remember being struck with their fine physique—giants, some of them—and by their enormous strength. If once they were trained and drilled . . . What were they thinking about as they watched us through slant eyes, those Chinamen on the Western Front? Years ago Robert Louis Stevenson tried to answer a similar question in his book called *Across the Plains*:

" I could not look but with wonder and respect on the Chinese. Their forefathers watched the stars before mine had begun to keep pigs. Gunpowder and printing which the other day we imitated . . . were theirs in a long past antiquity. They walk the earth with us, but it seems they must be of different clay. They hear the clock strike the same hour, yet surely of a different epoch. . . . Heaven knows if we had one common thought or fancy all that way, or whether our eyes which were formed upon the same design beheld the same world out of the carriage window."

THE RISING TIDE OF COLOUR

Since Stevenson's time Western civilisation has been carried to the East. Under our guidance the Oriental peoples have established factories where they compete with Western manufactures on low wages and sweated labour of women and children. Young Orientals come to Western universities, learn to speak glibly of " liberty "and " progress," and

go back to their own country to exploit their **own** countrymen in commerce and industry on Western lines, or to become agents of revolution.

" The net result of this Europeanisation," writes the Sirdar Ikbāl Ali Shah, " is that the surging tide of the scientific civilisation of the West is carrying everything before it as it breaks wave after wave upon us in Asia; and as every unbiassed observer would attest, it is not making us better men, an asset either to our educators or the world at large. . . . We speak of Nationalism where no nationhood exists, we crave after a representative government in a land where generations have lived and died under benign autocracy, we speak of religion, but lightly."

All over the East, not only in China, that scientific civilisation of the West is beginning to break in upon the Oriental mind, or it is being forced upon that mind by Western peoples. The French have raised big Black and Brown Armies in North Africa, teaching them how to use machine-guns, how to throw bombs, how to fight the white enemies of France. Are they sure of their fidelity ? I can answer the question. *They are not sure.* And those ideas of nationhood, independence from white rule, self-government, racial supremacy, are stirring across the Egyptian desert, and from Mesopotamia to Persia, from southern India to the North-west Frontier, with Russian Communists as missionaries of revolt everywhere.

It is dangerous for the Children of Progress now

being born in European cradles. It may spoil their chances. Is there going to be a struggle for existence between the white and coloured races, before Science and all the new powers it is giving us can secure the well-being of humanity ?

These scientists with whom I have been talking lately are not unaware of those dangers ahead. It casts a gloom over their hopes, I find. They believe that a new struggle for existence is not far off as history is counted and that this civilisation is, as Wells says, " a race between education and catastrophe." What is haunting them, I find, is the growth of world population coinciding with a decline in the resources of food and energy.

I walked round a London park not long ago with a man whose whole life has been devoted to bacteriology. I spoke a few words about the enormous benefits which that science had conferred upon the human race by the elimination of plague, malaria, and other diseases in tropical countries. But he interrupted me with a melancholy laugh.

" All that work," he said, " has merely produced new problems and perils for the human race."

He strode along in a drizzle of rain and then spoke again after a silence which I did not interrupt.

" The truth is," he said, " that we scientists have much to answer for by defeating the ruthless old methods of Mother Nature. Look at India. Because of our knowledge of bacteriology and the causes of plague, and our agricultural improvements and

sanitary organisation, India added 109* millions to its population between 1872 and 1911. Now Africa is beating India in rapidity of increase—prodigious !—while Europe is going in for birth control and restricting population for economic reasons. What does all that mean ? The inevitable decline of white power—the rising tide of colour. That's pretty serious unless we handle the problem wisely. But there's more in it than that."

" What ? " I asked.

He spoke to me after another silence.

" The world," he said, " is increasing its population faster than its food supplies."

THE WORLD'S FOOD

I have been looking into that question, testing its truth as far as I can by going to the right authorities who ought to know. If one can believe their statements and figures the world is indeed approaching a new struggle for existence which may be the grimmest thing in human history since the early clash of races for the good places of the earth. If Science doesn't fulfil its promises, or rather its hopes and dreams, civilisation seems to be heading for a smash, because of a desperate competition for the essentials of life, the chance of trade and the survival of race.

The last census revealed the fact that the population of the world grew at the rate of doubling in

sixty years. According to Professor Gregory of Glasgow in another 120 years, if this rate of increase is maintained, there will be 6600 million people, which is the limit of the world's food supplies. Long before that limit is reached, it looks as though there will be a fierce conflict for the fertile places of the earth, unless the peoples of the world unite to intensify and distribute the supplies of food by fair and orderly means and rearrange the whole structure of their international relationships, and alter in a most radical way the present development of industrial life.

There is one possibility for which science is now striving which may avert this grim prospect of world-wide famine. Science may come to the rescue with that synthetic food which is now being studied in chemical laboratories—a vital fuel containing all the elements of body-building and energising derived directly from the sun without its transmutation through plant life or animal life. But there is no certain hope of that, hardly an uncertain hope. We must find another way out of this shadow which is creeping nearer to us and may touch the lives of children now in their cradles, not only in the countries where primitive conditions still exist, but in the centres of European civilisation and the United States.

I have been looking at a book called *The Expansion of Races*, by an American scientist named Woodruff. Many of his arguments and most of his conclusions

seem to me unsound, but one must accept his figures which can easily be checked.

He reckons that in 1950—not so far away now—the population of the United States will be nearer 160 than 150 millions. He doesn't deny the extreme estimate of 400 millions by the end of this century, though he believes that it is exaggerated. In any case, he says, the people of the United States are increasing faster than their food supplies, and maintains that such increase cannot continue with any margin of safety if food is exported.

Actually the United States are importing food already—from Canada and the Argentine. American scientists are beginning to get anxious about their meat supplies. Steffanson, the great explorer, is promoting a scheme for raising reindeer in the Arctic circle to save the butcher's bill, though that is not likely to solve the problem on any scale of importance.

But what about England and Germany and other industrialised nations of Europe, with their enormous demand for food which they do not produce for themselves? England would starve to death in three months—man, woman and child—if cut off from her imports of food from other countries, and those other countries are beginning to need their own and more than they can raise for themselves.

Yes, the problem is serious for a not far distant future, and young gentlemen now abed in nice little nurseries, with a promise of long life ahead, may have

THE COMING STRUGGLE

to tighten in their belts when they are young fellows of eighty or ninety in the first flush of youth (their thymus glands still functioning !) and still desirous of joy. It is possible, of course, to bring new areas of the earth under cultivation, in the tropics, in Australia, in desert lands, and to intensify food production by increased irrigation, the chemical destruction of insect pests, the use of chemical manures, and the development of machinery on the farms. At first sight those methods seem to assure our future food supplies for many generations ahead, and personally I believe that upon those lines the problem will be solved, provided there is a check to the growth of population and the prevention of world-wars by intelligent co-operation for the well-wholly humanity as a whole—a proviso which is being of doubtful according to our present measure of intelligence.¹

This industrial civilisation of ours, penetrating many countries which were formerly agricultural

¹ Since writing on this subject of the world's food supplies I have had an interesting letter from a correspondent in British Columbia—Mr Frank N Hales—who presents me with some very impressive facts and arguments showing that in Canada alone there are almost limitless possibilities of increasing the wheat output.

" In Canada," he writes, " in spite of its 2500 miles of railroad the actually cultivated area is only a small fraction of the total arable area. Only the other day someone suggested a plan whereby, through the expenditure of a paltry £10,000,000 a comparatively small virgin area might be tapped, which, if provided with transportation, would add to the world's wheat supply more than the present total production of Canada. It is probably no exaggeration to say that, all conditions of production remaining the same, Canada could treble its wheat output, if there were an effective demand for it."

in the East as well as the West, has an adverse influence upon the world's food supplies. It is tipping the balance of that scale which should maintain a proper equilibrium between the field and the factory. Larger groups are being industrialised and crowding into cities, owing to the increased efficiency of machinery, and the necessity of exchanging manufactured goods at an ever-increasing pace to keep the machines employed and support these city populations. It is not only the lure of the city with its lights and social pleasures which draws people away from the countryside. That is a strong pull, almost irresistible to minds excited by the jazz spirit of the modern age, or educated to the need of fuller self-expression than is possible perhaps in a turnip field or a cabbage patch. Mechanical and scientific knowledge restrict the need of human labour on the land.

Forty years ago in America it required four hours and thirty-four minutes' labour to make a bushel of corn. Now it is forty minutes or less. The result is that fewer men are wanted on the farm. It is one reason of the drift to the cities in all industrialised countries, and especially those where there is no longer much elbow-room on the land.

MACHINE-MADE CIVILISATION

In all nations of Europe and in many countries which we Western people call "backward" because of their agricultural or pastoral way of life, machine-

driven industry is being intensified and the cities are draining the fields of human labour. That is leading to many dangers, and there is one aspect of this process which is developing an economic problem already causing international friction and rivalry, with only one possible result—which is War—if it goes on to its logical conclusion.

All these manufacturing countries and these new factories which are being set up in peasant states are turning out the same kind of goods. It is not as if each country is providing something which they can best produce for exchange with similar specialised goods in other lands. No, with machinery which becomes more efficient, swifter in production, each country is pouring out articles which compete directly with the manufactured goods of other countries. And they are not satisfied with supplying their own internal needs. They want to export their goods in order to increase their wealth and power.

Germany with enormous developments of her industrial plant in workshops like Krupps, which formerly were used for the production of armaments, is making cash registers, steel knives, razors, agricultural implements, pails and pans, everything that can be made out of metal. But in England, France and the United States the factories are also pouring out cash registers, steel knives, agricultural implements, pails and pans, and everything that can be made out of metal, and trying to invade the markets of the world.

no THE DAY AFTER TO-MORROW

England was formerly supreme in her output of cotton goods which she sold to India, China, France, Italy, Turkey, the Balkan States, and most nations of the earth. Now India has set up her own cotton mills. China is making cotton goods. So are France, Italy and Spain, while the United States which formerly exported raw cotton and imported cotton cloth is now flooding Europe and the East with cotton goods and restricting the export of raw cotton.

Before the war Italy was mainly agricultural. She produced wine, and olive oil, and fruit, and flowers, and lovely works of art. But since the war, under the spur of Mussolini, and an intense national ambition for power and expansion, Italy is becoming rapidly industrial. What is she producing ? Textile goods, metal goods, motor-cars, which she proposes to export to countries also producing textile goods, metal goods, motor-cars.

Poland is becoming industrial after a thousand years of peasantry. Her factories are increasing rapidly. She is becoming a competing country with other industrial nations. She is producing machine-made goods in great quantities. So is Czechoslovakia. Away across the world Brazil was a great buyer of manufactured goods from the United States, Great Britain and Germany, in return for coffee, rubber, and other fruits of the earth. Now Brazil is setting up machines and manufacturing most of her own needs in those lines. Japan is one of the great manufacturing nations. Japanese cotton goods

THE COMING STRUGGLE in

are underselling British cotton goods in Egypt. Japanese markets are not so profitable to the United States and Great Britain because their own people are manufacturing many of their own machine-made wares.

The whole of this new problem—this intense and increasing competition within machinery-built civilisation—has been stated brilliantly and brutally in a striking little book called *Ouroboros*, by the American writer Garett Garett. Now *Ouroboros* was a snake that swallowed its own tail.

Mr. Garett shows how in many countries people are deserting the fields to mind the machines, and how the machines are creating a fierce competition between nations because their output must somehow and somewhere be sold in order to feed the city populations.

France is only one example.

" In every city now there is a housing problem. Yet in the country two hours from Paris you will see houses empty and going to ruin ; whole rural villages in the way of being abandoned ; vineyards perishing for want of care ; fields going to grass instead of grain. Their industrial power is rising, their agricultural power is falling. Before the war they were, or might have been, self-nourishing on their own soil, like the people of the United States. That precious security they cast away. In place of it they take on the anxieties of Empire. They must impose upon Morocco the blessing of European

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civilisation in order to have an outlet there for the surplus of their machines/'

All these industrial countries are putting up tariff walls against each other's goods, to protect home industries, yet all of them try to invade other countries with their own goods. And the machines, speeding up their rate of output, pouring out their products in a tide which becomes more furious, are driving nations into deadly rivalry and a new struggle for existence.

" So now what will happen ? " asks Garet Garrett, and cannot find an answer.

" The Italians suggest a bitter competition in terms of living—those to survive who will accept most patiently and at the lowest wage the drudgery of minding machines. That might go rather far; ultimately it comes to absurdity. To whom at last should they sell their goods ? Not to the impoverished workers of other industrial countries defeated in the struggle. To whom else ? To the agricultural countries ? But these, for the reasons we have seen, are tending as such to disappear. They are buying machines ! "

THE EXHAUSTION OF ENERGY

Talking with the scientists and reading their books I find that at the back of their minds—sometimes in the foreground of their thoughts—is another anxiety which deepens their belief that the struggle for existence is not going to be less but more severe

in the not far distant future. At the very time, they say, when world population is increasing prodigiously, and when cities are becoming monstrous with machine-minding humanity, something else is happening in the world to create a fierce and ruthless struggle between those who own the sources of life's essential needs and those who lack them. I have already referred to that fear of the scientists in my first article. The store of energy, they say, is getting exhausted.

They assert that the natural resources of power which turns the machinery of the world, drives its ships across the ocean, sends its wireless messages, and creates all the physical activities of modern civilisation apart from human labour are beginning to dwindle and give out. To most of us, complacent with our present state, this possible exhaustion of power seems no more than a bogey which may affright far-distant ages but need be no cause of anxiety in living minds or in the lives of our children and children's children. The scientists, looking further ahead, see the stealthy approach of this new peril.

The United States, according to Woodruff, are using their resources like spendthrifts, and will soon overdraw their account.

" Our timber," he says, " will be exhausted in twenty years, and our gas petroleum in another fifty at our increasing rates of consumption. The end of iron ore is already in sight. Pittsburg may go the way of Tyre and Sidon."

"The exhaustion of the available supplies of energy upon which the present era of the world relies," says Professor Soddy, the great English physicist, "is no longer a remotely distant prospect."

The late Sir William Ramsay, who was the first man to discover the transmutation of metals by atomic change, gave an address before the war to the British Association, in which he warned them that the power upon which British industry and commerce has been built up cannot last for ever.

"The available quantity of coal in the British Isles," he said, "is very nearly 100,000 million tons. It is easy to calculate that, if the rate of working increases as it is doing, our coal will be completely exhausted in 175 years."

Even that seems a long spell ahead. Even with the aid of Voronoff's gland grafting none of us will live to see the end of British coal power. But it is not a great span in the history of a race, and long before that every ton of coal will be regarded as a most precious store of energy and as the last heritage of the industrial era. It will be more difficult to get because of deeper workings. Its production will cost more, and its dwindling treasure will be desperately hoarded. There will be Government decrees prohibiting its export to foreign nations largely dependent upon it for their own industry. Yet without that export of black fuel how will England feed her people, dependent upon export trade for their very lives? Those people in her teeming

cities owe their existence to coal. Without it they would not have been born. It was the industrial era, based on cheap coal, which speeded up the birth-rate by prodigious increase. The supremacy of Great Britain in the middle years of the nineteenth century, the expansion of her Empire, her enormous reserves of wealth before the war, were due to that cheap production of coal which not only fed her own factories, but was carried in her merchant ships to the far ports of the world in exchange for all the needs and luxuries of life. Is all that ending in a century and a half from now, and will the British Empire go the way of other Empires which had their day and died? Long before that hundred and fifty years the end will be in sight, and England and her people will stare with mournful eyes at their approaching doom. . . . It will happen unless science provides another form of power, or unless the human mind in England and elsewhere develops some new system, some simplification of life, by which all this mechanical energy is no longer needed.

NEW SOURCES OF POWER

Is Science going to find that new source of power?

Shortly before the war a committee of English scientists with this future problem in their minds was appointed to study the possibility of replacing coal power by some other form of energy. They investigated the chance of getting power from water,

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from the tides, from the sun, from the wind. But their report was unfavourable. No such energy could be produced cheaply and sufficiently, they said, by any of those means which could replace the use of coal. In April of this year the Privy Council in England appointed a new Committee of Research to "try again," with special reference to the tides. A multitude of devices have been suggested for harnessing this colossal bulk of energy to human use. Some of these have been crudely mechanical, employing in some form or other the conception of floating barges working gigantic levers by their rise and fall. Others have been more elaborate and ingenious. But expert opinion has been almost unanimous in favour of filling large reservoirs with the rising tide and allowing the escaping water to actuate turbines during the ebb. Mr. Norman Davey in his *Studies in Tidal Power*, published two years ago, stated that there were forty-nine sites in England, twenty in Scotland, and three in Ireland where the tidal range exceeded ten feet, and where, theoretically at least, 1000 horse-power could be developed. He estimated that by the use of these and smaller stations a total of approximately 4,000,000 horse-power could be produced continuously, an enormous addition to the resources of the country, equivalent to 30,000,000 or 40,000,000 tons of coal.

ATOMIC ENERGY

That is a possibility which cannot be ignored, but the mind of the physicists is directed to the one illimitable form of power which, if it could be liberated, would solve all that problem of exhaustion and provide energy for the whole world and for all imaginable epochs of time. I have already alluded to that scientific quest for some means of releasing the energy of the atom by accelerating atomic change. As Professor Soddy says, " The quarry is in full view and by numerous routes the investigators are starting off in hot pursuit."

There seems to be no doubt that there is this enormous and almost terrifying force in the constitution of matter lying all around us. One has to accept that on the authority of the great scientists who are all agreed on that point. Take, for instance, the late Sir William Ramsay who, I believe, first discovered the element of helium and the actual transmutation of metals by atomic change.

" Suppose," he says, " that the energy in a ton of radium could be utilised in thirty years. . . . It would suffice to propel a ship of 5000 tons at the rate of fifteen knots an hour for thirty years. To do this actually requires a million and a half tons of coal. . . . But the supply of radium is a very imited one, and it can be safely affirmed that the production will never surpass half an ounce a year. If, however, the elements, which we have been

used to consider as permanent, are capable of changing with evolution of energy—if some form of cataclyser could be discovered which would usefully increase their almost inconceivably slow rate of exchange—then it is not too much to say that the whole future of our race would be altered."

That is the problem clearly stated. And Sir William Ramsay suggested the method by which this liberation of atomic force could be effected. It is perhaps one of the most important sentences in science ever uttered by human lips.

"One can imagine the very atoms themselves exposed to bombardment by enormously quickly-moving helium atoms, failing to withstand the impacts"

Those words contain the main hope of the human race for renewing the sources of energy which are now being exhausted. Perhaps they are the only hope of mankind for future life on earth.

It is only lately that I have begun to understand the structure of an atom—that little solar system, as it were, made up of negative electrons whirling round a positive nucleus, so that all matter in its last analysis is pure force. I have listened to lectures by Sir Oliver Lodge which seem to make it all very clear and yet leave enormous mysteries behind their simplicity.

The atom itself is inconceivably minute, yet relative to its size, its electrons may be compared to a few gnats flying in regular orbits round a great cathedral—the atom itself—which has no walls.

There is no crowding within the structure of the atom but great emptiness.

Particles of other atoms may fly through that space without hitting the central nucleus.

Atoms unite to form molecules of matter and the force which holds them together obeys the electrical law of positive and negative attraction. . . . Yes, it all sounds very simple !

The force within the nucleus of the atom was revealed by studying the Alpha rays given out by radio-active elements. They are particles of the nucleus of helium and travel at the speed of ten thousand miles a second. On their journey some of them make chance collisions with the nuclei of other atoms, knocking off some of their " protons " which are positively charged.

So great is the energy produced by their discharge that a volume of radio-active gas (called radio-emanation) gives out six million times as much heat as the same volume of oxygen and hydrogen burning together and producing the intense heat of the blow-pipe which everybody knows.

These atomic changes are taking place in nature through the whole scale of ninety-two elements which lead from hydrogen to lead. They take place when helium is produced from radium, but the process is almost immeasurably long in this transmutation of elements by atomic change according to nature's clock. Tested by this new method of time measurement the oldest rocks in which lead

is present appear to have an age of 1500 million years. *If one could hurry up that process by smashing up the nuclei of atoms and altering their constitution of positive and negative charges, vast stores of energy could be liberated.*

" If we could make an ounce of hydrogen turn into helium " (says Professor Andrade, one of the great authorities on the structure of the atom) " by gathering the hydrogen nuclei—protons—in bundles of four and binding them with two electrons so that they stuck together, we should have gained energy equivalent to about a million horse-power for a seven-hour day." If we could do that we should not need to worry about coal-fields and oil and other forms of power. There are men who are trying to do it. . . .

BOMBARDING THE ATOM

On three Saturdays lately I have gone to the Royal Institution in Albemarle Street, London, where Sir Ernest Rutherford, the " Grandfather of the Alpha ray," as I heard him call himself, was demonstrating the character, speed, and force of those radiant particles by a series of delicate and beautiful experiments.

In Albemarle Street ladies were passing on their way to tea in fashionable hotels. There was the roar of traffic along Piccadilly. That tide of humanity, unaware of a coming struggle for existence, any threat to their children or children's children, were enjoying

themselves, or failing to enjoy themselves, on a Saturday half-holiday in a drizzle of rain. But inside that lecture-room was gathered a group of men, with here and there a woman. They were mostly elderly, those men, with little pointed beards, and eyes dimmed by work in laboratories with microscopes and test-tubes. Their names are unknown to frequenters of the movies, but very famous in the world of science. They were the great physicists of England and they had come to listen to one of their fellows, that man Rutherford with his rather nervous way of speech, a tall burly man with a shy friendly smile.

What was behind these demonstrations of the Alpha ray ? Perhaps none of these scientists thought of that very much. They were not interested at the moment in saving the world or anything like that, but attentive to the photographs of "ionisation," the light effects of helium particles passing through gas, and the law of the curves which reveal the rise and fall of energy in this radiation, as far as I could understand.

These experiments are the way by which science hopes to capture the illimitable force within the atom. I saw, actually, the bombardment of the very nucleus of the atom, as suggested by Sir William Ramsay—photographs of the radiation given out when the helium particles or Alpha rays pass through gas, knocking off electrons from other atoms now and again by mere chance, colliding with

their nuclei and getting kicked out of their own direction by a greater power than their own.

I saw this preliminary bombardment in the greatest battle which the mind of man has ever conceived—so vast in its objective that if he wins he will gain the mastery of the material world until the end of earth-time, and yet so minute in its operation that one of the atoms, whose changing structure may be revealed by photography of radiant results, would need to be multiplied 250 million times to make a surface line an inch long, while its electrons are billions of times smaller. The genius of man has measured them, weighed them, calculated their exact electric force, revealed their precise and definite orbits, and made their effects under certain conditions visible upon photographic plates though in themselves they are invisible.

Will the genius of man, which has gone so far into these mysteries, capture their final secret and command their power? Will that atomic energy ever be liberated? The late Sir William Ramsay, who pointed the way, thought that it might never be. Soddy thinks it may take centuries to discover. Professor Andrade says with a certain cynicism that "it is open to anyone to prophesy that we shall be able to do so within the next fifty years, and open to anybody else to contradict him." And he adds that "whether the source of energy, if found, will lead to new happiness, or to vast increases of population followed by ruthless wars, is a question

to which the answer must at present be dictated by temperament rather than by reason."

THE DANGER OF ATOMIC POWER

These scientists are afraid of the power for which they are searching. If it were used for destruction it would destroy the human race. The ideals of men have not kept pace even with the powers now at their command. Can they be trusted with the control of atomic force? War, as Professor Soddy says, would not be a lingering agony. . . . And yet, unless such new energy is discovered and captured for the use of man, the sources of life upon which our present civilisation utterly depends may be exhausted, when the children of our children, endowed with a longer span of life, face the Day after To-morrow with its inevitable death.

It is an outlook which is not pleasant to contemplate. One's imagination conjures up some future Rutherford working in his laboratory, feverishly, without much time ahead, to save the last chance of civilisation. He is intensifying the bombardment of the atom by particles more powerful than those of the Alpha ray. He is within reach of that portentous victory over matter, and there is not much time left to him. . . . Coal has been all but exhausted in England. The oil wells are running dry. The wheels of industry have slowed down. The human race is getting hungry. The coloured peoples are advancing upon the white men's

sanctuaries. Barbarism, cannibalism, a world of horror and death draw near. That Rutherford of the future, alone in his laboratory, is nearing the end of his quest. He stares at his photographs of atomic radiation with brooding eyes. That last experiment! Some terrific force was liberated which blew down the wall of his laboratory and smashed some of his priceless instruments. He has had nothing to eat for several days. He is weak and old, and his heart is crocking out. He prays for another week of life so that he can save the world. . . . It is a story for H. G. Wells!

But supposing that future Rutherford fails in his quest, what then? Is there no hope for humanity at all? Is civilisation already dying?

PROPHETS OF DOOM

It is perhaps some unconscious or semi-conscious knowledge—some intuition or foreboding—of this exhaustion of the very sources of energy leading to a desperate struggle for existence in which Empires, States and Peoples may perish, which is accountable for a wave of melancholy spreading over the Western world since the last great war, and expressed poignantly by many of the deepest thinkers in many different nations. They are all "calamity howlers." It is a pessimism which strikes to the very roots of social philosophy and pervades the intellectual life of Europe with the spirit of despair. It has found expression in pictorial art which denies beauty;

in drama which goes to brutality, cruelty, **and vice for** its pictures of life ; in music, which revolts against the charm and melody and rhythm of former ages, and expresses modern life in strange and violent cacophonies; and it is stated starkly by novelists, essayists and philosophers. It is not only an acknowledgment but an assertion that Western civilisation has reached its zenith and is on the downward curve, that the end of the industrial era is at hand, that civilisation is in the process of decay and near to death. This writing on the wall is in Italian, French, German, Spanish, Danish, English, and many other tongues.

" Night falls over Europe," said that great German statesman and idealist, Walther Rathenau, just before his death. " Darkness is descending upon Europe/' writes Maurice Muret, in a book entitled *The Twilight of the White Races*. " The process of dissolving the economy of Europe has already begun," says Nitti, once Prime Minister of Italy.

These prophets of doom do not limit themselves to Europe in their vision of mortal sickness overtaking civilisation. It is civilisation itself which is on its way to dissolution and not even the United States, they say, shall be spared, because they have within themselves the disease of death.

PHILOSOPHY OF PESSIMISM

This morbid philosophy—caused partly by the spiritual shock of the war and its disastrous

consequences in many countries, but due also, I think, to the materialistic despair which has followed the abandonment of religion by millions of minds unsettled by scientific disbelief—has been most elaborately set forth in that strange and terrible book *The Decline of the West*, by Oswald Spengler, a German scholar. In his case it was not the war which made him foretell the end of Western civilisation. The war came only as a proof to his mind that his previous theories were right—one small and additional bit of evidence that the structure of civilisation is breaking down under inescapable law. That is the frightful and tragic thesis of his book—that civilisation itself is the beginning of the end, because when things have " become " they are dead, and it is only the " becoming " that is life.

" Everything become is mortal," he writes. " Not only peoples, languages, races, and cultures are transient. In a few centuries from now there will be no more Western culture, no more German, English, or French. . . . The primitive phenomenon of the great Culture will itself have disappeared one day, and with it the drama of world-history; aye, and man himself, and beyond man the phenomenon of plant and animal existence on the earth's surface, the earth, the sun, the whole world of sun systems."

That tremendous, all-embracing prophecy of death may strike a faint chill into imaginative minds reaching out towards the gates of eternity, but leave the ordinary and practical minds untouched because

of that remoteness. But this man has no comfort **for** the immediate future, because he sees the already visible decay of all that culture which gave vital force to Europe in its days of "becoming," and the downward curve in that cycle of civilisation which is drawn by destiny.

I have read most of this book by Spengler in spite of its extreme difficulty of form and expression and its wanderings through all human history and religions. It seems to me remarkable that something like 100,000 copies of this book have been bought and read. It is a best seller like any popular novel though incomprehensible in parts to half-educated minds like mine. But its influence on other minds has been profound and widespread and even in the United States it has disciples and believers.

In Germany, above all, stunned for a time by their defeat in war, seeing the very foundations of their old faith in discipline and order and industry destroyed (only for a time) by the downfall of their pride, and the failure of their rulers, and the ruin of their money system in time of inflation, and the utter disproof of that materialistic philosophy which had been their worship before the war, this book by Spengler had a deep influence from which I fancy they are escaping owing to new prosperity. Believing in the weakening of the West with all its ideas and methods, they began to turn their eyes to the East, and heard the coming of the coloured peoples, and believed that perhaps they held the secret of the

future because the West had failed, and that their gods were the true gods, their philosophy the way of truth.

Amazing that the German mind of all minds should be drawn towards Buddhism and Oriental fatalism as a way of escape from despair and anarchy. Yet Count Keyserling, a Baltic Baron, typical of what we should call "the Prussian mind," was only a leader in a kind of mass movement of the German intellectuals towards a new School of Wisdom, founded upon the passive resignation, the indifference to material progress and comfort, the spiritual conception of life divorced from reality, which characterises the Oriental philosophies.

Count Keyserling does not promulgate a philosophy of despair. There is a nobility and hopefulness in his idealism. His book, I think, is full of truth and beauty, but he, too, like many modern minds, is exceedingly anxious. He, too, believes that modern democracy is overwhelming the old culture of our civilisation by a process of barbarisation. He is not an enemy of machinery if it could liberate the spirit of men, but he finds the machines are enslaving the men who should control them. In America, where he found the highest expression of mechanical efficiency, he was terrified by the soul-destroying effect of that achievement. He condemns America not because it is less "civilised" than Europe, but more "civilised."

"What is so awful in Americanism/" he writes,

" is not that it devitalises men, but that it simplifies the psychic organism to an unheard-of degree. America proves that a complete and full inner life can be lived without a soul, without intellectual interests, without cultivated feelings." . . . And this implies a fearful danger. To-day a low condition is held up to humanity as the highest ideal. If this ideal is not dethroned soon it leads inevitably to barbarism, and not to temporary but permanent barbarism."

Yet after that judgment he finds America the most advanced, and most prosperous type of industrial civilisation—towards which all other nations are striving. That then is a condemnation of civilisation itself.

THE CHANCE OF ESCAPE

All this is unmitigated gloom, leading to despair. Is it true, or is it only the dark illusion of morbid minds? I should be a liar if I pretended that I disbelieved that some of these dangers lie ahead for the human race. But I believe that the human mind is not incapable of avoiding them and finding a way out.

It is probable that the world is increasing its population beyond its food supplies. But it is almost certain, according to historical laws, that population will fall gradually to the level of its mean subsistence.

It is likely on all evidence that we are reaching the

limit of industrial development and that the furious competition in machine-made goods will be beaten back so that nations will have to be more self-supporting and not dependent on export trade. That is not wholly a dismal prospect, though the transition stage will be painful and perhaps tragic in many countries. It is right and natural for man to base his life upon the land, which is the source of real wealth. The disintegration of enormous cities and a more general return to the fields and woods may be a blessing rather than a curse.

The simplification of life with less needs and less luxuries may bring back happiness which seems to have fled from many centres of our present civilisation. We may be going to the dogs, but, as Chesterton says, they may be "rather jolly dogs." The immense perils which I have set down, as I have reported the facts and ideas in the mind of science, are not imaginary. Their results will be a world calamity if there is not intelligence enough to deal with them and control them. The weakening of the white races will undoubtedly lead to an overwhelming tide of colour unless the white races decide to stop killing each other—not beyond the range of human intelligence—and co-operate instead of compete with each other.

By acknowledging the rights of the coloured races, by a gradual withdrawal from old forms of domination according as the coloured peoples advance in self-control and possibilities of self-government,

there may be friendly communication and intercourse which will avoid world-war, and a " fighting retreat." A spiritual understanding of other human minds, racial instincts and needs of life, may lead to a solution of many economic problems and causes of conflict. A world-wide system of co-operation and distribution by which the products most easily produced in one country may be exchanged for those most easily produced in another, instead of all producing the same kind of things, would lead to less fever of competition and less waste of human energy.

The genius of the human mind which has investigated so many secrets of nature with such marvellous skill, is not incapable of re-shaping its own destiny and frustrating the evil forces which are threatening the future life of mankind. I do not see many signs as yet that human intelligence is on the upgrade, or that man's spiritual nature is advancing to high altitudes. On the contrary, there are signs of decadence and weakening will power in many aspects of modern civilisation. But we have the possibility within ourselves of improving our minds and our manners. Upon that possibility depends the fate of civilisation and all that makes life good to us.

IV

THE FUTURE OF THOUGHT AND THE MASTERY OF MIND

IS it possible to speed up the evolution of the human intelligence ? Can we by taking thought and studying the powers of our own minds acquire a more efficient control of our own bodies and a masterful influence over the conditions of life around us ?

The question is of utmost importance. Looking around the world to-day we must admit that human intelligence seems at a low ebb. Everywhere there is friction, disorder, conflict, stupidity and unhappiness. The mass mind—to which you and I, dear readers, are of course superior, intellectually and morally—does not work by reason but by emotion. It is a prey to the traditional prejudices of ignorance and credulity. It is played upon by charlatans, political impostors, advertising swindlers. It is duped by slogans which appeal to its lowest passions or to false ideals. There is no clear thinking upon high planes of intelligence at a time when the whole world is uncertain of its destiny, and awaiting the Day after To-morrow with no sure faith in peace and social well-being. The coming struggle for existence

may find us unprepared in wisdom. The enormous powers which science is putting into our hands by many new discoveries may be turned against us for our own destruction because of our lack of intelligent control. Unless we think, we shall perish. Can we not create a world of enlightened men and women working harmoniously together for the common weal?

MODERN MATERIALISTS

There is a school of psychology to-day which repudiates this idealism. It utterly denies the spiritual faculties of the human mind and reduces human personality to a series of reflex actions caused by a stimulus of nerves and senses. These old-fashioned adherents of the material and mechanistic theory of life—ignoring all modern research—and the conclusions of the most brilliant biologists and psychologists of to-day—maintain that the mind is a mere machine for the transformation of energy differing from all other organisms only in being more complex. They talk in terms of cells, organs, muscular movements, chemical actions, internal secretions, imprisoning human life within the cogs and wheels, as it were, of its bodily machine. They talk of instincts which must be satisfied because they have a physical cause and need, and they make no distinction between good and evil because all life, they say, is merely "Behaviourism" dictated by animal impulses which must not be thwarted. In Russia this is the psychology officially taught in the

schools. They are the training schools of human beasts who, if they have homicidal desires, must satisfy them, or if they are impelled by animal passion need not exercise any restraint or control, because it would be "thwarting" their own nature. It is an education in free love and all mental lawlessness, which will be the ruin of any civilisation which adopts it. Unfortunately this philosophy of "Behaviourism" is creeping into other countries, and a friend of mine recently was horrified to hear it expounded to a group of young men in Hyde Park on a Sunday morning. There will be no hope for the world if that school of thought prevails.

On the other hand, there are many scientific minds to-day who believe that it is not impossible to raise the Standard of human thought, which is the only hope of humanity. They believe—with an optimism which I find magnificent—that we are on the eve of great discoveries concerning the human mind likely to give us a world of new knowledge and intellectual power, by which we may take charge of our own destiny and control our own evolution.

James Harvey Robinson in his brilliant little book, *The Mind in the Making*, expresses this belief in notable words:

"We are in the midst of the greatest revolution," he says, "that has ever overtaken mankind. Our whole conception of mind is undergoing a great change. We are beginning to understand its nature and, as we find out more, intelligence may be raised

to a recognised dignity and effectiveness which it has never enjoyed before/' He hints at untried ways of enriching our existence and improving our relations with our fellow-men.

MEN LIKE GODS

I find—to my surprise, as I must confess—that many scientific thinkers of to-day, in many countries of the world, are foretelling the time when men may truly be "like gods/¹ as H. G. Wells imagined, with intellectual powers far beyond our present faculties. Those master minds of the future will, they think, solve many problems and troubles of life and human relationship and will look back with pity upon our present state of society with its unnecessary conflicts, its individual agonies, its inequalities, stupidities, passions and despairs. At least, they say, this knowledge is not beyond the reach of human intelligence.

In that Day after To-morrow—when experiments and evidence now being accumulated have been properly tested and co-ordinated—men and women, just ordinary folk like you and me, may do all sorts of things with the mechanism of our minds which now seem to belong to the realms of magic or phantasy. We may heal ourselves of many bodily ills without the aid of physic or surgery. We may indeed so control the working of our bodies that disease will have no chance until our physical structure wears out by natural decay after a span of life far longer than our present limit. We may

develop a beautiful and harmonious rhythm of life so that body and mind will be liberated from many of the repressions, inhibitions, mental and physical disorders which make life a misery to so many of us now. What a vision of good hope !

In that Day after To-morrow—unless catastrophe wins the race with education—many scientific inventions which seem so marvellous to us now, and so full of promise for the future, may be thrown on the scrap-heap as trivial and inefficient toys because of new faculties of mind, or, rather, natural faculties newly developed, in the possession of all who care to use them. Wireless telegraphy, or broadcasting, television which is still only a promise, may be abandoned as old-fashioned methods of communication.

The future City man sitting in his office may call in his secretary and say: " Miss Jones, I wish to give some instructions to our representative in Persia. Kindly do not let me be interrupted until I have finished my conversation with him. And you might pull down those blinds. I find I can concentrate better in darkness."

In his darkened room he may " go into the silence," as it is called by Oriental philosophers, thrusting out from his thoughts all remembrance of a slight tiff he had with his wife at breakfast, and other little annoyances and distractions which may occur even when men are—more or less—like gods, and concentrate his thought upon Mr. Brown in Persia. . . .
" Is that you, Brown ? , . , Yes, Silas K. Smith

speaking. . . . About those Consignments. . . . What's your idea ? I don't quite get it. . . . Oh, yes ! The camel caravan hasn't arrived from Teheran ? Well now, what do you think of that ? . . ."

It sounds comical, put that way. Too ordinary and commonplace. And yet very serious scientists, not believing at all in spiritualism or other forms of supernatural agency, believe that by developing the normal and natural powers of the human mind it may be possible to communicate direct with other minds, regardless of distance.

MODERN MIRACLES

They may be miracle workers, those children of ours in the Day after To-morrow, not in the sense that they will defy the laws of nature, but control and use them with a power that now seems to us marvellous and incredible.

It will be possible—it is now possible, they say—to see every detail of the life and actions of living people thousands of miles away, by no supernatural agency, by purely natural though incomprehensible laws within the minds of men and women. It is possible—it will soon become a commonplace, they suggest—for living people to project some image of themselves to other minds far away, to call to them for help, to warn them of impending danger.

Sir Oliver Lodge is a spiritualist, but he is speaking in terms of natural science and not of spiritualism when he says:

" I am prepared to confess that the weight of evidence is sufficient to satisfy my own mind that such things do undoubtedly occur; that the distance between England and India is no barrier to the sympathetic communication of intelligence in some way of which we are at present ignorant; that just as a signalling key in London causes a telegraphic instrument to respond instantaneously in Teheran—which is an everyday occurrence—so the danger or death of a distant child, or brother, or husband, may be signalled without wire or telegraph clerk to the heart of a human being fitted to be the recipient of such a message."

" What is the meaning of this sympathetic resonance between two minds ? " he asks, admitting that he cannot find the answer. " Is it conceivably the germ of a new sense, as it were—something which the human race is, in the process of evolution, destined to receive in fuller measure ? Or is it the relic of a faculty possessed by our animal ancestors before speech was ? "

Other gifts, even more marvellous, may be ours. We may get outside Time and see and know of things in the "before" and the "now" and the "future" which are only terms of time-bound minds. By the touch of some object of antiquity, some old bone or ornament or clay-baked image, we may see the vision of life as it was lived by men and women in the dawn of history or in civilizations which have passed away thousands of years ago, as

time is reckoned, though the light from this planet of ours by which they lived may only just be reaching worlds far away in space. By "going into the silence" our minds may travel, as it were, a little faster than our bodies and see things with which we shall catch up later with our physical beings. We may be able to see our own future lives, the future of history, the happenings that are to come, though it is by our free will and decision that they shall happen. Here again this gift may come to us not by any supernatural agency, not by any communication with spirits, not by any magic, but by developing natural faculties of the human mind which all of us have but few of us use.

If these things are true—and the ordinary healthy mind will regard them with the greatest scepticism until presented with scientific evidence which the intelligence feels bound to accept—they open up new vistas of knowledge and power which await men and women of the future. Is there any evidence which makes them credible? Is a new science of mind being developed, or are we being duped by a hark-back to old superstitions belonging to the dark ages of history when men believed in necromancy, crystal-gazing, astrology, charms, incantations, and all kinds of wizardry and witchcraft? Or is it possible that those modes of magic had some foundation in truth, and that they were practised by people who had some dim and debased recollections of a knowledge of natural powers once

known to previous civilisations **and** lost in **the** wreckage of ancient races, or overlaid **by other** interests and conditions of life ?

THE STUDY OF AUTO-SUGGESTION

It is the study of auto-suggestion which has put science on the track of many strange things which will be familiar to and widely used by the children of To-morrow. And it must not be forgotten that this knowledge of certain powers of the mind over the body is directly due to hypnotism, or "mesmerism" as it was first called, which was regarded as a diabolical act of sorcery when it was exploited by charlatans in the eighteenth century. There is indeed nothing new either in hypnotism or in auto-suggestion, which were practised in very early times, but what is new, and suggestive of amazing possibilities, is the scientific evidence and exploration of the phenomena attached to them.

" *We cannot set any fixed limits to the power of the mind over the body,*" says Dr. William Brown, the great English psychologist, in agreement with most of his scientific collaborators.

Merely by self-suggestion, or by the suggestion of others acting powerfully on our minds, it is possible, as we now know, to cause or cure many diseases which are not merely nervous but have a physical reality. The great French psychologist, Baudoin, gives amazing instances of this, which are well known and admitted by medical science.

Take, for example, the case of warts. They are of trivial importance, but one would not imagine that they could be produced or removed merely by suggestion. Yet in the Swiss canton of Vaud the girls make a joke of it. To cause warts they go out one evening, moisten the tip of the finger with saliva, look up at a star, and touch the other hand with the wet finger-tip, counting one, two, three up to the number of warts required ! Surely enough the warts appear ! I may pass them on by suggestion to girl or boy friends. A ribbon on the hand and is knotted as many times as there are warts on the hand. Then the ribbon is dropped on the highway. Whoever picks it up and unties the knots will get the warts—and the original owner of them is cured ! It reads like a fairy-tale, but it is true, as every medical man fully admits. Only the faith is needed that the warts will come or go.

They are trivial things, as I have said, those warts, but grave afflictions of the human body may be cured just as easily by the power of suggestion. At the French clinic at Nancy, established by the late Emile Coue, blind men recovered their sight, the deaf were made to hear, the paralysed were able to walk, sometimes instantaneously as though by a divine miracle, sometimes after a long course of treatment. It was not done by faith healing in the ordinary sense of the words as used by religious revivalists working on intense emotion and the ecstasy of conversion. It was done quietly by a

very simple, and rather child-like, man with a little white beard and blue, honest eyes, and a charming smile, who told his patients that they could cure themselves by powers within themselves—by suggesting to their own imagination that they could see or walk or hear when they were blind or lame or deaf, and by letting this suggestion work in their subconscious mind without any effort of will.

Here are a few cases out of hundreds reported by Nancy School.

sc in the war and invalided out as unable to move his right leg except the jerky impulsion of an artificial limb. Cure ensued upon the first suggestion.

A woman of Nancy had suffered for three years from an intractable eczema of the hands. Cure was effected by suggestion in a few sittings.

Louis Schmidt, aged 44, had an attack of indigestion, as a sequel of which he became affected with almost complete paralysis. After the first sitting with Coue he could walk and even run.

A little girl named Jacqueline, aged 7, had been totally deaf since an attack of typhoid at fourteen months old. She was unable to speak. After six weeks' treatment she could pronounce all the sounds of the alphabet and sing a song to a pianoforte accompaniment.

I myself saw Coue cure several people from stammering. I was at the Albert Hall, in London, where he was not demonstrating his cures by

suggestion, but giving a lecture on his theories. Good-humouredly, however, he consented to deal with several lifelong stammerers who clambered on to the platform. Smiling at them, he made each man repeat very slowly after him : " I will never stammer again." They did so with great difficulty and hesitation for the first time, and with greater ease the second time, and with perfect ease the third time. " Now," said Coue, laughing heartily, " say ' I am cured ! ' Say it as loudly as you can." Each man shouted out " I am cured! " and afterwards I heard them chattering to their friends with great fluency and every sign of joy.

THE POWER OF THE MIND

It is perfectly true to say that most of the diseases which may be cured by suggestion are due to nervous disorder, but that disorder actually produces organic effects, owing to the intimate relation between mind and body. According to Dr. William Brown, who is a great authority, there can be no mental illness without some physical alteration of cells and tissues. Shell-shock due to repressed fear actually produces a physical dissociation of the nervous system. In many cases illness is entirely imaginary in its cause, but it is illness nevertheless, profoundly affecting the bodily health. It follows, or at least it is proved, that an intense act of imagination may cure as well as cause a malady. The most amusing instance of this recorded by Baudoin is that of a man who

suffered from asthma and was awakened in a country inn with a violent paroxysm.

Greatly distressed for breath he got out of bed and hunted for the matches, which he could not find. He groped about for the window and fumbled against a pane of glass. Damn it all, where's the window-bolt? He could not find it, and gasping for breath smashed the pane with his fist. Again and again he filled his lungs with air. The throbbing at his temples ceased. His gasps and spasms ceased. He returned to bed feeling enormously relieved. . . . Next morning one of the items on his bill was "*Broken clock case, 4.35 francs.*"

That is a comical case, but it illustrates the force of imagination really and truly acting upon the physical organs, and to repeat the tremendous words of Dr. Willam Brown: *We cannot set any fixed limit to the power of the mind over the body.* There is no reason whatever to doubt the miracles of saints in all ages and the miracles that happen to-day in places like Lourdes. There is no reason why we should not all be miracle workers if our personality is so impressive in its truth and simplicity and love that what we say will be believed by people around us *and by ourselves.* Nor is this evidence of the effect of suggestion upon the human mind any denial of supernatural and divine agency, for its mysterious workings, natural as we now know them to be, are still manifestations of power which is not isolated or limited, but part of the universal power which is

eternal and illimitable. There is no line drawn between natural and supernatural, just as there is no line between the subconscious and conscious mind.

THE DE RUDDER CASE

One of the most extraordinary cures recorded in connection with Lourdes is what is known as the De Rudder case, which was authenticated at the time by Catholic and Protestant doctors and men of science without religious prejudice. I myself met a Protestant doctor who had investigated it thoroughly and who told me that it was something outside the laws of ordinary anatomical knowledge. "Certainly a miracle," he said, "though that explains nothing unless one believes in the direct manifestation of divine power."

De Rudder was an old gardener in Holland who for years had suffered from a suppurating ulcer which had eaten into the bone of one of his ancles so that part of it had rotted away and he could twist his foot right round. He had been treated for years by his mistress's doctor and had to walk by the aid of a crutch, as was, of course, well known by all his neighbours. One day he went to a little shrine which was a reproduction of the Grotto of Lourdes. He travelled part of the way by tramcar, but was turned out because his suppurating ulcer had an unpleasant odour. On his crutch he hobbled to the shrine, said a few prayers, and suddenly had an extraordinary sensation which made him believe

that something had happened to him. He sprang up and presently began shouting and laughing: "I am cured! I can walk. My foot is healed."

He walked back to the village without his crutches. His little daughter was frightened at the sight of him, because she had never seen him walking like that—and there was a strange look about him. He was immediately examined by his own doctor who was astounded because there was no trace of the old wound. Other doctors were summoned. The affair became famous, and when after some years De Rudder died, his leg was amputated and it was seen that the bone where the ulcer had been showed a faint zigzag line like a flash of lightning. A new bit of bone had grown where the ulcer had eaten its way, and this had happened in a way unknown to previous experience. When two bits of bone join together after a fracture a ring of osseous matter forms round the separated parts, but in this case there was just that zigzag marking. . . . The evidence for this is complete in all its stages. Who shall say what happened in the mind of De Rudder, reaching out by prayer in his humble, ignorant way, and cured by a supreme act of faith, as the leper was cured when he cried out to Christ? These faith cures, of which the sceptic is contemptuous, as though that name explained everything and something rather silly, are surely revelations of some supernatural but not unnatural powers derived from or in touch with the eternal source of all power.

They are proofs, or at least signs, that the human mind itself is not merely a mechanism dependent upon the chemical action of its cells and limited material and physical conditions, although those organic functions are the machinery of thought as a piano with its wires and hammers is the instrument by which divine music is produced.

THE SUBCONSCIOUS MIND

These modern scientists are finding out many secrets about the human mind, but it is all rather new knowledge and as yet unexplained. It is only recently that men like Freud and Jung have explored the life of the subconscious mind, that secret and hidden life which stores up every sensation experience, emotion, and impulse which comes to us from the moment of birth and probably before birth. The conscious mind is only partially aware of that storehouse of knowledge, that great emotional reservoir, and those secret workshops in which most of our mental and physical processes are carried on, even in our sleeping hours. The conscious mind tries to ignore or repress some of those instincts and desires when they emerge from their hiding-places, and this—as every student of Freud knows—causes internal conflict and disharmonies which lead sometimes to tragic unhappiness and mental disorder.

It is in the subconscious mind that auto-suggestion works quietly and powerfully. A suggestion dropped

into it develops, gathers force, sometimes instantaneously, sometimes after a germinating process. And it acts most powerfully when the conscious mind is not endeavouring to obtain control, or is not in a critical and alert state. When the mind is hypnotised, that is to say, dissociated from external impressions, or when it is in a kind of blank, as in a day-dream, when external objects are unnoticed and the ordinary processes of attention are dulled down, then suggestion is peculiarly strong, and the subconscious mind itself becomes intensely sensitive and reveals its own power and knowledge and faculties. It is by dipping down into subconsciousness that modern psychologists are becoming aware of certain natural phenomena which may, if developed, give to the men and women of To-morrow a new and astonishing mastery of mind over matter.

I am only reporting the lines of investigation which are now being followed by many serious psychologists, and many of them, I find, believe that the men and women of To-morrow may make practical use of senses which are now mostly hidden and undeveloped. They may have other means of sight than the eyes. They may be marvellously sensitive to vibrations which do not at present affect our conscious intelligence. They may generate mental forces which will give them a new command over that other form of force which we now call matter, but which we are told, in its last analysis of atoms and electrons, is pure energy.

This is certain. There are and always have been people who, for some unknown reason, are peculiarly sensitive to certain vibrations or sensations. Take the simple but still mysterious case of men who earn their living by locating the presence of water, oil, and metals by "divining rods." The old English name for them is "dowsers," and by the trembling of a hazel rod they are able to detect in an apparently miraculous way an underground spring or a vein of mineral in the rocks. For a long time their powers were disbelieved, except by simple country folk who regarded them as magical, but before the war the German government employed such men in their African colonies, and the French government has used them for locating seams of coal. They are undoubtedly acutely sensitive to very faint vibrations which do not affect ordinary folk.

THE MEANING OF THOUGHT-READING

The parlour tricks of "thought-reading," which is not the same thing as telepathy or thought transference, also prove that some people—and probably all of us if we only tried—are sensitive to very slight physical movements and have an acute sense of touch which may obtain startling results. I remember as a boy acting as the agent of a thought reader at a public banquet. He undertook to imitate exactly, while blindfolded, and without previous knowledge, any series of dramatic actions which might be invented by one of the company.

He was carefully guarded in another room while one of us committed an imaginary murder by stabbing one of the guests with the handle of a table knife after climbing over several chairs, robbing a man of his handkerchief, and doing other melodramatic tricks. The "thought-reader" was brought in and held me by the wrist. Almost as quick as thought he repeated every action until the whole chain of detail leading up to the "murder" had been reproduced. I was totally unconscious of influencing the man. He seemed to lead me almost violently in his haste to carry out his task. What he was actually doing is now known. It is what is called "muscle-reading." Slight contractions of my muscles, very faint alterations in my pulse and breath, small inhibitory movements of which I was unaware, were all being noticed instantly by the subconsciousness of the man who held my wrist and they led him unerringly where I wanted him to go. Even where there is no actual contact so-called thought-readers use the same methods, and are actually aware of faint alterations in the breath and movements of the audience as though they were calling out "hot" or "cold" in the children's game of finding hidden objects.

This thought-reading, therefore, is not supernatural. It is muscle-reading, but that does not remove the wonder of it. On the contrary, it is a proof that our senses may be much more finely adapted to receiving the slightest impression than,

in the ordinary rough and tumble of life, we are generally aware. We are telephone exchanges and photographic instruments and aerial receivers of marvellous delicacy, though most of us make but a clumsy use of our faculties. In many ways perhaps savages and animals make better use of their senses and we are overlaid by civilisation. We may rediscover these things so that in the future humanity may use them and develop them in ways that now seem miraculous.

EYELESS SIGHT

Those people of the Day after To-morrow may read books with their fingers instead of their eyes. They may have a "circular" vision which will enable them to see behind them as well as in front. They may be able to read a newspaper before unfolding it, or behold the shape and colour of objects in what seems to us absolute darkness. Blind men whose eyes have been destroyed by war or accident may be able to see through their skin or any part of their bodies.

All that is asserted in an amazing little book I have just read called *Eyeless Sight*. It is written by a Frenchman named Jules Romain, and his experiments and results are vouched for by a considerable body of French scientists and intellectuals including the late Anatole France.

He asserts that the skin of the human body contains thousands of elementary eyes—ocelli, as

he calls them—which are sensitive to light, and convey images to the nerves from which they are transmitted to the brain. They have been disused so long, he thinks, in the process of evolution of our ordinary way of vision that we are unaware of them and can only make use of them by redeveloping their elementary powers.

According to his experiments, which I record without any guarantee of truth—I am merely a reporter in these matters—he discovered that any ordinary people chosen at random and slightly hypnotised, or at least induced to attain an intense concentration, could see, and even read, when blindfolded and placed in a position where the object or writing was outside the range of ordinary sight. For instance, a man with his chin over the half-opened lid of a box held on his knees could read letters or see objects placed inside the box, though his line of vision, of course, would be straight ahead above the box. He could see with his chest or the back of his head, or his exposed arms or his legs, although the importance of the various regions is unequal. Vision, says M. Romaine, is difficult, hesitating and imperfect when only one region is exposed.

" For example, if the hands are bare, the sleeves lifted to the elbow, the forehead clear, and the chest uncovered, the subject reads easily and at a normal speed a page of a novel or an article in a newspaper printed in ordinary type. If he exposes no more than the back of his head or his forearm he will have

great difficulty **in** distinguishing a 6 from an 8 **drawn** **in** characters 3 cm. high with lines 1 mm., thick. . . "

Apart from detail, which I need not describe, M. Jules Romaines asserts that in hundreds of experiments with subjects taken at random he has definitely proved that there is an "extra-retinal" vision. He finds that a certain number of sittings are necessary in most cases before the first vague fumbblings and errors of sight become clear impressions. His subjects do not get their impressions from touch which is strictly precluded, although they use their hands in gestures as though to focus the physical vision. At first the range of vision is weak, though it gradually increases in depth. The subject does not search for the object with his eyes, but with his chest or other exposed parts of his body, and it is curious that in order to distinguish colours he sniffs as though he could tell them by smell. He is also sensitive to infra-red rays of light which do not affect ordinary vision.

It is not necessary to be hypnotised in order to acquire this extra-retinal vision, and M. Romaines claims that he could see through shut and sealed eyes after a series of attempts which for a time gave no success at all, but gradually developed from a vague awareness of shapes to a clear discernment of small objects around and behind him.

I do not vouch for the truth of these assertions, having made no effort to test them, beyond an experiment with my eyes shut which had no success

at all! I can only repeat that they have **been** guaranteed by a number of French professors **and** scientists. In my simplicity, however, as an ignoramus in science, it seems to me plausible that the skin should be sensitive to light and convey images to the nerves, even if not to the extent claimed by M. Romains. I believe it is an acknowledged fact in biology that an eye may be transplanted from one part of the body to another in certain animal forms, such as tadpoles, and function admirably. Whatever may be the truth of *Eyeless Sight*, it is certain that people who walk in their sleep or hypnotic subjects whose eyes are bandaged have a strange gift of walking about amidst furniture and other objects without stumbling against them, and with an absolute assurance, as though they could really see. It may be due to slight differences of atmosphere recorded by the sense of touch and by the sense of hearing, or it may be due to that amazing theory of Jules Romains. In any case, it proves some kind of faculty or faculties infinitely more sensitive than in ordinary daily use, though you and I possess them.

THOUGHT TRANSFERENCE

What about telepathy—real thought-transference between two minds, regardless of distance? What evidence is there that the Day after To-morrow, using that term vaguely, we may dispense with all other forms of communication and just think from

one to another and establish contact at will with distant friends, and read one another's minds like open books, if we are properly attuned? That is a formidable thought which would change all our ways of life. Imagine what would happen if we could see behind the masks worn by humanity to hide their secret thoughts, their hidden agonies, their unsatisfied desires, their ambitions and despairs? I think that, on the whole, it would lead to greater sympathy and tolerance among us, more understanding, an almost God-like understanding of our fellow-men and women. It might break down all hatreds and all cruelties.

Years ago my old friend W. T. Stead, the editor of the *Review of Reviews*, claimed that when he wanted to interview some famous person he would just put himself into a trancelike state, a kind of slight self-hypnotism, ask the questions he wanted to know, and write down the answers. Time and time again when he submitted these documents to the persons concerned they were, he said, amazed by the accuracy with which he had put down their very thoughts. I thought him mad. I still think he was unhinged and duped by spiritualistic practices. But he may have had some strange gift of mental telepathy.

That word explains nothing, but it is a useful and well-understood name for certain mental phenomena which may be true, and if true, are vastly important. I am bound to say that after studying the evidence for and against mental telepathy it seems to me

proved that there is such a thing as thought-transference. It has been tested under strictly scientific conditions by thousands of experiments. It is to some extent within the experience of all of us in elementary ways. How often do we think of a man or woman quite casually and with no apparent reason, only to meet him or her quick upon the thought? But these experiments go much farther than that sort of thing, which may be due to coincidence.

Years ago Sir Oliver Lodge, before he became a spiritualist, carried out a number of experiments with a private family who lent themselves to his tests in a friendly way without any professional medium being present or any use of hypnotism. He found that two of the girls could draw with very fair accuracy certain simple diagrams which he had previously drawn and concealed from them. They reproduced a drawing of a Union Jack, though without the cross-bar. They drew a pennant, though the wrong way round. They drew a square and then outside it a St. Andrew's Cross, though Sir Oliver had drawn the cross inside the square. They could also describe objects which he had hidden from their vision, sometimes perfectly, sometimes with mistakes in detail. The Psychical Research Society of which he was a member interested itself in this subject. Many experiments were made. Among them two ladies living 400 miles apart agreed to act as agent and subject. One of them tried to tell the other

every day at a certain hour what she had been doing or what she desired the other to think. The second lady wrote down every day on a post card what came into her head about her friend's acts and thoughts. The proportion of successful results was striking, although not conclusive. In many cases the lady who wrote the post cards did not get the exact messages conveyed to her, but seemed to have knowledge of other happenings connected with her friend. Those were indecisive experiments. Since then the tests have been much more strict and the results almost beyond doubt. It seems to me certain that ideas and knowledge are passed from one mind to another, and that some people can tap one's mind, as it were.

I have only had one instance of this myself, but it startled me. I went into the tent of a Galician gipsy who spoke a barbarous mixture of French and German which she had picked up on her way through Europe. She knew nothing of my life, but before I had been with her two minutes she told me that I was worried because a near relative of mine had an illness of the throat. There was to be an operation. It was a *mauvaise gorge*—a bad throat—and she reiterated those words with her hand to her own throat and a look of pain. It was perfectly true, and my mind at the time was obsessed with the thought of that lady and her approaching operation. How did this gipsy know? Undoubtedly by receiving her knowledge from my brain. Yes, but that does not explain the matter. How was that thought

transferred ? Can we send out thoughts in waves ? Does every thought we have create an actual vibration ? And if so, can those vibrations be received and translated into thought by other brains ? The wireless vibrations seem to suggest a parallel, but it must not be forgotten that they convey sounds which are physical in their action. Television by wireless rays conveys images by vibrations of light from a material object upon a sensitised surface which is influenced by that light. But thought cannot travel in that way, according to psychologists who understand the mechanism of the brain. Certain cells are stimulated, certain chemical actions take place, certain sensations are transmitted to the nerves and through them to the brain, but the ideas that result from those physical processes—thought itself—do not have any physical existence. It is difficult to formulate a theory by which the thought of a lady with a bad throat about to undergo an operation could be conveyed to any sensitive receiver by a series of vibrations. According to the known laws of physiology it is impossible, I am told.

THE MYSTERY OF CLAIRVOYANCE

Then there is that amazing phenomenon called clairvoyance or second sight. Here again there is an immense body of evidence—difficult to ignore—that there is something more in it than the tricks of charlatanism. The most scientific evidence has been presented by Eugene Osty with hundreds of experi-

ments which seem to prove beyond all reasonable **doubt** that many persons put into a hypnotic state, or self-hypnotised, are able to see the actions of individuals of whom they have no previous knowledge merely by contact with something which belonged to them. They are able to describe these people in great detail. They know their character and state of health. They reveal things in their past life and see things happening in the future, not by any methods of spiritualism, not by messages from the other world conveyed by spirit voices speaking through mediums, but by some mental power within themselves.

In Osty's remarkable book, *The Supernormal Faculties in Man*, there are hundreds of records of clairvoyance verified by himself which seem to prove that the mind may get outside time and space, that it may obtain knowledge absolutely beyond the range of mental telepathy, even if that is proved, and that it has supernormal powers which reach out as it were to some world-mind or universal stream of intelligence no longer limited by the physical mechanism of the brain or dependent upon it.

Not long ago a friend of mine, who is a hard-headed Scot, had an experience which I am bound to believe because of my faith in his honesty and clear, sane judgment of facts. He was driving in a cab in Edinburgh and stooped down to tie up a bootlace when suddenly he had a " day-dream " of an accident happening to him. He saw the horse of the cab in

which **he** was travelling knock down a man who was crossing the road. The wheels of the cab passed **over** his body and my Scottish friend felt the jolt. A crowd gathered and the whole scene, the actual faces, were vividly seen in the imagination of my friend. He was startled and thought that he must be suffering from an attack of indigestion which had caused a momentary hallucination. Or perhaps the action of stooping to tie up his boots had sent a rush of blood to his head, causing this waking dream. . . . A few minutes later his cab ran over a man crossing the street. Every detail of the scene was exactly as my friend had seen it—before it happened. How was it that his mind had gone ahead of "time"? What explanation is there for this and a thousand other cases of "second sight" which can hardly be denied?

ENERGY OF THE MIND

German, French and Russian psychologists have been investigating these phenomena of telepathy and clairvoyance with serious attention.

A great German chemist named Professor Ostwald has put forward a theory of "Energetics." Just as all matter is reduced to energy so, he thinks, are all these strange mental phenomena. They are due, he says, to the transformation of energy stored up in the atoms and electrons, cells and tissues and chemical processes of the body into nervous energy and psychic energy. An idea, he asserts, is simply a form of energy and nothing more, for nothing exists

except energy. He suggests that many of the manifestations which are put down to "spiritualistic" agency—table-rapping and table-turning, the lifting of objects by invisible means—are simply effects of nervous and mental energy emanating from ordinary human brains. The mind and the body contain potential energy of terrific power just as the atom is an invisible unit of mighty force, according to the chemists and physicists. If we could control and direct this energy we possess, we could, perhaps, literally "remove mountains." Carrying Ostwald's theory to its logical conclusion, men and women of the future may kill each other by thought, knock each other down at a distance, and create their own power for driving an engine by liberating some of their psychic store of "energetics." That, no doubt, is a *reductio ad absurdum*, but anyhow, the theory suggests a mastery of mind over matter which now we only dimly apprehend.

Professor Notik, following Ostwald, maintains that there is an emanation of psycho-physical energy, and thinks that it can cause the exact reproduction of the idea that it was connected with in any brain into which it penetrates.

The French psychologist, Forel, thinks that the emission of electrons conveys the message.

SUPERNORMAL FACULTIES

This theory of vibrations, however, is severely criticised by Tischner, who is, in my judgment, the

most scientific investigator of all phenomena relating to telepathy and clairvoyance. He does not deny the presence of little-known or unknown rays which emanate from living beings, particularly from the human brain, but he believes, on evidence which seems conclusive to him, that these vibrations could not account for results obtained from hypnotised subjects. For instance, they are able to read words which have been written on slips of paper folded in half and put against their foreheads, no one being present who knew what words were written. If vibrations came from the paper to their brains, the folded characters would appear as a meaningless blur, but they "see" them as they were first written before being folded. Then again, how do vibrations account for clairvoyance of events in the future, or for knowledge not directly communicated from one mind to another? While denying all supernatural agency of spirit messages and such things, Rudolf Tischner believes that there is clear evidence of supernormal faculties of the human mind which are entirely independent of physical processes, and do not correspond to any changes in the ganglia of the brain.

"We are led by a series of exact experiments," he says, "to assume, at least in principle, the possibility of the action of the mind outside the body."

Eugene Osty in his *Supernormal Faculties in Man* takes the same view. He is inclined to think that there is some plane of intelligence or soul beyond the ordinary mechanism of thought with which the individual

mind may establish contact outside the ordinary limitations of time and space. The individual mind may get into touch with all other minds, with the Absolute Truth itself, or with the Universal Mind, or Soul—why not say God?—which is like a broad stream in which the little individual intelligence finds its source.

As yet the meaning of these things is unknown. Man himself, as Osty says, is "the profoundest enigma yet encountered"—the more insoluble as knowledge increases. What new facts we get do but extend the problem of life beyond any limits that we can foresee. But Science is finding certain clues, suggestions, and hints of something beyond our present range of psychological knowledge.

"In the unexplored region of human thought/' writes Osty, "we advance with hesitating steps. Feeling in the dark for contact with things, the searching hand meets a thread which seems to connect with the things already experienced, and it may possibly prove the guiding clue by which our advance may become quicker and more sure."

It is upon these thin threads—these strange, elusive clues—which seem to lead towards a No-Man's-Land between mind and spirit, that scientific psychology is proceeding warily in its investigations. Is there any practical use in such enquiries? Will they tend to raise the standard of intelligence in the world of To-morrow? Even if the people of the future are able to use telepathy as easily as we now use

telegraphy, will the thoughts they convey to each other be the right kind of thoughts, better than ours, making them happier, wiser, and nobler, giving them a stronger control over their own destiny, helping them to solve the perplexities and problems which are bound to come? Whatever the instrument of the thought may be, it is the thought itself that matters.

CONTROL OF SUBCONSCIOUS THOUGHT

I think we may put on one side all supernormal powers, which, in my opinion, will always be exceptional gifts of a few highly sensitive and sublimated minds, even if they are better known and developed. But I think also that our new knowledge of the subconscious mind and the power of the mind over the body working through suggestion may lead to practical and important results even in the present generation, and certainly in the next. This exploration of mental processes has already proved that a healthy body depends on a healthy mind, and *vice versa*, so that to keep well we must keep happy. In order to gain intellectual control of our thoughts and actions, to think finely and nobly, to act freely and courageously, to feel right and healthy impulses, to be men and women less like the beasts and more like the gods, we must educate that subconscious mind of ours by surrounding it with the right environment and influences. From birth upwards every impression we receive is stored up in that deep well of our subconscious mind. " Nothing we take

in through the senses/" says one psychologist, " ever leaves us quite the same as we were." Ugly sounds, ugly thoughts, ugly sights, create a muddy sediment in our subconscious reservoir which comes creeping up to consciousness like evil reptiles when we are off our guard. Our dreams are haunted by the evil ghosts of our early environment and experience. Our spirits are depressed by the squalour of our surroundings.

Beauty is not an unpractical thing, as so many modern business men are apt to think. In order to raise the standard of intelligence and moral well-being, we must get back to beauty in factories where men and women work and in places of business, as in the days of the mediaeval guilds when craftsmen lavished all their skill upon beautifying their Guild-halls, and when every object in daily use had some grace of art, some little touch of humorous or fanciful workmanship. The Athenian ideal of life was " beauty without extravagance, contemplation without unmanliness." If there is to be any progress in civilisation that ideal will be restored according to the laws of scientific psychology.

The subconscious mind of the future will be nourished by good art, good music, and good thought. It was the Christian as well as the pagan ideal, before the Industrial Age took beauty out of life for a time. St. Paul counselled his followers to fill their hearts " constantly with whatsoever things are true, whatsoever things are honest, what-

soever things are just, whatsoever things are pure, whatsoever things are lovely." That is to say, they were to be constantly storing their subconscious minds with ideas of truth and beauty by the right kind of suggestion.

By obtaining more knowledge of that subconscious self the people of the Day after To-morrow will be able to eliminate many of the " complexes " and " inhibitions/" to use the jargon of Freud, which now distress our minds and bodies. They will stop treating the superficial maladies of the mind—its irritabilities, its nervous crises, its violent acts and crimes which arise so often from false repressions—and dive deep below the surface to the original causes of disorder. There will be more mind doctors than surgeons, more soul doctors than judges and magistrates, more sanatoria than prisons. For psychoanalysis, despite all its absurdities and exaggerations, has revealed the fact that vice is often a disease and that crime is mostly due to bad environment and education and is, in many cases, susceptible of treatment by suggestion. The study of modern psychology leads to greater tolerance and sympathy and understanding of other people's minds, and those three gifts, if extended to the world, will make for **the** greater peace and happiness of mankind.

THE USE OF PSYCHOLOGY

This new knowledge of mental processes and mind mastery will be translated into practice by leaders of

men, as to some extent it is already being used. Employers of labour will realise more and more that the happiness of their workpeople makes for efficiency and output. If they sing at their work there will be more work done. Short hours and concentrated energy is more profitable than long hours and tired minds. There must be more relief from the monotony of machine-made and standardised work, either by a frequent change of occupation or by a revolt from the tyranny of machines crushing out individual craftsmanship and mental interests.

" It is an unnatural and barbarous state of things," says Wingfield-Stratford, the English psychologist, " in which the chief employment of man's life is not also his chief happiness. The mere fact that work is a burden and not a pleasure shows that there is something fundamentally wrong, and crying to be remedied in our social system. . . . We shall never attain to the perfection of which we are capable until unhappiness is regarded as abnormal—sometimes a blind stroke of forces still beyond our control, but most often a crime and a blunder to be driven with ignominy out of the universe."

By the laws of the new psychology as well as by the laws of economics and industrial efficiency it is certain that unless we set our mental house in order and obtain a more intellectual control of life there will be an explosion of human forces by wars and revolutions which may destroy us all, just as blind and brutal impulses which lie in our subconsciousness

break out into violent and uncontrolled action. " We cannot go on increasing our mechanical power," says Wingfield-Stratford in his brilliant book *The Reconstruction of Mind*, " unless our minds can keep pace. We cannot adopt methods that, by our own admission, annihilate thought and skill without paying the penalty. If we ask labour to accept soul-destroying and repulsive tasks, labour will rebel blindly and brutally in proportion to the efficiency of our standardisation."

There will be no " men like gods " in the Day after To-morrow. The Utopian dream of H. G. Wells, as most other Utopias, is an absurdity and in some ways a blasphemy, because it makes man's material comfort so complete that all purpose and need of struggle are taken from him and there is no spiritual meaning or explanation of life or death. There can be no standing still in civilisation or human minds, and it is quite certain that whatever else happens that Day after To-morrow, there will be no static happiness, but a thousand new problems and difficulties for the human mind to conquer.

How will the mind of the future meet these problems, and those enormous perils which are looming close upon us, if not by making use of those powers which are within our knowledge and reach—the power of the mind over the body by which it may develop a nobler personality, and the power of the mind to reach out to other minds and—by faith or prayer—to the mind of God or the Absolute Truth ?

Sympathy is the most probable and most scientific explanation of many of these phenomena of the mind. If there is such a thing as mental telepathy it is due to the sympathy between two minds, calling across space to each other. Sympathy is the power by which a man like Coue worked his cures of suggestion. Sympathy, a sensitive understanding of other people's motives, sufferings and desires, is the secret of all genius and exalted personality whether of saints or heroes or leaders of men. The future endeavour of the human mind, therefore, must be to extend the range of sympathy—the ^Christian religion would call it Love—to all minds, to all classes, to all nations, and to all creatures.

That, I think, is the conclusion to which modern psychology is leading as it follows the threads of evidence into the great enigma. It is not a new message to humanity. It was delivered in the Sermon on the Mount quite a long time ago. But science to-day is reaffirming it, by an absolute denial of that materialistic philosophy which has led to many present troubles, and by the revelation of psychic powers in the human mind by which we may all be miracle workers upon ourselves and the world about us, if we wish to be. . . . Then let us work miracles, in God's name ! For civilisation is not in a healthy state just now ; and there are many fools about.

V

THE CONFLICT OF THE SPIRIT

IT is more than an amusing adventure of the mind to peer forwards into the future as I have been trying to do by the aid of science and the latest thought of audacious brains. It brings us up sharply against the rather alarming truth that we ourselves are the architects of the future. We cannot evade that responsibility. The beauty of the world to come, or its ugliness, the happiness of its people, or their misery, the downfall of their civilisation, or their advance to a more splendid destiny, are being prepared now by what is happening in our own minds and by the weakness, or the strength, that we hand down to them.

What kind of a future are we planning for our children and our children's children ? The scientists in their occasional moods of optimism promise them better health, longer life, greater mastery over material forces, and a rapid extension of knowledge by developing the latent powers of the human mind.

THE VISION OF UTOPIA

Putting on rose-tinted spectacles and drawing aside the veil between the present and the future

we may see our descendants in a new apocalyptic vision based upon modern text-books of biology and psychology.

They are tall men and women, perfect in grace and well-being.

Disease has been banished from life, except by rare accidents.

There are no imbeciles, or degenerates, or ugly and debased types, caused by the breeding of the unfit and the foul environment of slum dwellings. All that is but the nightmare memory of the dark ages of history somewhere about the year 1928.

Old age has been postponed several decades, and when people begin to lose vitality they renew their youth a while by a little glandular stimulant.

They live in garden cities where flowers, lovelier than we know, bloom all the year round, and where there is no darkness, because of the flushed lights that flood their streets and their roof gardens.

They are dressed in shimmering garments which they wear lightly about their lovely limbs.

There is no outward distinction between men and women. They have the same liberties. They share the same work—made easy by a universal distribution of power from the liberation of atomic energy controlling delicate machines.

Drudgery, and household worries, and servile classes ministering to the needs of others, no longer exist in the social state, everyone taking turns in

the easy service which is necessary to supply the needs of life.

The rearing of animals for human food, the horrors of the slaughter-house, and the reek and grease of cooking in domestic kitchens, belong only to the history of old barbarities. Synthetized food and direct contact with the vital energy of life renew the daily strength of these future men and women.

In their leisure they enjoy a charming comradeship, unspoilt by any baseness or poison of passion because their minds are in perfect control of their emotions, and there are none of those repressed instincts, disharmonies between mind and body, or physical weaknesses and abnormalities which, in the bad old past, used to degrade the ideal of love and cause many miseries and crimes in human relationship.

Liberated from those low-grade instincts and limitations, those happy human souls in the Day after To-morrow spend their hours of recreation in the enjoyment of life's beauty and spiritual intercourse, with art, music, and playfulness.

They may think across the world to minds in tune with them.

They may see and hear all that is happening in distant places by wireless vibrations.

Their journeyings are by air, and the great spaces of the sky are glittering with their pleasure planes.

There are no poor, for all are rich in the equal distribution of life's great gifts.

There is peace in the world, for frontiers have been

abolished and all nations have become one brotherhood, having a universal language, though remembering the remnants of the old dialects they used to speak.

The world's workers, in co-operation and not in conflict, are the world's rulers, selecting their noblest minds to maintain their Ideal State.

There are no barriers of colour, or caste, or race, but a gradual merging into a new World Type, slightly darker than the Nordic blondes of nowadays. The East and the West have met and mingled and there are no "backward peoples" governed for their own good by alien rulers.

The rapidity of communication from one part of the world to another, quick as thought itself, and the universal advance in intelligence and knowledge by developing the latent powers of the human mind, so long unknown, have raised all children of life to an equality of wisdom which is very closely in touch with spiritual and eternal truth and the Great Cause of all.

There are no narrow little homes, confined within their own walls, imprisoned in social compartments of caste and snobbishness. There are common nurseries for the children who are born into this blessedness, and playing fields for youth of both sexes who receive the same education and grow up together as the brothers and sisters of one family.

There are no prisons, for crime is a stupidity, a

useless form of activity, long ago stamped **out** by psychologists and doctors of the mind.

There are no hospitals, for the diseases of darkness have disappeared under the cleansing light of science.

There are no armies or navies, or police forces. Why on earth should there be, when there is no one to fight, because all peoples have their share of joy, and it is a mere matter of common sense to keep the few simple laws which are needed for an absence of confusion.

There is work to do in factories more splendid than cathedrals, humming with the vibration of enormous energy, decorated with glorious art, filled with music, while the workers move about among their dynamos, which have replaced human servitude. There is only enough toil to make leisure likeable, and it is clean, and intelligent, and nobly paid by a share of life's prodigious bounty.

It is the Kingdom of heaven on earth.

THE STRUGGLE FOR GOOD

That is the dream of the Day after To-morrow. It is a dream which has stirred the imagination of great thinkers since the beginning of civilisation. It is the old Utopia of Sir Thomas More and the new Utopia of H. G. Wells. Many revolutions began by the endeavour of visionary men to get nearer to that ideal of life. Frightful cruelties, bloody wars, new tyrannies, have resulted from the desperate

attempt of men or mobs to realise that vision of universal happiness and equality. It is as old as philosophy, as new as the youngest scientist working in his laboratory to-day and thinking sometimes of how good life could be if only the minds of men and women would move a little faster towards their future destiny. To-day, in spite of a thousand disillusionings, all the teaching of history, deplorable set-backs to civilisation with its cycles of advance and decay, it is the dream that still haunts hopeful minds excited by the advance of science and the triumphs of the human mind over the material forces of life.

We cannot afford to deny that dream, or to stop our efforts towards its fulfilment, or its part fulfilment. It is the shining mirage towards which we must always struggle—that Kingdom of Heaven on earth—or else abandon all hope and endeavour for human betterment. And yet—alas—I see no sign that it is near at hand. I see life still as an endless conflict, and man himself as a battleground in which there is ceaseless warfare between two opposing forces—the spirit of good and evil. Scientists of to-day, the wisest of them, are filled with grave anxieties about the near future, and prophesy dark things. They are afraid of the powers they are putting into the hands of men. They have no great faith in man's intelligence or moral code. When they stare starkly ahead many of them see a fiercer struggle for existence than has yet happened in the world. I

stand in the middle of the road, neither believing that the worst will happen nor the best, but that the struggle will go on from age to age, between those two embattled forces of good and evil, now one side winning and now the other, but the spirit of good never wholly overthrown, and always rising again with courage and faith. Perhaps the truest and most hopeful thing on that subject has been written by General Smuts of South Africa, with whom I had a talk once during time of war upon the future of the world.

" It has been my lot," he says, " to have passed many years of my life amidst the conflicts of men, in their wars and their council chambers. Everywhere I have seen that it was at bottom a struggle for the good, a wild striving towards human betterment ; that through blinding mists of passions and illusion^ men are yet sincerely, earnestly, groping towards the light, towards the ideal of a better, more secure, life for themselves and their fellows. The groaning and travailing of the universe is never aimless or resultless. Its profound labours mean new creation, the slow but steady realisation of the good. The ideas of truth, beauty, and goodness are firmly grounded in the nature of things and will not eventually be lost/*

That, I believe, is true. But I see in that Day after To-morrow not the fulfilment of the dream of the Ideal State, but a renewal of that conflict between good and evil desperately at grips. I see those men

and women of the future not enjoying a kingdom of heaven on earth, not having a beautiful leisure in garden cities for intellectual comradeship in a state of comfortable peace, but struggling in small groups—the noblest and wisest of them—to save civilisation from a crashing downfall, to maintain the standards of truth and beauty, and to thrust back the forces of evil and destruction by spiritual courage and high endeavour.

The world at the present time is not on its way to peace, though there are many peacemakers. It is well on its way to a series of wars which may culminate in some new world-war for our children's children. It is becoming more difficult, rather than less, to isolate the areas of strife, because nations are being brought nearer together by more rapid means of transport and communication.

PERIL ON THE WING

On May 21 of this year the whole imagination of the world was thrilled by a boy named Lindbergh who flew across the Atlantic and landed near Paris. He had started in a casual way, light-heartedly, with those sandwiches, now historic, as his only food for that journey across a waste of waters. Europe received him as a messenger of the gods, this simple young American, as modest as he was tall, a fine specimen of the world's best youth. He brought romance on his wings to a world in which most things

have been done and all adventures told—until the next. He was the spirit of heroic youth and, surely, the herald of a new age—this Air Age which is to change every aspect of life and break all its old traditions.

So it would be if men rose as high in spiritual ideals as they can lift their bodies in the sky. But, alas, our minds still remain earthbound, and in that flight by Lindbergh and his followers—Chamberlain and Levine—Commander Byrd—how many more since these words were written?—there is a threat as well as a hope. Just as years ago England ceased to be an island when Bleriot flew across the English Channel, showing the way to German bombing planes who, not many years afterwards, dropped death into London streets and many English cities, so now America is no longer isolated from enemies without. What Lindbergh has done, others will do, "not in single spies, but in battalions." The sky-scrappers of New York are not so safe as they were, and they would make a horrid mess if they toppled and fell into Wall Street or Fifth Avenue. Nor is Europe or China or any part of the world beyond reach of American airmen, in thousands or hundreds of thousands, if one day the people of the United States take wings unto themselves and get involved in some war which seems to them good and just and necessary, as all wars do to those who make them.

This victory of flight is creating new fears in the

mind of men rather than new hopes. It is creating new suspicions and rivalries. Germany is making a network over Europe with her aerial services, and France is uneasy. Russia is buying aeroplanes and sending some of them to China. Great Britain is developing aircraft at great cost to her over-burdened tax-payers and relying on that weapon, very largely, to hold the restive peoples in her Eastern Empire. Italy has some wonderful airmen and many factories for building aircraft.

FEARS OF THE FUTURE

There is something sinister in all this. It betrays some hidden fear of the future. In spite of Locarno Pacts, the League of Nations, and other agencies of peace, there is uneasiness in Europe. Few people believe now that the map of Europe as it was made by the Peace of Versailles and other treaties will remain unaltered and unalterable. Hungary, amputated, with many of her people under alien rule, is hardly patient for something to "slip." Italy, under Mussolini, states in a loud voice so that all may hear that she must "expand or burst." Mussolini calls for an army of five million men. What for? Against whom? Germany, honestly working for peace under Stresemann's present policy, envisages the time when she must repudiate the Dawes Agreement and demand the revision of her treaties and say to France, "What about it?" and to England, "On which side will you be next time?"

And to the world, " We are strong again, after those years of weakness and humiliation." Russia dreams bad dreams. Beaten back along the line of revolution by the world's recovery after war, her rulers still hope that evil will prevail and that Europe may be flung again into furnace fires. Wherever there is trouble and revolt in the world they are there with money and propaganda. Half Asiatics, and wholly hostile to Western civilisation, they turn Eastwards for their greatest hopes of raising hell. They are not afraid of the Yellow Peril. They are ready to open the gates to the tides of colour. They are not worried by the eternal conflict between the forces of good and evil. Definitely a little group of cold and ruthless men who have made Russian people blind and dumb—are on the side of evil. It is their ally. They are glad to see misery rather than happiness, poverty rather than prosperity, war rather than peace, so that other nations will be dragged down to their own level and follow their lead to hell on earth out of which they hope—I think sincerely, as fanatics of a theory—that the Dream will be fulfilled. What, then, is the chance of peace when that Day after To-morrow comes with its untold tale ?

The tragedy of it is that the very peacemakers are now talking of " preparedness" again, and are afraid of moving one step in the direction of disarmament lest they should find themselves unarmed among their enemies. Who can say they are wrong, looking at the minds and morals of the world ? I

for one do not think the British Fleet can reduce its strength with any safety below its present standard while there are shadows creeping across the Pacific and the coloured races of the world are seething with revolt, and weakness or goodwill may let loose anarchy in which the white races will be involved, because of their own rivalries and ambitions. If England were to withdraw from India and Egypt or leave Australia unguarded, or lose her way through the Mediterranean, it would not be twenty-four hours before there was a flame of fire round the world, with other peoples fighting for her ancient place and power.

In that Naval Conference at Geneva the delegates of the United States, whose people are supposed to be instinctively on the side of peace and against the piling up of armaments, did not show the slightest disposition to be the first nation on earth to surrender its present standard of sea-power or to reduce it below the level of British strength, just as the British delegates refused to be put at disadvantage. For many days they faced each other with suspicion and mental reservations. And yet our two peoples are pledged to friendship by ties of blood, language and ideals beyond any other peoples of the world. How, then, can we expect other nations to disarm or to show any mutual trustfulness when they have old wounds still unhealed, and centuries of hatred between them? We cannot expect it yet. It seems to be beyond the range of

human nature as we now know it, and as it remains unchanged and—apparently—unchanging.

A CHANGE IN SPIRIT

Apparently unchanging, although below the surface there are faint, hardly perceptible changes working in the minds of men and women. All over the world to-day there are groups devoting their whole mind to the problem of peace, and educating other minds to that ideal. They are not without effect. The Junior Red Cross, The International Students' Union, the Bureau of International Studies at Geneva, the Youth Movement in Germany, and a thousand other agencies of peaceful propaganda are sowing seeds which are germinating in millions of young minds. Against them are the militarists, the nationalists, the believers in big battalions and great guns. It would be impossible now to rally up the youth of Europe for another great war with the same united discipline as in 1914. That, I think, is certain. There would be internal revolts, and social revolutions, and those, I think, will happen if Mussolini launches his legions or if Germany of the future decides to challenge Europe again, or if France attacks Germany to enforce financial tribute. We are on our way to those revolutions, for the new autocracies of Europe hold their power insecurely over their own people, and tyranny, however benevolent, or brutal, never lasts.

There is one great power working in the minds of men which is perhaps the only force capable of preventing another world-war in the future. It is the power of Fear. It is the fear, not cowardly, but wise, that another Armageddon involving the European nations will inevitably lead to the annihilation of their civilisation and open wide the gates to the rising tide of colour. There is no doubt about the results of such a war. It is not the imaginative exaggeration of journalistic minds. It is the sober warning of all scientists who know the enormous development of the means and methods of slaughter since the end of the last great war. We were just getting into our stride when it finished, as far as the mechanical powers of destruction were produced, and in the modernising of our methods of attack,

WAR OF THE FUTURE

In the war of the future, if it happens between the industrial powers, the great cities with their teeming life will be attacked instantly by swarms of aircraft dropping bombs enormously more destructive than any used in the last conflict. There will be no trenches for the protection of human bodies, for they would be soaked with poison gas and captured by battalions of tanks advancing behind smoke-screens. It is highly probable now that these armies will be provided with instruments which will create a zone of death by the projection of rays which will blind and burn all living creatures.

The ranks of the new armies will be filled by women as well as men. There will be squadrons of women pilots, and armoured cars will be driven into the fighting line by those whom we now call " flappers." For it is inconceivable that the women of to-morrow, sharing all the liberties of men, all their work, all their sports, in absolute equality and comradeship, will shelter themselves behind the false plea of being the weaker sex, and allow young manhood to die for them in masses while they hide in underground shelters or under the ruins of bombarded cities. Beyond all doubt there will be armies of young women, officered by their own sex and ready for any risk of death or for any desperate adventure. They will be as brave as men, as strong as men, not less skilful in their use of arms, and ruthless to their enemies.

Without looking as far ahead as the Day after To-morrow one sees this claim of women to share the dangers of men and to repudiate their old-time frailty. They are the most reckless motorists. In Europe there are many women aviators. Rosita Forbes and Lady Richmond Brown have gone out into the desert and the wild places of the earth. There is already no difference in courage between men and women. To-morrow there will be no difference in death when war is waged. Even in the last war English and French women had their share of air raids, and the old jeer of frail womanhood not daring to say " Bo " to a goose was made ridiculous

when girls shrugged their shoulders and said "A bas les Boches! " when German bombers were overhead.

It is not a pleasant prospect, that idea of warfare with the beauty of women lying mangled among dead youth. It is so unpleasant that the mind of the world may revolt from it and adopt some scheme of outlawing war because it has become a threat to all that we think of as civilisation. I am not confident of that, knowing how slow is the human mind to move towards practical idealism, and how full of passion, stupidity and ignorance is this modern world of ours. But the scientists have warned us. We can't say we are blundering towards calamity without danger-signals ahead of us. They are there, with their red light at every cross-road which leads towards the future. Unless we get busy very quickly on new lines of spiritual advance, that dream of an Ideal State to which we are all groping in our various ways will not be fulfilled in the Day after To-morrow, but will be smashed by frightful realities thrusting future generations back to the jungle.

THE CONFLICT BETWEEN GOOD AND EVIL

Everything comes back—and goes forward—to that conflict of the spirit between good and evil. We cannot imagine even the vaguest picture of the future unless we settle in our own minds first whether good or evil is going to prevail, and under what

philosophy of life mankind is going to work out its next chapters of history. Will men be like gods, as H. G. Wells portrayed them ? Or will they be like devils ? Or will they remain, as humanity now is in the mass, a strange mixture of spirituality and animalism, of kindness and cruelty, of high ideals and low morality ?

I think we may rule out that vision of Men like Gods. The old serpent comes crawling into any little paradise we make, and that Ideal State I have described—not out of my own imagination, but as many dreamers have written about it—would surely break up into decay and death. For if there were no struggle for existence, no driving impetus behind the toil of men, they would become soft and weak. If they had all their needs satisfied, and all their desires fulfilled, they would get bored with life, sick of its beauty, surfeited with its pleasures. If there were no trouble, there would be no happiness. If there were no sweat of body or mind, there would be no joy in leisure and rest. If there were no pain, no agony of soul, no yearning and striving, no inequality, no competition, there would be no spiritual valour, no courage, no virtue, no high endeavour.

But we needn't worry about that dreadful possibility of an overdose of happiness! There will always be a conflict in the soul of man. So far from becoming like gods, the next generations of men and women are going to have a hard time in preventing

themselves from becoming like devils, and they will have to watch it very closely.

Science, which is providing them with many new powers so that they have new and enormous possibilities of doing evil to themselves and others, has not, so far, provided them with any substitute for the idea of God which in previous ages did keep some of us from indulging in the grosser vices and made us give allegiance to a moral and spiritual code, which was beyond our everyday reach, perhaps, but a standard in our souls. Under Christianity, Moham-medanism, Buddhism, or other forms of faith, it was not considered good to be disobedient to one's parents, to kill one's offspring, to put one's own interests and instincts before those of the community, and to regard this little transient life as the only chance of happiness,

Man from the beginning of time reconciled himself to many temporal disappointments and sufferings by faith in a future life, when he would get reward for good service, self-sacrifice, and obedience to the code of virtue in his religion, whatever that might be. But science, as it has been understood by the people, or, as I should rather say, misunderstood, has tended to destroy belief in a future life where personality survives, and has caused a weakening, if not a complete abandonment, of any faith in any God.

There is no longer that reconciliation between suffering here and happiness hereafter. Not believing

in that hereafter, men and women of all classes and races are desperate for immediate satisfaction of their hopes and needs. It is a reasonable view of life, if there is no second chance, or immortality. But it is very dangerous. For it is practically impossible in the world as we know it for all of us to get exactly what we want, or even a little of what we want. Mussolini, for instance, wants to dominate the Mediterranean, but France and England don't agree that he should. Mr. Jones, of London or Chicago, wants the wife of Mr. Smith, of Manchester or Boston, because he likes the colour of her eyes and thinks that life is useless to him without that loveliness. But Mr. Smith will see him damned first, and even Mrs. Smith has something to say about it.

A peasant working in the fields of France wants higher prices for his hay and crops so that he may get more prosperous in his village and enjoy the pleasures and power of life in his small community. But the clerks of Paris, stinting and scraping on small incomes, curse the peasants for high prices, and the landlords for high rents, and the Government for high taxes. Their wives refuse to bear them children because they want to go to more theatres, to wear prettier frocks, to climb into higher society. No one is satisfied however high in his wages, because there is some one on top with more luxuries.

THE SPIRIT OF REVOLT

The struggle is good—up to a point. If all the world were contented there would be no progress. But it is bad when it reaches a feverish revolt against the limitations of life itself, and when individuals refuse obedience to any authority of parents, or rulers, or employers, or State systems, or religious codes, because they deny them things which they covet and demand. It is bad when nations, stirred with these desires of wealth and self-interest, will fight to the death for other people's territories, or for the raw material of wealth, or for world markets.

The unrest in the world to-day, as in the homes of the world, the revolt of flaming youth against the old traditions, the Bolshevism in centres of industrialism, the general line of attack upon the old moralities, the increase of brutal crime in many countries, and the despair in many souls which have no cause for despair in their actual conditions of living, are due largely to the abandonment of faith in a future life and to the downfall of religion. For everyone is in a hurry to get what he can, here and now. "Let us eat, drink, and be merry, for to-morrow we die." "Let us put away the women we are tired of, or the men who make us tired, and find new love elsewhere—for to-morrow we die!" . . . "Why be loyal, if it means sacrifice? Why be kind, if it means self-denial? Why be virtuous, if it means a limitation of desire? Why not wallow in vice, if it amuses us, or

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commit any crime, if it produces wealth, or engage in any kind of war with any weapons ? . . . Because there is no God, and to-morrow we die, and there's not much time ahead for the fulfilment of our worldly ambitions and our instincts of egotism."

Science, as it was expressed yesterday and is understood now by the multitude who have not yet caught up with the science of to-day, has led to that revolt and despair by a materialistic teaching which denies any spiritual sanction or divine law for self-repression, sacrifice, and duty. If the philosophy of humanity is going to develop on those lines in the Day after To-morrow, then men and women will not be " like gods " in any way, but they will come out of their jungles to tear each other to pieces over the ruins of a civilisation that is dead. For without some kind of religion, some otherworldliness, some spiritual hope and faith, civilisation cannot exist. All history shows that civilisation dies when the gods are dethroned. Somehow we must get back to God, and that is very difficult to modern minds who have lost simplicity. We cannot pretend to be simple again.

THE COMING BACK OF FAITH

I believe—I dare to believe—that before the Day after To-morrow faith will be re-born. New prophets will arise, new saints will appear. There will be a call back to a more spiritual conception of life. Men and women will be reconciled again to the hard-

ships and difficulties of this adventure on earth, because they will be certain that it is not the end of the journey and that there is a chance of happiness ahead. That will be when new calamities threaten the world, and when either that vision of hope must appear or we shall go down in darkness and despair.

Science, after its many victories, may win the best of all by revealing the life of the spirit and by drawing aside the veil between time and eternity. Even now the most brilliant scientific thinkers are repudiating that old materialism which upset the balance of the human mind, and trying to reconcile scientific laws and facts with a divine purpose and idea. It shows a complete ignorance of modern science among biologists and psychologists to maintain the old post-Darwin theories of a mechanical evolution operating by the blind forces of heredity and the survival of the fittest. The younger men, like Haldane, Soddy, and others, perceive an intelligent purpose, a spiritual force at work in every phase of evolutionary life. They see, indeed, only one reality beyond all appearances and that is spiritual energy, if I rightly interpret them, as I think I do.

In the Day after To-morrow, therefore, I see a revival of faith in spiritual values and a return to religion at the call of new saints and prophets in a world of conflict and confusion. Small groups of men and women possessed of greater powers than any of us now can claim—miracle-workers in their mastery of mind over matter—will be the defenders

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of the faith against the forces of evil which threaten to destroy mankind. Like the early Christians, they may be persecuted and go to dreadful martyrdom amidst the fierce cruelty of men like beasts, and women like fiends, raising their dying voices above the fumes of poison-gas, above the ruins of bombarded cities, across a world filled with slaughter from frightful engines of destruction and up to a sky darkened with the wings of warring aircraft. They may be the humble and despised slaves in new Empires of luxury and vice rising and then rotting on the old graveyards of former civilisations, among which ours may be numbered. They may be the heroes and heroines of a last stand against invasions of yellow men swarming against a decadent and tottering Christendom, outnumbered, outgunned, but holding out behind its last lines of defence.

THE ETERNAL STRUGGLE

Certain it is that whatever the future may be, there also will be human and spiritual conflict, for that is life and that is man. There will be no lotus-eating world of leisure dallying with soft delights. The environment of men changes. Their conditions change. Their tools are different. But man himself, with his nervous system, his intelligence, his appetites, his spirit, remains essentially the same.

As a friend of mine says, Old Adam is the same as Mr. Adam, Sir John Adam, Lord Adam of Edenbridge,

apart from some slight changes of fashion and social conventions. Some of us no longer walk very much now on our flat feet. There is a "tin Lizzie" or a Rolls-Royce in the garage interfering with the action of the liver and creating large fortunes to proprietors of patent medicines. We fly to a journey's end, instead of taking a train or a boat—but the brain that arrives is much the same kind of brain that travelled shorter distances, more slowly, in simpler times.

All this complexity of life, this labour-saving machinery, these short cuts through time and space, do not alter very much the mentality of mankind. The loss of simplicity does not, perhaps, lead to any mental or moral gain. Before the time of cheap books, the wonderful and luxurious furnishing of schools and universities, the material opportunities for the acquirement of knowledge, there was more wisdom in the world, though not such a general smattering of elementary education in things that don't matter. People read more newspapers and more novels, but the results are not blinding in their magnificence. They go to the movies, whereas their forefathers saw no pictures of life beyond their village, but they lose their own depths of character by watching the falsities of unreality.

It is possible that this conflict which the future will have to face may destroy some of those new toys and instruments of modern civilisation, but out of calamity there may come again the blessing of that

simplicity in which the soul of man, and that **queer body** of his, best thrive. As G. K. Chesterton says, "we may be going to the dogs, but they may be rather jolly dogs," liberating our descendants from some of those luxuries and comforts which clog our mental and moral health.

Whatever happens there is only one thing that matters, broad and large, and that is the courage of man himself to face whatever adventures life demands of him, and the faith of man in his highest conception of God. If humanity loses that courage and that faith, all is lost, and the dream is shattered.

The future is the past entered through another gate. The Day after To-morrow is yesterday with a change of scene. There is no direct unswerving progress of the human march through history, but a series of cycles, rising and falling as the forces of good and evil ebb and sway in their eternal struggle.

The only thing that never dies is the Spirit which somehow causes us to carry on through this strange adventure of life. It is the only reality in a world of illusion, hopes and dreams. The Day after To-morrow will be shaped by the spirit, the faith, and the courage which stir in humanity to-day. Let us then create men and women of cheerful yesterdays and confident to-morrows.

VI

THE NATIONS OF THE WORLD

IN the foregoing pages I have dealt, a little fantastically now and then, with the forecast of the future as it appears to scientific minds looking ahead of their present knowledge and assuming a rapid advance upon their present lines of research. It is not I who have played the prophet, but these physicists, biologists, and psychologists, whose work I have tried to understand, and sometimes, no doubt, have failed to understand, because their subjects and method of expression are very difficult to an unscientific mind like mine. Their prophecies on the whole are not comforting. Many of them are profoundly disturbing, and, as I have shown, the belief of these scientists in the almost unlimited possibilities of discovery and achievement in all branches of human knowledge is in many cases darkened by a dreadful pessimism regarding the use which humanity will make of these gifts of science. They utter portentous warnings. . . .

WHAT OF TO-MORROW ?

Those anxieties relate to that vague future to which I have given the title of *The Day after*

To-morrow, but there are millions of people in the world, especially middle-aged men like myself, perhaps, who are more keenly interested in knowing what is happening to-day and what is likely to happen in the near future, with ten or twenty years as their limit of curiosity. What can we read, they ask, out of the riddle of all these hopes and fears which now possess the mind of the world? What is going to come out of China—and Russia? What is going on below the surface of this uncertain peace in Europe? What of Mussolini and the Fascist State? Is the League of Nations any real guarantee of security among its member States, or is it merely a puppet show—at the best a debating society—which will be pushed on one side with ruthless contempt when the passions of peoples, inflamed by autocrats or by a smouldering sense of injustice, by racial ambition, economic needs, or some trivial accident or outrage, burst into another conflagration which will set the world aflame? In what direction are we all heading, here and now? What is going to happen, not in some imaginary Day after To-morrow, but actually—to-morrow?

It is undeniable that in the ten years after the Armistice, fear rather than hope is the predominant mood of the European mind. In spite of the League of Nations and many treaties of arbitration and pacts of "mutual assistance" between many States, there is no sense of security whatever in the mind of the average man and woman as far as I

know anything about it. The Locarno Pact, by which Great Britain guaranteed all her blood and treasure (without the consent of the youth that will die) to defend France, if ever again she should be attacked by Germany, or Germany if she were attacked by France, was supposed to allay all those fears which still made Europe an armed camp. France, especially, was to be relieved from her complex of fear. " *The Spirit of Locar-r-r-no* " became a kind of magic incantation, broadcast through millions of loud speakers to happy homes. Everybody was going to love one another at last. The Spirit of Locarno had descended like a gentle dove over Germany and France. Monsieur Briand and Herr Stresemann had shed tears over each other. Sir Austen Chamberlain had been made a Knight of the Garter. It was all very beautiful. . . . But somehow the spell did not last for more than a month or two.

PREPARING FOR WAR

The reply of France to this guarantee of security took a most peculiar form. In March of 1927 the French Chamber by five hundred to thirty-one votes adopted a Government Bill for the organisation of the country in time of war. Its provisions formed a new chapter in the history of national defence, and ordained for the first time in modern civilisation that in the new type of warfare there can be no non-combatants. No longer will professional armies do the dirty work, No longer even will a conscript

army be restricted to able-bodied men. The whole nation will be mobilised and every citizen will be allotted a definite duty in a warfare which will threaten cities as well as fortresses, women and children as well as fighting men, and destroy entire populations unless they are equipped with means of defence by having organised their own powers of destruction. Details of new defensive work for the protection of the French frontier (guaranteed from aggression by Great Britain) and other details relating to an increase of the professional army from 70,000 to 105,000, are unimportant compared with the terrible significance of that general mobilisation of the nation, but they do not suggest any confidence in the Pact of Locarno or other instruments of peace. France, bled white in the last war, is preparing for the next, not because her people are fond of war, but because they fear it.

We are, to tell the truth, all preparing for the next war, and for the same reason. This country of ours desires peace as much as any other nation in the world and more than some. We can no longer afford the luxury even of those little frontier wars which used to provide exciting adventures for war correspondents and special artists in the nineteenth century. With a budget of over £800,000,000 a year, and declining trade, we can afford still less any war on a big scale, which would lead to financial ruin. Spiritually the nation is still less ready for war. We could hardly rouse ourselves

up to another struggle after all the agony of the last, unless in desperate self-defence of our homes and women. And yet we are preparing for that thing we loathe, at a very great cost. Great Britain and Ireland spent 77 million pounds on armaments between 1913 and 1914, and 85 millions between 1926 and 1927. That increase was due to higher wages and less value for money, but even taking that into consideration the figure prevents us from reproaching other nations for high expenditure on their armies, navies, and aircraft.

We have "mechanised" our army for the war of the future, and the War Office is no longer satisfied with its old training grounds. It has put in a claim for the beauty of the Surrey commons, the last sanctuaries of nature within easy reach of London beyond its southward sprawl, and tanks and armoured cars will frighten away the larks and nightingales, and army huts and trenches and bombing schools and anti-aircraft batteries, and guns and transport, and gas sections will make a noisy desert where now silver birches and young larches, and heather-covered hills, and lonely heaths where the wind blows, brother, are quiet under the sky. All this intensive training—though not on Surrey commons—may be necessary in the present state of the world's mentality, but it does not suggest any sense of confidence in a lasting peace.

The Naval Conference in 1927 between the United States, Japan, and Great Britain ended without

agreement, because America insisted upon large cruisers and 8-inch guns, while Great Britain wished to reduce the size of cruisers and have more of them within the allotted tonnage for the protection of her trade routes upon which her life depends. The argument was a technical one, and upon technical lines I for one could not see the weakness of the British case, which seemed to me reasonable and fair. But there was a very unpleasant and unhappy idea never mentioned by the experts, never alluded to even in a whisper by delegates or diplomats, that "the time may come," as they used to say in the old melodramas, when the British and American Navies might have a difference of opinion over an abstract idea called the Freedom of the Seas. Abstract, that is to say, until a British fleet might be blockading an enemy's ports and sweeping the seas for ships conveying contraband of war or food supplies. In such a case the United States might, and probably would, say "What the hell"—and other words of protest and annoyance leading to repartee. In that case——But all that is dangerous stuff. It is so dangerous that arithmetical arguments between American and British naval experts ought to follow, rather than precede, conferences and agreements, with prayers to God and other spiritual preparation, between the two English-speaking peoples, settling once and for all the Law of the Seas and entering into a solemn and sacred covenant to abide by it between themselves in peace

and goodwill for ever and ever, Amen, Questions of tonnage and gun power could be settled very easily after that with much saving of money on both sides. But no, the scream for a Big Navy is a wonderfully good slogan for political purposes. The world can go to the devil, the sea may swallow its dead, the youth of the next generation may be drowned, maimed, or blinded, but a few loud-mouth gentlemen with party prospects must have their little bit of fun.

THE MENTAL STATE OF EUROPE

If we analyse the political conditions in Europe to-day and try to understand the mental state of governments and peoples which have produced those conditions we must admit, I think, that "the higher intelligence," as represented by statesmen and rulers, has failed lamentably so far to learn anything from the horrible lessons of the World-War which ended in 1918. At least it has failed to adopt any new system of political philosophy which would prevent the recurrence of that calamity. The League of Nations, supported by practical idealists in all countries and appealing to men and women of goodwill as the one great hope of the future, has indeed formulated methods of international arbitration and conciliation which would go far to abolish warfare and give reasonable security to the world if the nations who have given their solemn allegiance to its jurisdiction believed in each other's

loyalty and sincerity. But there is no such belief. Secretly every nation believes that when some new crisis arises unleashing old passions of racial hatred or rivalry, the League itself and all the promises that have been made in its name will be broken by an irresistible clash of national interests and ambitions."

Already many Governments most solemnly pledged to the League are acting as though it did not exist. They have made, and are still making, alliances and groups which are in direct opposition to the whole spirit and meaning of the League, although they profess a most passionate devotion to its principles. Ever since the Treaties of Peace were signed France has been endeavouring to gain security against Germany—disarmed and defenceless for several years after her defeat, but with enormous powers of recuperation—by military alliances with the new nations which surround the German people—Poland, Czecho-Slovakia, and Jugo-Slavia. Towards the end of last year a French treaty with Jugo-Slavia, tightening up previous understandings of mutual assistance, was immediately followed by an Italian treaty with Albania openly announcing to the world that Italy would defend Albania against any violation of her frontiers in order to secure Italian influence on the other side of the Adriatic. In the words of one student of international affairs—Mr. Crawford Price—"The pact is a full-blooded, old-fashioned military alliance, valid for a minimum

of twenty years, flashed upon the world with a definite object, and it means that Albania becomes, to all intents and purposes, a dependency of Italy." Mussolini throws down the gauntlet in a den of lions, who are the Balkan peoples, still untamed by the scourge of war. Where is the League in all this ? How does it prove any faith in the spirit and power of the League to substitute arbitration and conciliation for force and that old bogey the Balance of Power ?

Europe is haunted by a thousand fears. Its statesmen know that they are building upon volcanic ground. There is not an intelligent observer of political conditions to-day who does not admit, privately, that the present map of Europe cannot remain unchanged as it was drawn after the war, and that if it is not redrawn by general consent its boundaries between one nation and another will be upheaved by violent eruptions. On the other hand, the first attempt at revision may precipitate the explosion.

The map of Roumania alone is like a danger signal in the centre of Europe. Its eastern frontier has embraced the old Russian territory of Bessarabia. On the north-west it has grasped the whole province of Transylvania which Hungary once owned and intends to recover, though she might have to fight for it with her finger-nails. "The old women will march behind us with their scissors," I was told by a Hungarian farmer out there. And

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on the north of Roumania is Czecho-Slovakia, also in possession of land that was once Hungary and of people who are still Hungarian, and divided internally by seething passions of race and politics. " If Hungary has to wait a thousand years," I was told in Budapest, " she will never forget the brutal injustice by which her woods and forests, her waterways and railway lines, her industries and mineral wealth, her old historic lands, and the people of her blood, were delivered to enemies of inferior culture and insatiable greed. But we shall not wait for a thousand years. It will not be very long before we move when things begin to slip. . . ."

THE POLISH FRONTIERS

There are other danger signals in Europe. One of them is the Polish corridor cut through the heart of East Prussia to the old city of Danzig, still very German, and becoming more German, I am told. The farce of it, the peril of it, was forced upon my mind when I travelled from Berlin to Riga on the way to Russia. There were customs examinations and passport examinations each side of this narrow corridor, which creates an intolerable situation for Germany, like an open wound in her political system.

Something nearly " slipped " below the foundations of European peace upon which the Treaty of Versailles was built when last November the Soviet Government in Moscow presented a note to Poland

regarding her relations with her next-door neighbour Lithuania—a note of warning and remonstrance. For seven years since Poland seized the city of Vilna within Lithuanian territory, the two countries broke off friendly relations. Diplomatic intercourse and commercial exchange almost ceased. Lithuania was exasperated not only by losing her old city, but by the denial of her language and history in schools across the Polish frontier. The Poles replied with the same charges regarding their nationals on the other side. That local quarrel would not seem very serious to the outside world but for the intervention of the Soviet Republic and the constant possibility of some hostile action which would bring Poland into conflict with Russia. In such a case the whole of Europe would be in an uproar, for France stands by Poland, and Germany might be gravely tempted to demand a complete revision of the Versailles Treaty in return for her neutrality—if indeed her people could be persuaded to remain passive. The old women of Hungary would be sharpening their scissors and the Balkans would be aflame. By the Lake of Geneva the Council and Assembly of the League of Nations might find themselves crying peace when there was no peace, and the hopes of the idealists would be drowned in the water beyond the Hotel Beaurivage where the delegates take their afternoon tea and learn to talk "international."

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THE MIND OF MUSSOLINI

There is another cause of anxiety not so far East as Poland. What is working in the mind of Mussolini and how long can he wait before he feeds his Black-shirts on the spoils of victory, which are dead bodies and flaming homesteads, from some enemy unknown? It is my opinion, based on reports of private conversation with the Duce, that he is much more cautious and far-seeing than some of his words suggest, and that he will not lead Italy into any military adventure until the opportunity seems perfectly good and his strength overwhelming in the direction where he may intend to strike. Like Macchiavelli, his master, he will gain his end by diplomacy and threats of force rather than risk defeat by the use of force on some great hazard. Nevertheless his words of fire may overheat the blood of his followers until it becomes feverish. One must make due allowance for the Italian temperament, their love of oratory, their belief that words by themselves are as good as acts and much more beautiful; but even so Mussolini's constant allusions to "living bayonets/" and "the will to victory," his demand that Italy shall have five million men in arms ready for attack, his dictum that Italy must "expand or burst," and his calls to the flaming spirit of Italian youth, are painfully reminiscent of a certain war-lord "in shining armour," whose eloquence

in the same style before the last war is recorded in history.

Mr. Mussolini is not very fond of the League of Nations. He does not believe in the gentle spirit of conciliation. He believes openly and frankly that might is right—at least in the case of Italy. His genius, which is great, is not on the side of the peacemakers—unless they give to Italy all those good things which belong to her (as her people think) by ancient right, by promises made when she entered the world-war and broken when peace was made, and by the vital spirit which is in her now—that uprush of national consciousness, that divine exaltation, that awareness of tremendous destiny, which is stirring in the heart of her people. That is to say (translated into prose) that Italy wants the French Riviera, a strong control over the eastern side of the Adriatic now in the possession of Jugo-Slavia, a strip of Asia Minor, certain Greek islands in the Mediterranean, and a more important sphere of influence in North Africa. With the Mediterranean as an Italian lake—it is Mussolini's phrase—there is no doubt that the Duce would be a very strong supporter of the League of Nations and the preservation of peace! Unfortunately other Powers concerned would rather see the Mediterranean turn red with blood than yield an inch of their soil or its coastline to rebuild the Roman Empire or satisfy a Caesar who has not yet won his wars.

That psychology does not seem very helpful to people here and there who are trying to devise some plan of security between nations which will avoid or postpone the overthrow of civilisation. Because, of course, it will come to that if the white peoples decide to have another war on a big scale with a really first-class exhibition of aeroplanes, poison-gas, and newly-invented engines and apparatus, including Mr. John Baird's "noctovision" (which he showed to me the other day), enabling us to see our enemy in the dark—and for them to see us—so that the night will be as splendid as the day for slaughter.

RUSSIA AND THE FAR EAST

Europe is not going to be isolated if such a war happens. The Far East is not so far as it used to be. It is not so unchanging as we used to think. Russia, that double-headed mystery, turns one face to the West and one face to the East, and there are more missionaries who go East from Moscow now than those who come West. When I was in that city of golden domes, billeted in a house opposite the tower of Ivan Velike beyond the Kremlin walls, there were six Chinese mandarins in adjoining rooms. "Dirty work/" said a friend of mine who watched them down the corridor. Well, it showed that Soviet Russia was busy in China, entering into diplomatic relations with Oriental peoples, spreading her propaganda of revolution, as far as she could reach, which

is very far. In Persia the Russian traders and emissaries have almost ousted British influence which was predominant at one time. In Afghanistan Russian agents are busy stirring up trouble against India. Towards the end of last year it became known in the city of London that Russia was buying immense quantities of high-grade nitrates suitable for high-explosives, and increasing her output of poison-gas for purposes unknown, while the Russian people were being frightened by deliberate propaganda into the belief—quite sincere, I am told among the masses—that the capitalists of Europe, and especially the British Empire, were preparing to wage war upon them.

The policy of that small group of ruthless men who govern Russia with its vast illiterate people is more concerned with the East than with the West. Having failed so far to overthrow the European system by revolutionary propaganda they see their best chance of attacking that system lies in the uprising of the yellow and brown races of the world. To some extent it is a hatred of Western civilisation—not so beautiful as we like to think it—which spurs them on. They are men with the inferiority complex, made bitter and fanatical because they have failed in fulfilling their ideals—that "dictatorship of the proletariat"—with which they set out, and eager for revenge against States and statesmen who have treated them like dogs and refused to deal with them.

But I think that their Eastern policy is dictated also by fear and the instinct of self-defence. They are afraid of Japan, which is looking towards Siberia as a rich outlet for her surplus population, safer to attack than the Philippines or Australia which would unite the two greatest navies of the world against her. In any case, they are jealous and suspicious of Japanese influence in China, and it is by keeping China in a state of turmoil, and by a friendly assistance to Chinese generals who are hostile to the "foreign devils," that Russia hopes to safeguard her own destiny.

I believe that lately the rulers of Russia are becoming frightened by many bogeys, partly of their own manufacture, and partly due to racial stress and strain. The economic condition of their country is still very miserable, though it has improved considerably as I am told by recent visitors, since I saw it at its worst in the year of famine. The autocratic power of their Soviet system of government has been weakened by internal dissension among leaders who are quarrelling for the control of the machine. The peasants have been antagonised by attacks on their religion, which shows signs of revival. Perhaps the only chance of keeping Russia from another revolution may be a war rallying the people in self-defence or some expeditionary war preached as a crusade.

It is the general opinion of those who know conditions in Russia to-day that an expeditionary war

is beyond their present resources of organisation and supply, and would lead to that internal smash of which they are most afraid. I am not so sure of that if they could have a knock at the British Empire in the East, across the Indian frontier where no other nation in the world would lift a little finger to help Great Britain in this affair. In any case men made desperate by dangers at home may risk a foreign diversion, as autocrats and tyrants have nearly always done.

Meanwhile before the League of Nations, the Soviet government has amused itself a good deal by appearing as the apostles of peace and general disarmament. It would be of enormous advantage to them if Europe reduced its armaments down to a low level, by fulfilling its solemn pledges to do so when Germany was disarmed. As there was not the faintest chance of more than a few reductions in relative strength in order to soothe the world's idealists, the Russian delegates had a wonderful opportunity to prove the hypocrisy of Europe, and to pose as the only honest pacifists in the world to-day. As propaganda for the benefit of the working classes in every country suspicious, and justly suspicious, of their own statesmen who are falling back into the old ways of diplomacy and arranging a new balance of power which is likely to produce another Armageddon in due time, this moral attitude of the Russian delegates at Geneva was of priceless value to them. They called **the bluff of a militarised Europe** by proposing their

scheme of total disarmament and shocked every War Office in the world.

In millions of working-class homes the fathers of sons who will be conscripted if there is another big war in Europe must have looked over at their wives across the evening paper and said : " After all, those Russians are on the side of peace. They speak good words. Perhaps they are the only people who can save Europe. . . . " Perhaps, after all, they had a logical sincerity behind their cynical disbelief in half measures and paper reductions. It may have to be all or nothing. Unless all nations disarm none can afford to do so.

Far away in the future there is the peril of the East advancing upon Europe, weakened, disorganised, torn to pieces by its own conflicts. The other day, at a luncheon-table in London, one of the most intellectual men I know began to prophesy very rapidly between the cheese and the dessert. " Of course," he said, " it's all cut and dried. China in alliance with Russia will dominate Europe, and having destroyed Western civilisation, will adopt Christianity as the Barbarians did after the conquest of Rome. The only Christianity left in the world will be the Catholic Church. There will be a Chinese Pope. . . . " A slight shudder went round the table, until somebody laughed.

Rather frightful all this. Is there no way out from such a tangled skein of perils and portents plucked by the skinny fingers of those three old women who

weave the plot of Fate ? What is the devilish thing—the psychological complex—the inherited curse—the philosophical error or whatever it may be that prevents our present standard of intelligence from devising some international agreement or system which will liberate the human mind from these terrors and enable us to get on with the job of life without such constant interruptions of organised death ? The terrors are real and urgent. They grow greater as every day passes, because of that increased knowledge and power which will make destruction more complete in the crowded cities of our tribes.

THE IDOL OF NATIONALITY

It is possible that we are endeavouring to maintain social ideas and systems of government which have not kept pace with the speed of communication, the terrific growth of population and the rapid progress of mechanical force, in the modern world. Looking at Europe alone it seems obvious that many of its troubles and dangers arise from the idea of nationality which has become intensified since the last war. It has taken the place of religion in the minds of European peoples. The word " France " means to the average Frenchman far more than God or Jesus Christ. Hundreds of thousands of men died willingly for France who would not have walked a yard in defence of the Christian faith. " Deutschland " to the German is a word of magic, full of deep and mystical emotion. It was for that word and all it

means that men linked arms and marched like martyrs against our machine-gun fire and were mown down in ranks like standing corn, as once I saw them from trenches in France, during the Somme battles.

I remember one day after the Armistice passing a battalion of Belgians carrying their national flag. A lieutenant with a fierce fanatical light in his eyes kept shouting *Saluez le drapeau !* I did salute the flag. I had every intention of doing so, being in British uniform and a warm friend of Belgium. But there was something terrible in that man's eyes. It was a kind of madness as though the flag he carried as a symbol did not represent pride and love of country so much as hatred and intolerance.

Immediately after the Treaty of Peace, all the new nations carved out of Austria and Hungary, and Poland restored to life after her historical assassination, and the Baltic States liberated from Russia, indulged in an orgy of nationalism. They closed themselves in behind frontiers of jealousy. They put up tariff walls against their neighbours, which prevented the natural flow of trade. They examined passports with every device of insult and delay against unfortunate foreigners who wished to cross their territory. They mobilised standing armies which drained their financial resources, and took able-bodied labour which could ill be spared from fields and factories to lounge about in ill-fitting khaki

sold to them cheap by British contractors. Europe, then and now, was a welter of small nations, not interested in intelligent co-operation for mutual benefit, but like a lot of robber barons shut up in their fortresses and waiting for some one to insult them.

BEFORE THE NATIONS

This nationality idea is really rather new in history. At least it has been developed intensively since the Middle Ages. Under the Roman Empire there were no nations. The Roman Legions were recruited from many races, worshipping many gods but proud of being in the service of Csesar, obedient on the whole to that Roman Law which ruled from East to West. After the downfall of the Empire the Church succeeded to its heritage as a central authority over all the tribes of men, and its claim to be an ultimate court of appeal between kings and princes and states on all matters of justice and moral law and Christian rights was admitted generally for many centuries.

Before the sixteenth century the definite boundaries between one nation and another, the narrow national idea of being separated in interests and character and ambitions from all other peoples, had hardly evolved. There was no such nation as Germany, but many small kingdoms and principalities of Germanic people, loosely bound together. Even France did not exist before Richelieu. The Burgundians, the Gascons, the Bretons and many other people

who would now die for France were not conscious of being Frenchmen in the Middle Ages, and would have denied the name with many oaths, though they belonged to the same faith and civilisation. Italy, like Germany, is a modern conception, less than a hundred years old.

In some ways the welding together of small states and kingdoms into nations was an advance in social history, making for order and unity, but it had two fatal results which we now perceive. It substituted national egotism and law for a general allegiance to some universal authority or law—which was often violated and denied, but did present an ideal dimly recognised and often obeyed by the conscience of the civilised world. The Imperial power of Rome, and afterwards the spiritual power of Rome, held civilisation together and was the central source of tradition, culture, justice, morality, and authority. When that was abandoned every nation became a law unto itself, and now, when the last rotten relic of what was once the " Holy Roman Empire " was shattered in the last war, we have many new nations no longer linked up into some working Federation, but isolated, jealous of each other, greedy for wealth and power, ambitious to extend their national and commercial prestige, armed and vigilant on their frontiers, and fanatical in their worship of the flag which symbolises their independence and pride.

THE WORSHIP OF NATIONALITY

One understands this patriotism. One knows that it is deep-rooted in racial history and local custom, and in the language, folk-lore, and spiritual heritage of peoples. England, Scotland, and Ireland—those names are also full of magic for those who love them. But it is possible, and in my opinion certain, that we dare not maintain this isolated patriotism, this extreme worship of nationality, now that the world is approaching another crisis which threatens civilisation. It seems to me that the only way of averting the perils that lie in wait for Europe is to establish a central authority and acknowledge a general law binding by consent upon all our nations, enforced by all of them against those who would disobey the law, and superior to the sovereign power of each separate state.

A very brilliant Frenchman named Lucien Romier, in a book called *Nation and Civilisation*, maintains that civilisation cannot continue if this idea of nationality persists. He points out that during the war each State set up a tyranny which conscripted not only the lives and wealth of its citizens, but the Press, the universities, science, religion, public opinion, and the intelligence of its people. It was impossible for any individual in any country, including the United States when they entered the war, to criticise the action of the Government, to appeal for peace, to suggest that God was not entirely

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On the side of the Allies, to establish some kind of intelligent communication with the enemy which might lead to a settlement of the dispute other than by continued slaughter. "All the active forces of European civilisation during those terrible years," he writes, "were the docile slaves of the State. . . . How are we going to guarantee ourselves from a return to that danger ? "

AN ARISTOCRACY OF INTELLECTUALS

He believes, as I do, that this new worship of the State, this religion of nationality, is the greatest problem which Europe has to solve to-day. His proposal for checking the violence of national egotism is interesting. I am especially interested, because I cherished the same idea for some time and elaborated it in the first novel I wrote after the war. He suggests that we should found a European aristocracy of faith and idealism which should become a kind of spiritual power similiar in some degree to that of the Church in the Middle Ages. It would be "an aristocracy of science and art which would preserve the knowledge of all these things in European civilisation which are vital, essential, and superior to the interests and egotism of nationality/" It would be an intellectual confederacy, a union of educated minds, cutting across all frontiers, indifferent to popular passion, contemptuous of national ambitions, and dedicated to the service and progress of civilisation itself. It sounds very good, all that! A little character of mine—

Dr. Small, as I called him in my novel—set about the organisation of this intellectual aristocracy by getting some of his friends to write post cards to their friends and so to form the first membership of this international elite, for the prevention of war and the progress of reason ! Simple soul !

There is, however, one dreadful drawback to this little scheme of saving the world. During the war there was hardly one German, French, English, Belgian, American, or any other scientist, professor, or intellectual of any kind, who did not believe that his country, whichever it might be, was perfectly righteous and that his one sacred duty was to live or die for it. The Germans still believe that they were guiltless. The Poles, the Russians, the Turks, the Czecho-Slovaks, the Serbians, the Italians, the Americans, and the English, are pretty sure that in all questions directly affecting the interests of their countries they are always in the right, inspired only by the noblest motives, desiring only fair play—and the instant recognition of their national point of view. Whether there might be an intellectual aristocracy who could liberate themselves from this national egotism and who would be brave enough to endure martyrdom (which would certainly be their fate) is, I think, doubtful.

THE AUTHORITY OF THE STATE

The tendency in Europe at the present time is to substitute the State for any other kind of spiritual authority, including God. State religion has been

set up in Russia. No individual, not even Trotsky, is allowed to utter a word of criticism against the Soviet Government. No word of truth, or falsity, is allowed to be published in Russian newspapers unless it has been first censored by officials of the " Ogpu," which used to be the " Cheka." No private idealism, philosophy or political notion is allowed to be discussed in a restaurant or a public place, where there is sure to be a spy who will report to the police. At political meetings, before the election of Soviet officials, free speech is allowed, but the free speakers are generally shot next morning in the back of the head.

The old democratic ideas of parliamentary government, when any duly elected member could get on his feet and let off " hot air " with great relief to himself and as a safety-valve to political passions elsewhere, is being ridiculed and abolished in many countries. Even in England democracy is not much favoured by the intelligentzia, and leading minds like Dean Inge state frankly their belief that democratic forms of government are doomed, first because a democratic government never existed except as an illusion which has been found out, and secondly because if it did exist it would mean the tyranny of the mob-mind placed in power by a majority of votes over people of intelligence and education who ought to rule the nation. The immediate alternative is dictatorship, established in Hungary, Spain, Italy, and Poland . . . but not, in the opinion of many people, a very safe or lasting alternative, because dictatorship has a

way of ending abruptly in a most unpleasant manner for the dictators. Not safe for the world either, because dictators, as a rule, are strangely influenced by the ghosts of Julius Caesar, Alexander the Great, Napoleon, and Simon Tapertit.

THE FASCIST STATE

The latest and most important experiment in government is the Fascist State under the leadership of Mussolini. It is more than a dictatorship. It is a new philosophy of society, or perhaps an old idea adapted to new conditions. It is based upon the doctrine that the interests of all classes must be subordinated to the supreme interest of the State, and that employers and labourers must subordinate their interests to production.

Every able-bodied citizen must belong to a Trade Union (as in Soviet Russia), and all activities of the nation are divided into six Federations, which include industry, commerce, agriculture and transport, under the authority of two National Confederations, one of employers and the other of employed. Each Federation is composed of a number of local Corporations, whose officials are selected for their known fidelity to Fascist principles. The whole system leads up from the local Corporation to the National Council of Corporations, of which Mussolini is President. The State has absolute control over the appointment of officials and over the action of the Unions or Corporations. By establishing Labour Courts administering a charter of rights and duties

for the protection of workers, the State will be the last Court of Appeal in all cases where there is a conflict of interests between employers and employed regarding wages, conditions of work and claims for justice. The idea is elaborated in great detail, safeguarding the rights of labour as well as the rights of property, organising the material welfare of all willing citizens, creating a great social machine, in which the humblest unit of force will be united with the most powerful in the one supreme and driving purpose of advancing the prosperity of the State to which all belong, which is indeed not separate from the people, but the very people in their corporate assembly, inspired by their moral quality, their united genius and their obedience to a common loyalty.

All this is curiously like the Soviet system and philosophy, except for the recognition of private property and use of capital—formerly denied by Russian Communists, but permitted, to some extent, at the present time in Russia—and except that its spirit and purpose are inspired perhaps by more noble conceptions of human destiny in a nation which has its roots in Roman history and traditions of civilisation to which the whole world must pay tribute. One sees, nevertheless, that by this system the individual is merged in his Corporation, and his Corporation in the State.

By the recent revision of the Penal Code in Italy, very severe punishment will be given to any citizens who deny their labour, or prevent the wheels of

industry from turning by strikes or lock-outs. Punishment, swift and harsh, will strike anyone who denounces or criticises the State or its actions. The Press, as in Russia, is controlled by the State. There is no freedom of speech except within the loyalty of Fascismo. Even foreigners, writing or speaking against the Fascist system or its leaders, will be denounced and tried, if resident in Italy; any property they may have in Italy Will be confiscated, and they will be imprisoned if they cross the Italian frontier after committing the crime of criticism in their own countries.

This system of government is very much admired by certain classes in England and the United States. " There is no nonsense about it," as I hear at dinner-tables from elderly Generals, Conservative politicians, charming ladies, and intelligent clerics. It is a strong defence against Bolshevism. It does away with all social disorder, industrial unrest, indiscipline, laziness, and disloyalty. Under a genius like Mussolini—dear good man !—the Fascist system has already created order out of chaos in Italy, cleaned the streets of beggars and filth, speeded up industry and trade, made Italy one of the Great Powers in Europe and perhaps the saviour of civilisation. So one hears from Bishops, and bookmakers, and all kinds of respectable people. There may be something in it. What they say about the change in Italy is certainly true, as I have seen with my own eyes.

THE USES OF AUTOCRACY

I will not deny that democracy is no guarantee of good sense or good government. The political crisis in France before Poincare held the reins with a tight hand threatened to wreck the financial situation of that country owing to the freedom to speak folly in the Chamber of Deputies, and if it had continued a week or two longer there would have been dictatorship or revolution. It is possible that Mussolini has discovered and organised a system of government that will be the type of the immediate future in other countries besides Italy, somewhat readapted to suit different national characteristics. It makes undoubtedly for a machine-like efficiency, it gives a guiding and driving power to the State, it is a short cut out of the conflict of interests between the classes, and it suppresses fools, freaks, fanatics, and all troublesome people (as defined by the Public Prosecutor) by sending them to rot in filthy prisons or to get madder than they are already in convict islands with hard labour and poor food.

There is much to be said for that kind of thing if one is quite sure that one is not going to be numbered among the troublesome people as the Christians were once numbered. It appeals very strongly to everyone who believes that the State can do no wrong. It is the ideal form of government from the point of view of such bodies as the Klu Klux Klan, and its methods appeal to sergeant-majors and other advocates of discipline and nothing but discipline.

Our Home Secretary, Sir William Joynson Hicks, would delight in its simplicity. Mr. Winston Churchill would model himself admirably on Mussolini and make the same kind of faces for the Press photographers. Unhappy England, divided in purpose, distracted by politics, impoverished by strikes and doles, and shockingly inefficient in many ways, would undoubtedly gain something (and I write sincerely) by establishing a corporate State somewhat on the Italian model. But she might also lose her soul, because (though I should hate to mention it above a whisper nowadays) the word "Liberty" still stands in the English dictionary, and in the past England has owed much of her greatness not to those who were most servile to her government, but to her rebels, her visionaries, her freaks and fanatics, the idealists who beat against the iron laws of government, the martyrs who refused to obey, the poets who satirised the power of the State in political squibs that were paid for by their ears, and unpatriotic fellows like Daniel Defoe and Dean Swift, Dr. Johnson and Charles Dickens, who dared to suggest that the actions of the State and the system of society under which they lived might perchance be improved. Under Mussolini and Fascismo such impudent rascals would be rounded up and marched in chains to the convict islands.

THE WEAKNESS OF THE LEAGUE

In any case it does seem to my simple mind that if Europe is to save her civilisation—her traditions

of civilisation—it will be necessary to advance beyond national egotism (while preserving national qualities and customs as long as possible) to some international system of law and organisation. The League of Nations seems to be the one means before the world at present by which such an authority could be established, but at the present time it is subject to the national egotism of its members, and especially of the Great Powers who reserve all questions affecting their own sovereign independence, sense of honour, and private judgment, if they think the decision of the League will be adverse to their interests. Huffed in their pride because they have been denied a permanent seat on the council, Spain and Brazil have already walked out. Italy made a long nose at the League when she decided to bombard Corfu. Sir Austen Chamberlain, representing Great Britain, told the League in language that was hardly diplomatic that the interests of the British Empire were superior in his mind to the interests of all the other nations on earth—though not in those exact words. For years after the war France belittled the League and relied upon the Council of Allied Ambassadors to keep a strangle grip on Germany.

The United States is still outside the League, although it was her President who founded it by claiming to represent a nation which afterwards repudiated his authority. Russia is outside the League, and until she comes in there can be no European settlement or security. Germany is anxious to use the League as a Court of Appeal for

the revision of the peace treaties, believing that the necessity of such a revision will be acknowledged by the spirit of international justice and by an assembly of nations working for the foundations of peace. But it is quite certain that neither Poland nor Czecho-Slovakia, nor Jugo-Slavia nor Roumania would agree at the present time to any revision of the treaties which would reduce their territory and alter their frontiers, and France is pledged to support their refusal even though the League were wrecked. It's all very difficult! National egotism is still stronger than international reasoning, and one cannot look to the League of Nations as a supreme Court of Appeal whose decisions will be accepted by all States so long as the present mentality of Europe remains unchanged.

NEW IDEAS IN OLD NATIONS

Fortunately the mentality of Europe will not remain unchanged. It is changing! It is indeed changing very rapidly and radically, although that is not yet apparent on the surface—it is still in the subconscious mind—and is not yet translated into action. But any close observer of France and Germany, for instance, during the years that have followed the war will agree that almost incredible changes have happened in the psychology of those two peoples. It may be summed up in the one brief and startling assertion that France and Germany may form an economic and military alliance which will control the destiny of Europe. Personally, I

don't think they will, but from a psychological point of view it is astounding that leading minds in both countries should—so soon after the agony and hatred of the war—seriously consider and propose that alliance as the most reasonable and powerful solution of the European problem. I have heard that discussed and approved by important people both in Germany and France.

The first time the idea was talked about in my hearing was by one of the most brilliant German journalists during the French occupation of the Ruhr—when the flame of hatred on both sides was intense and our conversation actually took place in Krupp's Hotel at Essen ! It seemed to me then the idea of a disordered mind. But since then that idea has been accepted by most unlikely minds, and it is curious but true that the minds now considering it are not those of the Left wings in France and Germany, but those on the Right. Only a few months ago it was elaborated for my benefit by a French aristocrat of the old regime who is also an industrialist. It appeals to men who believe that force is the only power which will save Europe from another war, and that the best combination of force is that alliance between France and Germany.

In England, Mr. Garvin, the editor of *The Observer*, who in my opinion is still the most daring and unconventional mind in English journalism to-day, sometimes rather wild but often very wise, advocates a triangle of power between France, Germany and Great Britain, and if there must be alliances and

balances of power (which seems to me a renunciation of a more spiritual advance) that combination would be formidable. But it is interesting again as a proof of a psychological change in a very short time after the last war.

As far as France is concerned there has come about a sharp and poignant realisation that if there is to be another war between herself and Germany, her last resources of blood, the genius of her race, all that is splendid and lovely in her heritage will be extinguished, whether in victory or defeat. She simply cannot afford another massacre of youth. Nor can she rely upon that elaborate structure of alliances with Poland, Jugo-Slavia, and others, by which she hoped for a time to safeguard her frontiers. They are not very keen to be used as her storm-troops. Her policy of keeping Germany weak and throttled has failed, as it was bound to fail. In a few years Germany will be again the most powerful nation in Europe. She has almost advanced to that position now. The only real safety for France is to make friends with her old enemy, and to bury the ancient grudge. Already she has entered into economic agreements with Germany which are based upon mutual benefit and not upon national rivalry. French industrialists are ready to carry this policy further, and the French people on their farms and in their factories will welcome any arrangement with Germany which may relieve their souls of the haunting horror that another war is inevitable.

THE GERMAN MIND

In Germany also there has been some change of mind and heart. This is acknowledged by all our representatives in Germany, by all Englishmen who have gone there frequently since the war as I have been, though it is denied by most others and by some Germans themselves. It is not complete, by any means. The old Junker spirit persists. Bodies of ex-officers swear vows of vengeance over their beer-mugs upon France and England. In the Universities the old "corporations" still keep up their militaristic ideas. There is secret drilling. Patriotic parades of the Steel Helms and others revive the war spirit. Herr Stresemann has to talk in two languages—one for Geneva and one for the Die-hards who give him a reluctant support. All that is true and not reassuring. But all that is a heritage from the past which is gradually being dropped by the younger generation and by forward-looking men.

The relief from conscription and from the old militarism which strutted over Germany has had an enormous effect upon the public mind. Defeat, after its first stupendous shock, revived the old German idealism. The Youth Movement, which numbers millions of adherents in all classes, was inspired at first by a kind of revolt against materialism and by a very active pacifism. The Wandering Birds (*Wandervogel*)—hundreds of thousands of young men and women who walked about Germany

on their way "back to nature"—adopted new ideals of life in which beauty took the place of discipline, and simplicity the place of success. All that has been a little tamed down from its first fresh enthusiasm, but young Germany on the whole is no longer under the spell of Nietzsche, and has repudiated the old gods of Brute Force and the Mailed Fist.

Bankers, industrialists, middle-class folk, artists, literary men are thinking in terms of peace and reconstruction and human co-operation. Stresemann is perfectly sincere, I am certain, having talked with the man, when he pledges Germany to support the spirit of the League of Nations, though he may not be able to control his political enemies. The one great passionate emotional desire of all good-natured Germans, of whom there are millions, is to be absolved by world opinion from the accusation that they were alone guilty of having engineered the world-war, and I think now the time has come when all honest and intelligent men must give them that absolution. They were not innocent lambs, but there were other Wolves. Russia was not guiltless. In a way we were all guilty by supporting a system of alliances and political rivalry •which was bound to lead to that explosion.

It is probable that Austria will link up with Germany. It is possible (though, I am told, unlikely) that Germany will re-establish a monarchy before many years have passed. Neither of those events would be of great importance to the rest of Europe,

What is more serious is the possibility of Germany defaulting on her reparation payments under the Dawes Scheme. So far those have been paid out of foreign loans, but the time approaches when they will have to be paid out of the profits of German trade, and in spite of her feverish industry, her tremendous energy and business genius, she still has an adverse trade balance. American money has been poured into German industry and the German nation is deeply in debt. The whole economic structure of Europe and of the United States will receive a shock if the German people are unable to continue their payments, as some financial experts predict. A financial crisis of that kind might lead to political earthquakes underpinning the weak foundations of European peace—but I am optimist enough to believe that none of these things need happen if we have the will that they shall not happen.

THE ALTERNATIVE TO CATASTROPHE

All this reads like undiluted pessimism. To my mind the dangers can only be averted by being realised. The European nations will drift to calamity unless they understand very clearly and starkly the frightful alternative to a change in psychology. There must be a new way of thinking, a recognition of some moral law greater than that of national egotism, an obedience to an international authority beyond that of sovereign rights, though not antagonistic to national traditions. We must give that authority to the League of Nations or to some other Court of Appeal. We must co-operate or perish.

That narrow national pride, jealously separating itself from the interests of other nations, refusing to recognise any law higher than its own selfishness, is but a logical conclusion to the intense individual liberty claimed by the modern mind which also has denied authority and refuses to obey any moral law outside or in conflict with its own desires and ambitions and self-expression. For a time at least after the war the youth of the world challenged all authority, believing (not without cause) that the old gods had betrayed them and that they must work out their own salvation. They refused obedience to tradition, religion, the law and the prophets. They decided to think out everything for themselves, as though the world had just arrived, and they are still thinking. But somehow, poor dears, they do not seem to have worried out any satisfactory scheme of life, and many of them, I am told, are discontented with being a law unto themselves and are looking around for some spiritual authority outside themselves to give a moral discipline and some definite and, if possible, divine purpose to the adventure of life. But they cannot find it in a National Church whose leaders differ as to doctrine and who have no certain faith in the greed they profess to believe.

MANY PROPHETS

The nations of Europe, like the individuals within them, are beginning to search for a prophet who will lead them out of the dark jungle of international

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fears and hatreds to the pleasant pasture-lands of hope and peace.

Some simple souls proclaimed recently that the prophet had been found disguised in a shabby old frock-coat, with a little dandruff on the collar, and trousers that bag disastrously below the knees, and known to the world as Aristide Briand.

Others raise their right arms in the Roman style and shout the name of a middle-sized man who stands like Napoleon with three fingers thrust between his waistcoat buttons scowling upon his photographers. Mussolini, they think, has the vision and the power.

Others worship the ghost of a little slant-eyed man with a billy-goat beard and a bowler hat, whose corpse lies below the Kremlin walls, and who preached world revolution as the primrose path to universal peace across the bodies of the bourgeoisie, Lenin !

Others, again, believe they have found the prophet in a little pug-faced gentleman with a pipe in his mouth, who, as Mr. Keynes remarked in memorable words, " has taken the place of Queen Victoria in the affections of the English people/'

But some do not believe in any of these prophets, and look rather for some sign from Heaven which will change the hearts of men and lead them back to God, but so far no sign appears above the flashing advertisements of Dewar's Whiskey or Wrigley's Chewing Gum, or the latest melodrama on the " movies/'

Mr. H. G. Wells, the only prophet of modern times who has actually seen some of his prophecies fulfilled—generally of a most unpleasant kind, like tanks and bombing aeroplanes—seems to have lost his faith in the advance of democracy to a flower-strewn Utopia with Men like Gods, and in his recent work suggests that human progress can only be attained by an intellectual aristocracy of very rich men, remarkably like Sir Alfred Mond, who will create enormous trusts, discipline the lower classes, and create a new heaven on earth by scientific organisation and divinely inspired committee meetings.

Mr. Julian Huxley—the brilliant grandson of a famous grandfather—looking at life as a biologist, believes that the world can be saved by a new form of Religion without Revelation—plus perhaps a little doctoring with the internal secretions. Like a charming Robespierre, with an infectious sense of humour which saves him from fanaticism, he would establish a new worship of the Goddess of Reason, not admitting in his simple faith that men and women are entirely unreasonable, and that if now and again they try to act strictly according to the laws of reason (which, of course, is their private interpretation of what is reasonable) the result is invariably accompanied by a considerable amount of bloodshed, hurried executions of people who refuse to agree with them, orgies of cruelty and immorality in the sacred name of Reason, and the sudden and painful death by assassination or *coup*

d'dtat of those who worshipped at the shrine of that very dangerous, uncertain, and elusive lady.

THE WAY OF SALVATION

I am old-fashioned enough to believe that ultimately the world can only be saved by getting back, or forward, to the Christian ideal and law of life, with a spiritual authority, admitted humbly and worshipfully in the hearts of men and women and with a power above and beyond reason—not wholly to be explained by reason—which will be obeyed cheerfully or with resignation when it denies one's selfishness, when it demands sacrifice for others and charity to all men, when it says "Thou shalt not kill/" though we want to kill, when it says that we may gain the whole world but lose our soul, and when *it* seems most damnably or divinely unreasonable, and totally inexplicable by scientific formulae or patriotic principles.

"Patriotism is not enough," said Nurse Cavell in words that were left off her statue until there was a row about it. Nor is pure intellect, which fails to reconcile life with death and to explain mysteries beyond the reach of science as science has so far reached. We know too much or too little—I cannot tell which. Our faith, and our humility, and our virtue have been destroyed by our egotism and our inquisitive peerings into the mechanism of life. We are all disturbed by what we know or what we think we know.

This new knowledge of ours, or this ignorance

about vibrations, and atoms, and electrons, and the subconscious mind, and the internal secretions, has not brought us happiness. We are all rather unhappy. Our human achievements over the material powers, our control of physical force, our aeroplanes and our wireless, have not added to the peace of the mind or brought laughter back to life, or answered any questions about here and hereafter. We don't believe much in hereafter, and so we despair of the now, which is unsatisfying, troublesome, almost abominable sometimes, and "stuffed with tragedy unless we have luck.

With our newspapers, and novels, and cheap small books on science, and philosophy, and world problems, and old religions, and new credulities, it is hard—impossible for many of us—to get back to any simple faith in God, or a future life, or supernatural religion, or spiritual authority, or some law outside ourselves commanding charity and things we don't much like.

It's absurd to pretend that such faith is easy nowadays. It's just a lie to say that science does not, and need not, disturb the minds of Christian men and women. It is hard, and it is going to be harder, to build any kind of bridge between science and faith unless one's knowledge and intelligence reach beyond the average share allotted to men and women busy with the daily job of life. The conflict between half knowledge and little faith is going to be intensified, and what is left of Christian ideals and belief may depart from many nations and many minds. Yet I am

convinced that our only hope in the long run is in a revival of the old faith in the spirit of the European peoples, animating their governments and their international relations, abating the aggressive egotism of nationality, submitting to a moral and accepted law above the rights of nations, substituting charity for hate, and uniting all civilised nations in defence of their spiritual heritage against the dangers of decadence, scientific warfare, and the downfall of idealism.

PEOPLES PLEDGED TO PEACE

That does not seem likely to happen, although one can hardly rule it out altogether from future possibilities. I do honestly believe that at the present time the European mind is gradually advancing to a more spiritual conception of life after a period of disillusioned materialism and is searching, almost yearningly, for a new leadership with more moral authority and vision than the statesmanship by which their lives are now directed.

I believe also, I was going to say in my bones, but really in my mind and heart, that great numbers of the common people of Europe, by which I mean the working men and women whose lives would be forfeit in another war, are nobler and wiser and of wider charity than their politicians, and have made up their minds that they will not be stampeded into any new world-war, as they were in the last, whatever call may be made to national ambitions, hatreds, feuds, and financial interests.

I believe that is wholly true in England and France. It is partly true in Germany. It is mainly true in the United States unless they are threatened by Japan (which is highly improbable), or unless they decide upon a naval war with Great Britain for the Freedom of the Seas (which means the right to trade with all belligerents) in a mood of temporary insanity created by political propaganda of Big Bill Thompsons and other Anglophobes. It is rather doubtful in Hungary, Italy, Jugo-Slavia, Czecho-Slovakia, Roumania, Poland, and Russia.

% Still, even taking into account countries where the war mentality is still latent or active, there is a spreading area, including the three Great Powers and many small nations of Western Europe, in which the mass mind is strongly set against any adventure with mechanised armies, poison-gas, and a sky full of bombing planes. They just won't allow it, and if any bald-headed or white-whiskered, or square-jowled statesmen try to lead them into it very unpleasant things will instantly happen in regard to those gentlemen.

If European diplomats decide upon war on the grand scale they will have to deal first with revolutions within their own frontiers, unless all methods of arbitration have first been tried, or unless it were in defence of certain values which we must keep lest we perish. Europe would have to fight, for instance, if the Chinese Dragon advanced upon it with flaming nostrils, or with innumerable machine-guns, by way of Moscow. But a large part of

Europe will; in my opinion, refuse to fight if Mr. Mussolini gets cross with some Balkan diplomat to the annoyance of that gentleman's private friends, or if Marshal Pilsudski in Warsaw puts all the fat in the fire by some hot-tempered words to Mr. Tchitcherin in Moscow.

There will be a combined movement among many peoples bringing enormous pressure upon their Governments to stamp out the fire before it spreads, and the League of Nations will be given the authority it now lacks to act on behalf of a majority of nations and to isolate any conflict arising between two or more States. Despite the many dangers ahead, and an inextricable tangle of races and rivalries, there is a good chance that the middle-class mind of the common man, so much despised by high brows and low brows, will save European civilisation and things worth while by a sanity, good temper, and spirit of co-operation which in the younger generation are replacing old fetishes of national passion, while they are groping towards a more spiritual understanding of life's enormous riddle, and believing more and more in the common interests of humanity, regardless of race. That is the new note one hears vibrating faintly in wireless waves above all political clamour. It is reaching out to receptive and sensitive minds in every country on earth. It may change the history of the world and prevent those evils which otherwise will destroy our heritage and hope.

