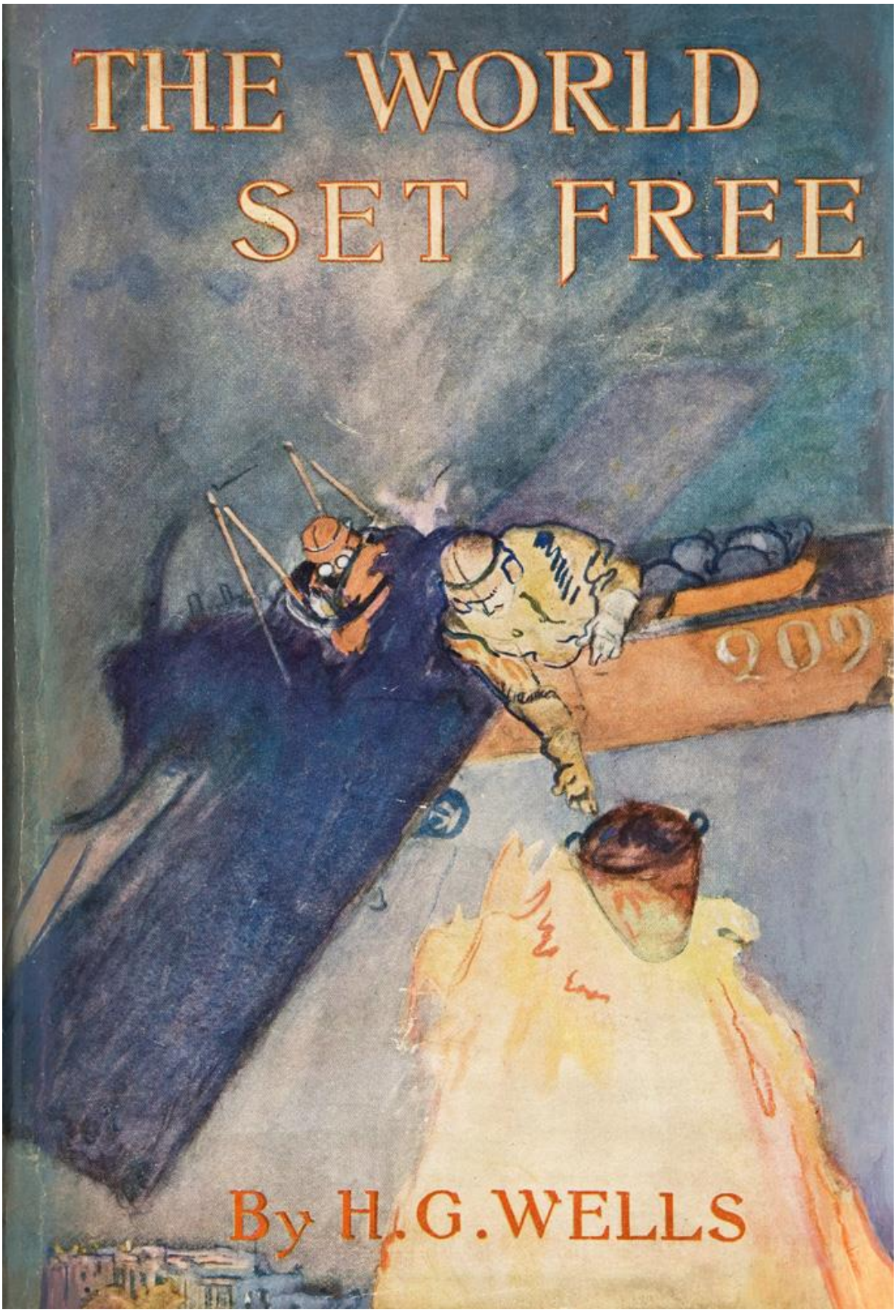
THE WORLD SET FREE



By H. G. WELLS

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We Are All Things That Make And Pass,
Striving Upon A Hidden Mission,
Out To The Open Sea.

TO
Frederick Soddy's
'Interpretation Of Radium'
This Story,
Which Owes Long Passages
To The Eleventh Chapter Of That Book,
Acknowledges And Inscribes Itself

Contents

PREFACE

The World Set Free was written in 1913 and published early in 1914, and it is the latest of a series of three fantasias of possibility, stories which all turn on the possible developments in the future of some contemporary force or group of forces. *The World Set Free* was written under the immediate shadow of the Great War. Every intelligent person in the world felt that disaster was impending and knew no way of averting it, but few of us realised in the earlier half of 1914 how near the crash was to us. The reader will be amused to find that here it is put off until the year 1956. He may naturally want to know the reason for what will seem now a quite extraordinary delay.

As a prophet, the author must confess he has always been inclined to be rather a slow prophet. The war aeroplane in the world of reality, for example, beat the forecast in *Anticipations* by about twenty years or so. I suppose a desire not to shock the sceptical reader's sense of use and wont and perhaps a less creditable disposition to hedge, have something to do with this dating forward of one's main events, but in the particular case of *The World Set Free* there was, I think, another motive in holding the Great War back, and that was to allow the chemist to get well forward with his discovery of the release of atomic energy. 1956—or for that matter 2056—may be none too late for that crowning revolution in human potentialities. And apart from this procrastination of over forty years, the guess at the opening phase of the war was fairly lucky; the forecast of an alliance of the Central Empires, the opening campaign through the Netherlands, and the despatch of the British Expeditionary Force were all justified before the book had been published six months. And the opening section of Chapter the Second remains now, after the reality has happened, a fairly adequate diagnosis of the essentials of the matter. One happy hit (in Chapter the Second, Section 2), on which the writer may congratulate himself, is the forecast that under modern conditions it would be quite impossible for any great general to emerge to supremacy and concentrate the enthusiasm of the armies of either side. There could be no Alexanders or Napoleons. And we soon heard the scientific corps muttering, 'These old fools,' exactly as it is here foretold.

These, however, are small details, and the misses in the story far outnumber the hits. It is the main thesis which is still of interest now; the thesis that because of the development of scientific knowledge, separate sovereign states and separate sovereign empires are no longer possible in the world, that to attempt to keep on with the old system is to heap disaster upon disaster for mankind and perhaps to destroy our race altogether. The remaining interest of this book now is the sustained validity of this thesis and the discussion of the possible ending of war on the earth. I have supposed a sort of epidemic of sanity to break out among the rulers of states and the leaders of mankind. I have represented the native common sense of the French mind and of the English mind—for manifestly King Egbert is meant to be 'God's Englishman'—leading mankind towards a bold and resolute effort of salvage and reconstruction. Instead of which, as the school book footnotes say, compare to-day's newspaper. Instead of a frank and honourable gathering of leading men, Englishman meeting German and Frenchman Russian, brothers in their offences and in their disaster, upon the hills of Brissago, beheld in Geneva at the other end of Switzerland a poor little League of (Allied) Nations (excluding the United States, Russia, and most of the 'subject peoples' of the world), meeting obscurely amidst a world-wide disregard

to make impotent gestures at the leading problems of the debacle. Either the disaster has not been vast enough yet or it has not been swift enough to inflict the necessary moral shock and achieve the necessary moral revulsion. Just as the world of 1913 was used to an increasing prosperity and thought that increase would go on for ever, so now it would seem the world is growing accustomed to a steady glide towards social disintegration, and thinks that that too can go on continually and never come to a final bump. So soon do use and wont establish themselves, and the most flaming and thunderous of lessons pale into disregard.

The question whether a Leblanc is still possible, the question whether it is still possible to bring about an outbreak of creative sanity in mankind, to avert this steady glide to destruction, is now one of the most urgent in the world. It is clear that the writer is temperamentally disposed to hope that there is such a possibility. But he has to confess that he sees few signs of any such breadth of understanding and steadfastness of will as an effectual effort to turn the rush of human affairs demands. The inertia of dead ideas and old institutions carries us on towards the rapids. Only in one direction is there any plain recognition of the idea of a human commonweal as something overriding any national and patriotic consideration, and that is in the working class movement throughout the world. And labour internationalism is closely bound up with conceptions of a profound social revolution. If world peace is to be attained through labour internationalism, it will have to be attained at the price of the completest social and economic reconstruction and by passing through a phase of revolution that will certainly be violent, that may be very bloody, which may be prolonged through a long period, and may in the end fail to achieve anything but social destruction. Nevertheless, the fact remains that it is in the labour class, and the labour class alone, that any conception of a world rule and a world peace has so far appeared. The dream of *The World Set Free*, a dream of highly educated and highly favoured leading and ruling men, voluntarily setting themselves to the task of reshaping the world, has thus far remained a dream.

H. G. WELLS.

EASTON GLEBE, DUNMOW, 1921.

PRELUDE
THE SUN SNARERS

Section I

The history of mankind is the history of the attainment of external power. Man is the tool-using, fire-making animal. From the outset of his terrestrial career we find him

supplementing the natural strength and bodily weapons of a beast by the heat of burning and the rough implement of stone. So he passed beyond the ape. From that he expands. Presently he added to himself the power of the horse and the ox, he borrowed the carrying strength of water and the driving force of the wind, he quickened his fire by blowing, and his simple tools, pointed first with copper and then with iron, increased and varied and became more elaborate and efficient. He sheltered his heat in houses and made his way easier by paths and roads. He complicated his social relationships and increased his efficiency by the division of labour. He began to store up knowledge. Contrivance followed contrivance, each making it possible for a man to do more. Always down the lengthening record, save for a set-back ever and again, he is doing more.... A quarter of a million years ago the utmost man was a savage, a being scarcely articulate, sheltering in holes in the rocks, armed with a rough-hewn flint or a fire-pointed stick, naked, living in small family groups, killed by some younger man so soon as his first virile activity declined. Over most of the great wildernesses of earth you would have sought him in vain; only in a few temperate and sub-tropical river valleys would you have found the squatting lairs of his little herds, a male, a few females, a child or so.

He knew no future then, no kind of life except the life he led. He fled the cave-bear over the rocks full of iron ore and the promise of sword and spear; he froze to death upon a ledge of coal; he drank water muddy with the clay that would one day make cups of porcelain; he chewed the ear of wild wheat he had plucked and gazed with a dim speculation in his eyes at the birds that soared beyond his reach. Or suddenly he became aware of the scent of another male and rose up roaring, his roars the formless precursors of moral admonitions. For he was a great individualist, that original, he suffered none other than himself.

So through the long generations, this heavy precursor, this ancestor of all of us, fought and bred and perished, changing almost imperceptibly.

Yet he changed. That keen chisel of necessity which sharpened the tiger's claw age by age and fined down the clumsy Orchippus to the swift grace of the horse, was at work upon him—is at work upon him still. The clumsier and more stupidly fierce among him were killed soonest and oftenest; the finer hand, the quicker eye, the bigger brain, the better balanced body prevailed; age by age, the implements were a little better made, the man a little more delicately adjusted to his possibilities. He became more social; his herd grew larger; no longer did each man kill or drive out his growing sons; a system of taboos made them tolerable to him, and they revered him alive and soon even after he was dead, and were his allies against the beasts and the rest of mankind. (But they were forbidden to touch the women of the tribe, they had to go out

and capture women for themselves, and each son fled from his stepmother and hid from her lest the anger of the Old Man should be roused. All the world over, even to this day, these ancient inevitable taboos can be traced.) And now instead of caves came huts and hovels, and the fire was better tended and there were wrappings and garments; and so aided, the creature spread into colder climates, carrying food with him, storing food—until sometimes the neglected grass-seed sprouted again and gave a first hint of agriculture.

And already there were the beginnings of leisure and thought.

Man began to think. There were times when he was fed, when his lusts and his fears were all appeased, when the sun shone upon the squatting-place and dim stirrings of speculation lit his eyes. He scratched upon a bone and found resemblance and pursued it and began pictorial art, moulded the soft, warm clay of the river brink between his fingers, and found a pleasure in its patternings and repetitions, shaped it into the form of vessels, and found that it would hold water. He watched the streaming river, and wondered from what bountiful breast this incessant water came; he blinked at the sun and dreamt that perhaps he might snare it and spear it as it went down to its resting-place amidst the distant hills. Then he was roused to convey to his brother that once indeed he had done so—at least that some one had done so—he mixed that perhaps with another dream almost as daring, that one day a mammoth had been beset; and therewith began fiction—pointing a way to achievement—and the august prophetic procession of tales.

For scores and hundreds of centuries, for myriads of generations that life of our fathers went on. From the beginning to the ripening of that phase of human life, from the first clumsy eolith of rudely chipped flint to the first implements of polished stone, was two or three thousand centuries, ten or fifteen thousand generations. So slowly, by human standards, did humanity gather itself together out of the dim intimations of the beast. And that first glimmering of speculation, that first story of achievement, that story-teller bright-eyed and flushed under his matted hair, gesticulating to his gaping, incredulous listener, gripping his wrist to keep him attentive, was the most marvellous beginning this world has ever seen. It doomed the mammoths, and it began the setting of that snare that shall catch the sun.

Section 2

That dream was but a moment in a man's life, whose proper business it seemed was to get food and kill his fellows and beget after the manner of all that belongs to the fellowship of the beasts. About him, hidden from him by the thinnest of veils, were the untouched sources of Power, whose magnitude we scarcely do more than suspect

even to-day, Power that could make his every conceivable dream come real. But the feet of the race were in the way of it, though he died blindly unknowing.

At last, in the generous levels of warm river valleys, where food is abundant and life very easy, the emerging human overcoming his earlier jealousies, becoming, as necessity persecuted him less urgently, more social and tolerant and amenable, achieved a larger community. There began a division of labour, certain of the older men specialised in knowledge and direction, a strong man took the fatherly leadership in war, and priest and king began to develop their *rôles* in the opening drama of man's history. The priest's solicitude was seed-time and harvest and fertility, and the king ruled peace and war. In a hundred river valleys about the warm, temperate zone of the earth there were already towns and temples, a score of thousand years ago. They flourished unrecorded, ignoring the past and unsuspicious of the future, for as yet writing had still to begin.

Very slowly did man increase his demand upon the illimitable wealth of Power that offered itself on every hand to him. He tamed certain animals, he developed his primordially haphazard agriculture into a ritual, he added first one metal to his resources and then another, until he had copper and tin and iron and lead and gold and silver to supplement his stone, he hewed and carved wood, made pottery, paddled down his river until he came to the sea, discovered the wheel and made the first roads. But his chief activity for a hundred centuries and more, was the subjugation of himself and others to larger and larger societies. The history of man is not simply the conquest of external power; it is first the conquest of those distrusts and fiercenesses, that self-concentration and intensity of animalism, that tie his hands from taking his inheritance. The ape in us still resents association. From the dawn of the age of polished stone to the achievement of the Peace of the World, man's dealings were chiefly with himself and his fellow man, trading, bargaining, law-making, propitiating, enslaving, conquering, exterminating, and every little increment in Power, he turned at once and always turns to the purposes of this confused elaborate struggle to socialise. To incorporate and comprehend his fellow men into a community of purpose became the last and greatest of his instincts. Already before the last polished phase of the stone age was over he had become a political animal. He made astonishingly far-reaching discoveries within himself, first of counting and then of writing and making records, and with that his town communities began to stretch out to dominion; in the valleys of the Nile, the Euphrates, and the great Chinese rivers, the first empires and the first written laws had their beginnings. Men specialised for fighting and rule as soldiers and knights. Later, as ships grew seaworthy, the Mediterranean which had been a barrier became a highway, and at last

out of a tangle of pirate polities came the great struggle of Carthage and Rome. The history of Europe is the history of the victory and breaking up of the Roman Empire. Every ascendant monarch in Europe up to the last, aped Cæsar and called himself Kaiser or Tsar or Imperator or Kasir-i-Hind. Measured by the duration of human life it is a vast space of time between that first dynasty in Egypt and the coming of the aeroplane, but by the scale that looks back to the makers of the eoliths, it is all of it a story of yesterday.

Now during this period of two hundred centuries or more, this period of the warring states, while men's minds were chiefly preoccupied by politics and mutual aggression, their progress in the acquirement of external Power was slow—rapid in comparison with the progress of the old stone age, but slow in comparison with this new age of systematic discovery in which we live. They did not very greatly alter the weapons and tactics of warfare, the methods of agriculture, seamanship, their knowledge of the habitable globe, or the devices and utensils of domestic life between the days of the early Egyptians and the days when Christopher Columbus was a child. Of course, there were inventions and changes, but there were also retrogressions; things were found out and then forgotten again; it was, on the whole, a progress, but it contained no steps; the peasant life was the same, there were already priests and lawyers and town craftsmen and territorial lords and rulers, doctors, wise women, soldiers and sailors in Egypt and China and Assyria and south-eastern Europe at the beginning of that period, and they were doing much the same things and living much the same life as they were in Europe in A.D. 1500. The English excavators of the year A.D. 1900 could delve into the remains of Babylon and Egypt and disinter legal documents, domestic accounts, and family correspondence that they could read with the completest sympathy. There were great religious and moral changes throughout the period, empires and republics replaced one another, Italy tried a vast experiment in slavery, and indeed slavery was tried again and again and failed and failed and was still to be tested again and rejected again in the New World; Christianity and Mohammedanism swept away a thousand more specialised cults, but essentially these were progressive adaptations of mankind to material conditions that must have seemed fixed for ever. The idea of revolutionary changes in the material conditions of life would have been entirely strange to human thought through all that time.

Yet the dreamer, the story-teller, was there still, waiting for his opportunity amidst the busy preoccupations, the comings and goings, the wars and processions, the castle building and cathedral building, the arts and loves, the small diplomacies and incurable feuds, the crusades and trading journeys of the middle ages. He no longer speculated with the untrammelled freedom of the stone-age savage; authoritative

explanations of everything barred his path; but he speculated with a better brain, sat idle and gazed at circling stars in the sky and mused upon the coin and crystal in his hand. Whenever there was a certain leisure for thought throughout these times, then men were to be found dissatisfied with the appearances of things, dissatisfied with the assurances of orthodox belief, uneasy with a sense of unread symbols in the world about them, questioning the finality of scholastic wisdom. Through all the ages of history there were men to whom this whisper had come of hidden things about them. They could no longer lead ordinary lives nor content themselves with the common things of this world once they had heard this voice. And mostly they believed not only that all this world was as it were a painted curtain before things unguessed at, but that these secrets were Power. Hitherto Power had come to men by chance, but now there were these seekers seeking, seeking among rare and curious and perplexing objects, sometimes finding some odd utilisable thing, sometimes deceiving themselves with fancied discovery, sometimes pretending to find. The world of every day laughed at these eccentric beings, or found them annoying and ill-treated them, or was seized with fear and made saints and sorcerers and warlocks of them, or with covetousness and entertained them hopefully; but for the greater part heeded them not at all. Yet they were of the blood of him who had first dreamt of attacking the mammoth; every one of them was of his blood and descent; and the thing they sought, all unwittingly, was the snare that will some day catch the sun.

Section 3

Such a man was that Leonardo da Vinci, who went about the court of Sforza in Milan in a state of dignified abstraction. His common-place books are full of prophetic subtlety and ingenious anticipations of the methods of the early aviators. Dürer was his parallel and Roger Bacon—whom the Franciscans silenced—of his kindred. Such a man again in an earlier city was Hero of Alexandria, who knew of the power of steam nineteen hundred years before it was first brought into use. And earlier still was Archimedes of Syracuse, and still earlier the legendary Daedalus of Cnossos. All up and down the record of history whenever there was a little leisure from war and brutality the seekers appeared. And half the alchemists were of their tribe.

When Roger Bacon blew up his first batch of gunpowder one might have supposed that men would have gone at once to the explosive engine. But they could see nothing of the sort. They were not yet beginning to think of seeing things; their metallurgy was all too poor to make such engines even had they thought of them. For a time they could not make instruments sound enough to stand this new force even for so rough a purpose as hurling a missile. Their first guns had barrels of coopered timber, and the world waited for more than five hundred years before the explosive engine came.

Even when the seekers found, it was at first a long journey before the world could use their findings for any but the roughest, most obvious purposes. If man in general was not still as absolutely blind to the unconquered energies about him as his paleolithic precursor, he was at best purblind.

Section 4

The latent energy of coal and the power of steam waited long on the verge of discovery, before they began to influence human lives.

There were no doubt many such devices as Hero's toys devised and forgotten, time after time, in courts and palaces, but it needed that coal should be mined and burning with plenty of iron at hand before it dawned upon men that here was something more than a curiosity. And it is to be remarked that the first recorded suggestion for the use of steam was in war; there is an Elizabethan pamphlet in which it is proposed to fire shot out of corked iron bottles full of heated water. The mining of coal for fuel, the smelting of iron upon a larger scale than men had ever done before, the steam pumping engine, the steam-engine and the steam-boat, followed one another in an order that had a kind of logical necessity. It is the most interesting and instructive chapter in the history of the human intelligence, the history of steam from its beginning as a fact in human consciousness to the perfection of the great turbine engines that preceded the utilisation of intra-molecular power. Nearly every human being must have seen steam, seen it incuriously for many thousands of years; the women in particular were always heating water, boiling it, seeing it boil away, seeing the lids of vessels dance with its fury; millions of people at different times must have watched steam pitching rocks out of volcanoes like cricket balls and blowing pumice into foam, and yet you may search the whole human record through, letters, books, inscriptions, pictures, for any glimmer of a realisation that here was force, here was strength to borrow and use.... Then suddenly man woke up to it, the railways spread like a network over the globe, the ever enlarging iron steamships began their staggering fight against wind and wave.

Steam was the first-comer in the new powers, it was the beginning of the Age of Energy that was to close the long history of the Warring States.

But for a long time men did not realise the importance of this novelty. They would not recognise, they were not able to recognise that anything fundamental had happened to their immemorial necessities. They called the steam-engine the 'iron horse' and pretended that they had made the most partial of substitutions. Steam machinery and factory production were visibly revolutionising the conditions of industrial production, population was streaming steadily in from the country-side and concentrating in

hitherto unthought-of masses about a few city centres, food was coming to them over enormous distances upon a scale that made the one sole precedent, the corn ships of imperial Rome, a petty incident; and a huge migration of peoples between Europe and Western Asia and America was in Progress, and—nobody seems to have realised that something new had come into human life, a strange swirl different altogether from any previous circling and mutation, a swirl like the swirl when at last the lock gates begin to open after a long phase of accumulating water and eddying inactivity....

The sober Englishman at the close of the nineteenth century could sit at his breakfast-table, decide between tea from Ceylon or coffee from Brazil, devour an egg from France with some Danish ham, or eat a New Zealand chop, wind up his breakfast with a West Indian banana, glance at the latest telegrams from all the world, scrutinise the prices current of his geographically distributed investments in South Africa, Japan, and Egypt, and tell the two children he had begotten (in the place of his father's eight) that he thought the world changed very little. They must play cricket, keep their hair cut, go to the old school he had gone to, shirk the lessons he had shirked, learn a few scraps of Horace and Virgil and Homer for the confusion of cads, and all would be well with them....

Section 5

Electricity, though it was perhaps the earlier of the two to be studied, invaded the common life of men a few decades after the exploitation of steam. To electricity also, in spite of its provocative nearness all about him, mankind had been utterly blind for incalculable ages. Could anything be more emphatic than the appeal of electricity for attention? It thundered at man's ears, it signalled to him in blinding flashes, occasionally it killed him, and he could not see it as a thing that concerned him enough to merit study. It came into the house with the cat on any dry day and crackled insinuatingly whenever he stroked her fur. It rotted his metals when he put them together.... There is no single record that any one questioned why the cat's fur crackles or why hair is so unruly to brush on a frosty day, before the sixteenth century. For endless years man seems to have done his very successful best not to think about it at all; until this new spirit of the Seeker turned itself to these things.

How often things must have been seen and dismissed as unimportant, before the speculative eye and the moment of vision came! It was Gilbert, Queen Elizabeth's court physician, who first puzzled his brains with rubbed amber and bits of glass and silk and shellac, and so began the quickening of the human mind to the existence of this universal presence. And even then the science of electricity remained a mere little group of curious facts for nearly two hundred years, connected perhaps with

magnetism—a mere guess that—perhaps with the lightning. Frogs' legs must have hung by copper hooks from iron railings and twitched upon countless occasions before Galvani saw them. Except for the lightning conductor, it was 250 years after Gilbert before electricity stepped out of the cabinet of scientific curiosities into the life of the common man.... Then suddenly, in the half-century between 1880 and 1930, it ousted the steam-engine and took over traction, it ousted every other form of household heating, abolished distance with the perfected wireless telephone and the telephotograph....

Section 6

And there was an extraordinary mental resistance to discovery and invention for at least a hundred years after the scientific revolution had begun. Each new thing made its way into practice against a scepticism that amounted at times to hostility. One writer upon these subjects gives a funny little domestic conversation that happened, he says, in the year 1898, within ten years, that is to say, of the time when the first aviators were fairly on the wing. He tells us how he sat at his desk in his study and conversed with his little boy.

His little boy was in profound trouble. He felt he had to speak very seriously to his father, and as he was a kindly little boy he did not want to do it too harshly.

This is what happened.

'I wish, Daddy,' he said, coming to his point, 'that you wouldn't write all this stuff about flying. The chaps rot me.'

'Yes!' said his father.

'And old Broomie, the Head I mean, he rots me. Everybody rots me.'

'But there is going to be flying—quite soon.'

The little boy was too well bred to say what he thought of that. 'Anyhow,' he said, 'I wish you wouldn't write about it.'

'You'll fly—lots of times—before you die,' the father assured him.

The little boy looked unhappy.

The father hesitated. Then he opened a drawer and took out a blurred and under-developed photograph. 'Come and look at this,' he said.

The little boy came round to him. The photograph showed a stream and a meadow beyond, and some trees, and in the air a black, pencil-like object with flat wings on

either side of it. It was the first record of the first apparatus heavier than air that ever maintained itself in the air by mechanical force. Across the margin was written: ‘Here we go up, up, up—from S. P. Langley, Smithsonian Institution, Washington.’

The father watched the effect of this reassuring document upon his son. ‘Well?’ he said.

‘That,’ said the schoolboy, after reflection, ‘is only a model.’

‘Model to-day, man to-morrow.’

The boy seemed divided in his allegiance. Then he decided for what he believed quite firmly to be omniscience. ‘But old Broomie,’ he said, ‘he told all the boys in his class only yesterday, “no man will ever fly.” No one, he says, who has ever shot grouse or pheasants on the wing would ever believe anything of the sort....’

Yet that boy lived to fly across the Atlantic and edit his father’s reminiscences.

Section 7

At the close of the nineteenth century as a multitude of passages in the literature of that time witness, it was thought that the fact that man had at last had successful and profitable dealings with the steam that scalded him and the electricity that flashed and banged about the sky at him, was an amazing and perhaps a culminating exercise of his intelligence and his intellectual courage. The air of ‘Nunc Dimittis’ sounds in same of these writings. ‘The great things are discovered,’ wrote Gerald Brown in his summary of the nineteenth century. ‘For us there remains little but the working out of detail.’ The spirit of the seeker was still rare in the world; education was unskilled, unstimulating, scholarly, and but little valued, and few people even then could have realised that Science was still but the flimsiest of trial sketches and discovery scarcely beginning. No one seems to have been afraid of science and its possibilities. Yet now where there had been but a score or so of seekers, there were many thousands, and for one needle of speculation that had been probing the curtain of appearances in 1800, there were now hundreds. And already Chemistry, which had been content with her atoms and molecules for the better part of a century, was preparing herself for that vast next stride that was to revolutionise the whole life of man from top to bottom.

One realises how crude was the science of that time when one considers the case of the composition of air. This was determined by that strange genius and recluse, that man of mystery, that disembowelled intelligence, Henry Cavendish, towards the end of the eighteenth century. So far as he was concerned the work was admirably done.

He separated all the known ingredients of the air with a precision altogether remarkable; he even put it upon record that he had some doubt about the purity of the nitrogen. For more than a hundred years his determination was repeated by chemists all the world over, his apparatus was treasured in London, he became, as they used to say, ‘classic,’ and always, at every one of the innumerable repetitions of his experiment, that sly element argon was hiding among the nitrogen (and with a little helium and traces of other substances, and indeed all the hints that might have led to the new departures of the twentieth-century chemistry), and every time it slipped unobserved through the professorial fingers that repeated his procedure.

Is it any wonder then with this margin of inaccuracy, that up to the very dawn of the twentieth-century scientific discovery was still rather a procession of happy accidents than an orderly conquest of nature?

Yet the spirit of seeking was spreading steadily through the world. Even the schoolmaster could not check it. For the mere handful who grew up to feel wonder and curiosity about the secrets of nature in the nineteenth century, there were now, at the beginning of the twentieth, myriads escaping from the limitations of intellectual routine and the habitual life, in Europe, in America, North and South, in Japan, in China, and all about the world.

It was in 1910 that the parents of young Holsten, who was to be called by a whole generation of scientific men, ‘the greatest of European chemists,’ were staying in a villa near Santo Domenico, between Fiesole and Florence. He was then only fifteen, but he was already distinguished as a mathematician and possessed by a savage appetite to understand. He had been particularly attracted by the mystery of phosphorescence and its apparent unrelatedness to every other source of light. He was to tell afterwards in his reminiscences how he watched the fireflies drifting and glowing among the dark trees in the garden of the villa under the warm blue night sky of Italy; how he caught and kept them in cages, dissected them, first studying the general anatomy of insects very elaborately, and how he began to experiment with the effect of various gases and varying temperature upon their light. Then the chance present of a little scientific toy invented by Sir William Crookes, a toy called the spinthariscope, on which radium particles impinge upon sulphide of zinc and make it luminous, induced him to associate the two sets of phenomena. It was a happy association for his inquiries. It was a rare and fortunate thing, too, that any one with the mathematical gift should have been taken by these curiosities.

Section 8

And while the boy Holsten was mooning over his fireflies at Fiesole, a certain professor of physics named Rufus was giving a course of afternoon lectures upon Radium and Radio-Activity in Edinburgh. They were lectures that had attracted a very considerable amount of attention. He gave them in a small lecture-theatre that had become more and more congested as his course proceeded. At his concluding discussion it was crowded right up to the ceiling at the back, and there people were standing, standing without any sense of fatigue, so fascinating did they find his suggestions. One youngster in particular, a chuckle-headed, scrub-haired lad from the Highlands, sat hugging his knee with great sand-red hands and drinking in every word, eyes aglow, cheeks flushed, and ears burning.

'And so,' said the professor, 'we see that this Radium, which seemed at first a fantastic exception, a mad inversion of all that was most established and fundamental in the constitution of matter, is really at one with the rest of the elements. It does noticeably and forcibly what probably all the other elements are doing with an imperceptible slowness. It is like the single voice crying aloud that betrays the silent breathing multitude in the darkness. Radium is an element that is breaking up and flying to pieces. But perhaps all elements are doing that at less perceptible rates. Uranium certainly is; thorium—the stuff of this incandescent gas mantle—certainly is; actinium. I feel that we are but beginning the list. And we know now that the atom, that once we thought hard and impenetrable, and indivisible and final and—lifeless—lifeless, is really a reservoir of immense energy. That is the most wonderful thing about all this work. A little while ago we thought of the atoms as we thought of bricks, as solid building material, as substantial matter, as unit masses of lifeless stuff, and behold! these bricks are boxes, treasure boxes, boxes full of the intensest force. This little bottle contains about a pint of uranium oxide; that is to say, about fourteen ounces of the element uranium. It is worth about a pound. And in this bottle, ladies and gentlemen, in the atoms in this bottle there slumbers at least as much energy as we could get by burning a hundred and sixty tons of coal. If at a word, in one instant I could suddenly release that energy here and now it would blow us and everything about us to fragments; if I could turn it into the machinery that lights this city, it could keep Edinburgh brightly lit for a week. But at present no man knows, no man has an inkling of how this little lump of stuff can be made to hasten the release of its store. It does release it, as a burn trickles. Slowly the uranium changes into radium, the radium changes into a gas called the radium emanation, and that again to what we call radium A, and so the process goes on, giving out energy at every stage, until at last we reach the last stage of all, which is, so far as we can tell at present, lead. But we cannot hasten it.'

‘I take ye, man,’ whispered the chuckle-headed lad, with his red hands tightening like a vice upon his knee. ‘I take ye, man. Go on! Oh, go on!’

The professor went on after a little pause. ‘Why is the change gradual?’ he asked. ‘Why does only a minute fraction of the radium disintegrate in any particular second? Why does it dole itself out so slowly and so exactly? Why does not all the uranium change to radium and all the radium change to the next lowest thing at once? Why this decay by driblets; why not a decay *en masse*? . . . Suppose presently we find it is possible to quicken that decay?’

The chuckle-headed lad nodded rapidly. The wonderful inevitable idea was coming. He drew his knee up towards his chin and swayed in his seat with excitement. ‘Why not?’ he echoed, ‘why not?’

The professor lifted his forefinger.

‘Given that knowledge,’ he said, ‘mark what we should be able to do! We should not only be able to use this uranium and thorium; not only should we have a source of power so potent that a man might carry in his hand the energy to light a city for a year, fight a fleet of battleships, or drive one of our giant liners across the Atlantic; but we should also have a clue that would enable us at last to quicken the process of disintegration in all the other elements, where decay is still so slow as to escape our finest measurements. Every scrap of solid matter in the world would become an available reservoir of concentrated force. Do you realise, ladies and gentlemen, what these things would mean for us?’

The scrub head nodded. ‘Oh! go on. Go on.’

‘It would mean a change in human conditions that I can only compare to the discovery of fire, that first discovery that lifted man above the brute. We stand to-day towards radio-activity as our ancestor stood towards fire before he had learnt to make it. He knew it then only as a strange thing utterly beyond his control, a flare on the crest of the volcano, a red destruction that poured through the forest. So it is that we know radio-activity to-day. This—this is the dawn of a new day in human living. At the climax of that civilisation which had its beginning in the hammered flint and the fire-stick of the savage, just when it is becoming apparent that our ever-increasing needs cannot be borne indefinitely by our present sources of energy, we discover suddenly the possibility of an entirely new civilisation. The energy we need for our very existence, and with which Nature supplies us still so grudgingly, is in reality locked up in inconceivable quantities all about us. We cannot pick that lock at present, but——’

He paused. His voice sank so that everybody strained a little to hear him.

‘——we will.’

He put up that lean finger again, his solitary gesture.

‘And then,’ he said….

‘Then that perpetual struggle for existence, that perpetual struggle to live on the bare surplus of Nature’s energies will cease to be the lot of Man. Man will step from the pinnacle of this civilisation to the beginning of the next. I have no eloquence, ladies and gentlemen, to express the vision of man’s material destiny that opens out before me. I see the desert continents transformed, the poles no longer wildernesses of ice, the whole world once more Eden. I see the power of man reach out among the stars….’

He stopped abruptly with a catching of the breath that many an actor or orator might have envied.

The lecture was over, the audience hung silent for a few seconds, sighed, became audible, stirred, fluttered, prepared for dispersal. More light was turned on and what had been a dim mass of figures became a bright confusion of movement. Some of the people signalled to friends, some crowded down towards the platform to examine the lecturer’s apparatus and make notes of his diagrams. But the chuckle-headed lad with the scrub hair wanted no such detailed frittering away of the thoughts that had inspired him. He wanted to be alone with them; he elbowed his way out almost fiercely, he made himself as angular and bony as a cow, fearing lest some one should speak to him, lest some one should invade his glowing sphere of enthusiasm.

He went through the streets with a rapt face, like a saint who sees visions. He had arms disproportionately long, and ridiculous big feet.

He must get alone, get somewhere high out of all this crowding of commonness, of everyday life.

He made his way to the top of Arthur’s Seat, and there he sat for a long time in the golden evening sunshine, still, except that ever and again he whispered to himself some precious phrase that had stuck in his mind.

‘If,’ he whispered, ‘if only we could pick that lock….’

The sun was sinking over the distant hills. Already it was shorn of its beams, a globe of ruddy gold, hanging over the great banks of cloud that would presently engulf it.

‘Eh!’ said the youngster. ‘Eh!’

He seemed to wake up at last out of his entrancement, and the red sun was there before his eyes. He stared at it, at first without intelligence, and then with a gathering recognition. Into his mind came a strange echo of that ancestral fancy, that fancy of a Stone Age savage, dead and scattered bones among the drift two hundred thousand years ago.

'Ye auld thing,' he said—and his eyes were shining, and he made a kind of grabbing gesture with his hand; 'ye auld red thing.... We'll have ye *yet*.'

CHAPTER THE FIRST
THE NEW SOURCE OF ENERGY

Section I

The problem which was already being mooted by such scientific men as Ramsay, Rutherford, and Soddy, in the very beginning of the twentieth century, the problem of inducing radio-activity in the heavier elements and so tapping the internal energy of atoms, was solved by a wonderful combination of induction, intuition, and luck by Holsten so soon as the year 1933. From the first detection of radio-activity to its first subjugation to human purpose measured little more than a quarter of a century. For twenty years after that, indeed, minor difficulties prevented any striking practical application of his success, but the essential thing was done, this new boundary in the march of human progress was crossed, in that year. He set up atomic disintegration in a minute particle of bismuth; it exploded with great violence into a heavy gas of extreme radio-activity, which disintegrated in its turn in the course of seven days, and it was only after another year's work that he was able to show practically that the last result of this rapid release of energy was gold. But the thing was done—at the cost of a blistered chest and an injured finger, and from the moment when the invisible speck of bismuth flashed into riving and rending energy, Holsten knew that he had opened a way for mankind, however narrow and dark it might still be, to worlds of limitless power. He recorded as much in the strange diary biography he left the world, a diary that was up to that particular moment a mass of speculations and calculations, and which suddenly became for a space an amazingly minute and human record of sensations and emotions that all humanity might understand.

He gives, in broken phrases and often single words, it is true, but none the less vividly for that, a record of the twenty-four hours following the demonstration of the correctness of his intricate tracery of computations and guesses. 'I thought I should not sleep,' he writes—the words he omitted are supplied in brackets—(on account of) 'pain in (the) hand and chest and (the) wonder of what I had done.... Slept like a child.'

He felt strange and disconcerted the next morning; he had nothing to do, he was living alone in apartments in Bloomsbury, and he decided to go up to Hampstead Heath, which he had known when he was a little boy as a breezy playground. He went up by the underground tube that was then the recognised means of travel from one part of London to another, and walked up Heath Street from the tube station to the open heath. He found it a gully of planks and scaffoldings between the hoardings of house-wreckers. The spirit of the times had seized upon that narrow, steep, and winding thoroughfare, and was in the act of making it commodious and interesting, according to the remarkable ideals of Neo-Georgian æstheticism. Such is the illogical quality of humanity that Holsten, fresh from work that was like a petard under the seat of current civilisation, saw these changes with regret. He had come up Heath Street perhaps a thousand times, had known the windows of all the little shops, spent hours in the vanished cinematograph theatre, and marvelled at the high-flung early Georgian houses upon the westward bank of that old gully of a thoroughfare; he felt strange with all these familiar things gone. He escaped at last with a feeling of relief from this choked alley of trenches and holes and cranes, and emerged upon the old familiar scene about the White Stone Pond. That, at least, was very much as it used to be.

There were still the fine old red-brick houses to left and right of him; the reservoir had been improved by a portico of marble, the white-fronted inn with the clustering flowers above its portico still stood out at the angle of the ways, and the blue view to Harrow Hill and Harrow spire, a view of hills and trees and shining waters and wind-driven cloud shadows, was like the opening of a great window to the ascending Londoner. All that was very reassuring. There was the same strolling crowd, the same perpetual miracle of motors dodging through it harmlessly, escaping headlong into the country from the Sabbatical stuffiness behind and below them. There was a band still, a women's suffrage meeting—for the suffrage women had won their way back to the tolerance, a trifle derisive, of the populace again—socialist orators, politicians, a band, and the same wild uproar of dogs, frantic with the gladness of their one blessed weekly release from the back yard and the chain. And away along the road to the Spaniards strolled a vast multitude, saying, as ever, that the view of London was exceptionally clear that day.

Young Holsten's face was white. He walked with that uneasy affectation of ease that marks an overstrained nervous system and an under-exercised body. He hesitated at the White Stone Pond whether to go to the left of it or the right, and again at the fork of the roads. He kept shifting his stick in his hand, and every now and then he would get in the way of people on the footpath or be jostled by them because of the uncertainty of his movements. He felt, he confesses, 'inadequate to ordinary existence.' He

seemed to himself to be something inhuman and mischievous. All the people about him looked fairly prosperous, fairly happy, fairly well adapted to the lives they had to lead—a week of work and a Sunday of best clothes and mild promenading—and he had launched something that would disorganise the entire fabric that held their contentments and ambitions and satisfactions together. ‘Felt like an imbecile who has presented a box full of loaded revolvers to a Crêche,’ he notes.

He met a man named Lawson, an old school-fellow, of whom history now knows only that he was red-faced and had a terrier. He and Holsten walked together and Holsten was sufficiently pale and jumpy for Lawson to tell him he overworked and needed a holiday. They sat down at a little table outside the County Council house of Golders Hill Park and sent one of the waiters to the Bull and Bush for a couple of bottles of beer, no doubt at Lawson’s suggestion. The beer warmed Holsten’s rather dehumanised system. He began to tell Lawson as clearly as he could to what his great discovery amounted. Lawson feigned attention, but indeed he had neither the knowledge nor the imagination to understand. ‘In the end, before many years are out, this must eventually change war, transit, lighting, building, and every sort of manufacture, even agriculture, every material human concern——’

Then Holsten stopped short. Lawson had leapt to his feet. ‘Damn that dog!’ cried Lawson. ‘Look at it now. Hi! Here! *Phewoo-phewoo-phewoo!* Come *here, Bobs!* Come *here!*’

The young scientific man, with his bandaged hand, sat at the green table, too tired to convey the wonder of the thing he had sought so long, his friend whistled and bawled for his dog, and the Sunday people drifted about them through the spring sunshine. For a moment or so Holsten stared at Lawson in astonishment, for he had been too intent upon what he had been saying to realise how little Lawson had attended.

Then he remarked, ‘*Well!*’ and smiled faintly, and—finished the tankard of beer before him.

Lawson sat down again. ‘One must look after one’s dog,’ he said, with a note of apology. ‘What was it you were telling me?’

Section 2

In the evening Holsten went out again. He walked to Saint Paul’s Cathedral, and stood for a time near the door listening to the evening service. The candles upon the altar reminded him in some odd way of the fireflies at Fiesole. Then he walked back through the evening lights to Westminster. He was oppressed, he was indeed scared, by his sense of the immense consequences of his discovery. He had a vague idea that night

that he ought not to publish his results, that they were premature, that some secret association of wise men should take care of his work and hand it on from generation to generation until the world was riper for its practical application. He felt that nobody in all the thousands of people he passed had really awakened to the fact of change, they trusted the world for what it was, not to alter too rapidly, to respect their trusts, their assurances, their habits, their little accustomed traffics and hard-won positions.

He went into those little gardens beneath the over-hanging, brightly-lit masses of the Savoy Hotel and the Hotel Cecil. He sat down on a seat and became aware of the talk of the two people next to him. It was the talk of a young couple evidently on the eve of marriage. The man was congratulating himself on having regular employment at last; 'they like me,' he said, 'and I like the job. If I work up—in'r dozen years or so I ought to be gettin' somethin' pretty comfortable. That's the plain sense of it, Hetty. There ain't no reason whatsoever why we shouldn't get along very decently—very decently indeed.'

The desire for little successes amidst conditions securely fixed! So it struck upon Holsten's mind. He added in his diary, 'I had a sense of all this globe as that....'

By that phrase he meant a kind of clairvoyant vision of this populated world as a whole, of all its cities and towns and villages, its high roads and the inns beside them, its gardens and farms and upland pastures, its boatmen and sailors, its ships coming along the great circles of the ocean, its time-tables and appointments and payments and dues as it were one unified and progressive spectacle. Sometimes such visions came to him; his mind, accustomed to great generalisations and yet acutely sensitive to detail, saw things far more comprehensively than the minds of most of his contemporaries. Usually the teeming sphere moved on to its predestined ends and circled with a stately swiftness on its path about the sun. Usually it was all a living progress that altered under his regard. But now fatigue a little deadened him to that incessancy of life, it seemed now just an eternal circling. He lapsed to the commoner persuasion of the great fixities and recurrencies of the human routine. The remoter past of wandering savagery, the inevitable changes of to-morrow were veiled, and he saw only day and night, seed-time and harvest, loving and begetting, births and deaths, walks in the summer sunlight and tales by the winter fireside, the ancient sequence of hope and acts and age perennially renewed, eddying on for ever and ever, save that now the impious hand of research was raised to overthrow this drowsy, gently humming, habitual, sunlit spinning-top of man's existence....

For a time he forgot wars and crimes and hates and persecutions, famine and pestilence, the cruelties of beasts, weariness and the bitter wind, failure and

insufficiency and retrocession. He saw all mankind in terms of the humble Sunday couple upon the seat beside him, who schemed their inglorious outlook and improbable contentments. ‘I had a sense of all this globe as that.’

His intelligence struggled against this mood and struggled for a time in vain. He reassured himself against the invasion of this disconcerting idea that he was something strange and inhuman, a loose wanderer from the flock returning with evil gifts from his sustained unnatural excursions amidst the darknesses and phosphorescences beneath the fair surfaces of life. Man had not been always thus; the instincts and desires of the little home, the little plot, was not all his nature; also he was an adventurer, an experimenter, an unresting curiosity, an insatiable desire. For a few thousand generations indeed he had tilled the earth and followed the seasons, saying his prayers, grinding his corn and trampling the October winepress, yet not for so long but that he was still full of restless stirrings.

‘If there have been home and routine and the field,’ thought Holsten, ‘there have also been wonder and the sea.’

He turned his head and looked up over the back of the seat at the great hotels above him, full of softly shaded lights and the glow and colour and stir of feasting. Might his gift to mankind mean simply more of that? . . .

He got up and walked out of the garden, surveyed a passing tram-car, laden with warm light, against the deep blues of evening, dripping and trailing long skirts of shining reflection; he crossed the Embankment and stood for a time watching the dark river and turning ever and again to the lit buildings and bridges. His mind began to scheme conceivable replacements of all those clustering arrangements....

‘It has begun,’ he writes in the diary in which these things are recorded. ‘It is not for me to reach out to consequences I cannot foresee. I am a part, not a whole; I am a little instrument in the armoury of Change. If I were to burn all these papers, before a score of years had passed, some other man would be doing this. . .

Section 3

Holsten, before he died, was destined to see atomic energy dominating every other source of power, but for some years yet a vast network of difficulties in detail and application kept the new discovery from any effective invasion of ordinary life. The path from the laboratory to the workshop is sometimes a tortuous one; electro-magnetic radiations were known and demonstrated for twenty years before Marconi made them practically available, and in the same way it was twenty years before induced radio-activity could be brought to practical utilisation. The thing, of course,

was discussed very much, more perhaps at the time of its discovery than during the interval of technical adaptation, but with very little realisation of the huge economic revolution that impended. What chiefly impressed the journalists of 1933 was the production of gold from bismuth and the realisation albeit upon unprofitable lines of the alchemist's dreams; there was a considerable amount of discussion and expectation in that more intelligent section of the educated publics of the various civilised countries which followed scientific development; but for the most part the world went about its business—as the inhabitants of those Swiss villages which live under the perpetual threat of overhanging rocks and mountains go about their business—just as though the possible was impossible, as though the inevitable was postponed for ever because it was delayed.

It was in 1953 that the first Holsten-Roberts engine brought induced radio-activity into the sphere of industrial production, and its first general use was to replace the steam-engine in electrical generating stations. Hard upon the appearance of this came the Dass-Tata engine—the invention of two among the brilliant galaxy of Bengali inventors the modernisation of Indian thought was producing at this time—which was used chiefly for automobiles, aeroplanes, waterplanes, and such-like, mobile purposes. The American Kemp engine, differing widely in principle but equally practicable, and the Krupp-Erlanger came hard upon the heels of this, and by the autumn of 1954 a gigantic replacement of industrial methods and machinery was in progress all about the habitable globe. Small wonder was this when the cost, even of these earliest and clumsiest of atomic engines, is compared with that of the power they superseded. Allowing for lubrication the Dass-Tata engine, once it was started cost a penny to run thirty-seven miles, and added only nine and quarter pounds to the weight of the carriage it drove. It made the heavy alcohol-driven automobile of the time ridiculous in appearance as well as preposterously costly. For many years the price of coal and every form of liquid fuel had been clambering to levels that made even the revival of the draft horse seem a practicable possibility, and now with the abrupt relaxation of this stringency, the change in appearance of the traffic upon the world's roads was instantaneous. In three years the frightful armoured monsters that had hooted and smoked and thundered about the world for four awful decades were swept away to the dealers in old metal, and the highways thronged with light and clean and shimmering shapes of silvered steel. At the same time a new impetus was given to aviation by the relatively enormous power for weight of the atomic engine, it was at last possible to add Redmayne's ingenious helicopter ascent and descent engine to the vertical propeller that had hitherto been the sole driving force of the aeroplane without overweighting the machine, and men found themselves possessed of an

instrument of flight that could hover or ascend or descend vertically and gently as well as rush wildly through the air. The last dread of flying vanished. As the journalists of the time phrased it, this was the epoch of the Leap into the Air. The new atomic aeroplane became indeed a mania; every one of means was frantic to possess a thing so controllable, so secure and so free from the dust and danger of the road, and in France alone in the year 1943 thirty thousand of these new aeroplanes were manufactured and licensed, and soared humming softly into the sky.

And with an equal speed atomic engines of various types invaded industrialism. The railways paid enormous premiums for priority in the delivery of atomic traction engines, atomic smelting was embarked upon so eagerly as to lead to a number of disastrous explosions due to inexperienced handling of the new power, and the revolutionary cheapening of both materials and electricity made the entire reconstruction of domestic buildings a matter merely dependent upon a reorganisation of the methods of the builder and the house-furnisher. Viewed from the side of the new power and from the point of view of those who financed and manufactured the new engines and material it required the age of the Leap into the Air was one of astonishing prosperity. Patent-holding companies were presently paying dividends of five or six hundred per cent. and enormous fortunes were made and fantastic wages earned by all who were concerned in the new developments. This prosperity was not a little enhanced by the fact that in both the Dass-Tata and Holsten-Roberts engines one of the recoverable waste products was gold—the former disintegrated dust of bismuth and the latter dust of lead—and that this new supply of gold led quite naturally to a rise in prices throughout the world.

This spectacle of feverish enterprise was productivity, this crowding flight of happy and fortunate rich people—every great city was as if a crawling ant-hill had suddenly taken wing—was the bright side of the opening phase of the new epoch in human history. Beneath that brightness was a gathering darkness, a deepening dismay. If there was a vast development of production there was also a huge destruction of values. These glaring factories working night and day, these glittering new vehicles swinging noiselessly along the roads, these flights of dragon-flies that swooped and soared and circled in the air, were indeed no more than the brightnesses of lamps and fires that gleam out when the world sinks towards twilight and the night. Between these high lights accumulated disaster, social catastrophe. The coal mines were manifestly doomed to closure at no very distant date, the vast amount of capital invested in oil was becoming unsaleable, millions of coal miners, steel workers upon the old lines, vast swarms of unskilled or under-skilled labourers in innumerable occupations, were being flung out of employment by the superior efficiency of the

new machinery, the rapid fall in the cost of transit was destroying high land values at every centre of population, the value of existing house property had become problematical, gold was undergoing headlong depreciation, all the securities upon which the credit of the world rested were slipping and sliding, banks were tottering, the stock exchanges were scenes of feverish panic;—this was the reverse of the spectacle, these were the black and monstrous under-consequences of the Leap into the Air.

There is a story of a demented London stockbroker running out into Threadneedle Street and tearing off his clothes as he ran. 'The Steel Trust is scrapping the whole of its plant,' he shouted. 'The State Railways are going to scrap all their engines. Everything's going to be scrapped—everything. Come and scrap the mint, you fellows, come and scrap the mint!'

In the year 1955 the suicide rate for the United States of America quadrupled any previous record. There was an enormous increase also in violent crime throughout the world. The thing had come upon an unprepared humanity; it seemed as though human society was to be smashed by its own magnificent gains.

For there had been no foresight of these things. There had been no attempt anywhere even to compute the probable dislocations this flood of inexpensive energy would produce in human affairs. The world in these days was not really governed at all, in the sense in which government came to be understood in subsequent years. Government was a treaty, not a design; it was forensic, conservative, disputatious, unseeing, unthinking, uncreative; throughout the world, except where the vestiges of absolutism still sheltered the court favourite and the trusted servant, it was in the hands of the predominant caste of lawyers, who had an enormous advantage in being the only trained caste. Their professional education and every circumstance in the manipulation of the fantastically naïve electoral methods by which they clambered to power, conspired to keep them contemptuous of facts, conscientiously unimaginative, alert to claim and seize advantages and suspicious of every generosity. Government was an obstructive business of energetic fractions, progress went on outside of and in spite of public activities, and legislation was the last crippling recognition of needs so clamorous and imperative and facts so aggressively established as to invade even the dingy seclusions of the judges and threaten the very existence of the otherwise inattentive political machine.

The world was so little governed that with the very coming of plenty, in the full tide of an incalculable abundance, when everything necessary to satisfy human needs and everything necessary to realise such will and purpose as existed then in human hearts

was already at hand, one has still to tell of hardship, famine, anger, confusion, conflict, and incoherent suffering. There was no scheme for the distribution of this vast new wealth that had come at last within the reach of men; there was no clear conception that any such distribution was possible. As one attempts a comprehensive view of those opening years of the new age, as one measures it against the latent achievement that later years have demonstrated, one begins to measure the blindness, the narrowness, the insensate unimaginative individualism of the pre-atomic time. Under this tremendous dawn of power and freedom, under a sky ablaze with promise, in the very presence of science standing like some bountiful goddess over all the squat darknesses of human life, holding patiently in her strong arms, until men chose to take them, security, plenty, the solution of riddles, the key of the bravest adventures, in her very presence, and with the earnest of her gifts in court, the world was to witness such things as the squalid spectacle of the Dass-Tata patent litigation.

There in a stuffy court in London, a grimy oblong box of a room, during the exceptional heat of the May of 1956, the leading counsel of the day argued and shouted over a miserable little matter of more royalties or less and whether the Dass-Tata company might not bar the Holsten-Roberts' methods of utilising the new power. The Dass-Tata people were indeed making a strenuous attempt to secure a world monopoly in atomic engineering. The judge, after the manner of those times, sat raised above the court, wearing a preposterous gown and a foolish huge wig, the counsel also wore dirty-looking little wigs and queer black gowns over their usual costume, wigs and gowns that were held to be necessary to their pleading, and upon unclean wooden benches stirred and whispered artful-looking solicitors, busily scribbling reporters, the parties to the case, expert witnesses, interested people, and a jostling confusion of subpoenaed persons, briefless young barristers (forming a style on the most esteemed and truculent examples) and casual eccentric spectators who preferred this pit of iniquity to the free sunlight outside. Every one was damply hot, the examining King's Counsel wiped the perspiration from his huge, clean-shaven upper lip; and into this atmosphere of grasping contention and human exhalations the daylight filtered through a window that was manifestly dirty. The jury sat in a double pew to the left of the judge, looking as uncomfortable as frogs that have fallen into an ash-pit, and in the witness-box lied the would-be omnivorous Dass, under cross-examination....

Holsten had always been accustomed to publish his results so soon as they appeared to him to be sufficiently advanced to furnish a basis for further work, and to that

confiding disposition and one happy flash of adaptive invention the alert Dass owed his claim....

But indeed a vast multitude of such sharp people were clutching, patenting, pre-empting, monopolising this or that feature of the new development, seeking to subdue this gigantic winged power to the purposes of their little lusts and avarice. That trial is just one of innumerable disputes of the same kind. For a time the face of the world festered with patent legislation. It chanced, however, to have one oddly dramatic feature in the fact that Holsten, after being kept waiting about the court for two days as a beggar might have waited at a rich man's door, after being bullied by ushers and watched by policemen, was called as a witness, rather severely handled by counsel, and told not to 'quibble' by the judge when he was trying to be absolutely explicit.

The judge scratched his nose with a quill pen, and sneered at Holsten's astonishment round the corner of his monstrous wig. Holsten was a great man, was he? Well, in a law-court great men were put in their places.

'We want to know has the plaintiff added anything to this or hasn't he?' said the judge, 'we don't want to have your views whether Sir Philip Dass's improvements were merely superficial adaptations or whether they were implicit in your paper. No doubt—after the manner of inventors—you think most things that were ever likely to be discovered are implicit in your papers. No doubt also you think too that most subsequent additions and modifications are merely superficial. Inventors have a way of thinking that. The law isn't concerned with that sort of thing. The law has nothing to do with the vanity of inventors. The law is concerned with the question whether these patent rights have the novelty the plantiff claims for them. What that admission may or may not stop, and all these other things you are saying in your overflowing zeal to answer more than the questions addressed to you—none of these things have anything whatever to do with the case in hand. It is a matter of constant astonishment to me in this court to see how you scientific men, with all your extraordinary claims to precision and veracity, wander and wander so soon as you get into the witness-box. I know no more unsatisfactory class of witness. The plain and simple question is, has Sir Philip Dass made any real addition to existing knowledge and methods in this matter or has he not? We don't want to know whether they were large or small additions nor what the consequences of your admission may be. That you will leave to us.'

Holsten was silent.

'Surely?' said the judge, almost pityingly.

‘No, he hasn’t,’ said Holsten, perceiving that for once in his life he must disregard infinitesimals.

‘Ah!’ said the judge, ‘now why couldn’t you say that when counsel put the question? . . .’

An entry in Holsten’s diary-autobiography, dated five days later, runs: ‘Still amazed. The law is the most dangerous thing in this country. It is hundreds of years old. It hasn’t an idea. The oldest of old bottles and this new wine, the most explosive wine. Something will overtake them.’

Section 4

There was a certain truth in Holsten’s assertion that the law was ‘hundreds of years old.’ It was, in relation to current thought and widely accepted ideas, an archaic thing. While almost all the material and methods of life had been changing rapidly and were now changing still more rapidly, the law-courts and the legislatures of the world were struggling desperately to meet modern demands with devices and procedures, conceptions of rights and property and authority and obligation that dated from the rude compromises of relatively barbaric times. The horse-hair wigs and antic dresses of the British judges, their musty courts and overbearing manners, were indeed only the outward and visible intimations of profounder anachronisms. The legal and political organisation of the earth in the middle twentieth century was indeed everywhere like a complicated garment, outworn yet strong, that now fettered the governing body that once it had protected.

Yet that same spirit of free-thinking and outspoken publication that in the field of natural science had been the beginning of the conquest of nature, was at work throughout all the eighteenth and nineteenth centuries preparing the spirit of the new world within the degenerating body of the old. The idea of a greater subordination of individual interests and established institutions to the collective future, is traceable more and more clearly in the literature of those times, and movement after movement fretted itself away in criticism of and opposition to first this aspect and then that of the legal, social, and political order. Already in the early nineteenth century Shelley, with no scrap of alternative, is denouncing the established rulers of the world as Anarchs, and the entire system of ideas and suggestions that was known as Socialism, and more particularly its international side, feeble as it was in creative proposals or any method of transition, still witnesses to the growth of a conception of a modernised system of inter-relationships that should supplant the existing tangle of proprietary legal ideas.

The word ‘Sociology’ was invented by Herbert Spencer, a popular writer upon philosophical subjects, who flourished about the middle of the nineteenth century, but the idea of a state, planned as an electric-traction system is planned, without reference to pre-existing apparatus, upon scientific lines, did not take a very strong hold upon the popular imagination of the world until the twentieth century. Then, the growing impatience of the American people with the monstrous and socially paralysing party systems that had sprung out of their absurd electoral arrangements, led to the appearance of what came to be called the ‘Modern State’ movement, and a galaxy of brilliant writers, in America, Europe, and the East, stirred up the world to the thought of bolder rearrangements of social interaction, property, employment, education, and government, than had ever been contemplated before. No doubt these Modern State ideas were very largely the reflection upon social and political thought of the vast revolution in material things that had been in progress for two hundred years, but for a long time they seemed to be having no more influence upon existing institutions than the writings of Rousseau and Voltaire seemed to have had at the time of the death of the latter. They were fermenting in men’s minds, and it needed only just such social and political stresses as the coming of the atomic mechanisms brought about, to thrust them forward abruptly into crude and startling realisation.

Section 5

Frederick Barnet’s *Wander Jahre* is one of those autobiographical novels that were popular throughout the third and fourth decades of the twentieth century. It was published in 1970, and one must understand Wander Jahre rather in a spiritual and intellectual than in a literal sense. It is indeed an allusive title, carrying the world back to the *Wilhelm Meister* of Goethe, a century and a half earlier.

Its author, Frederick Barnet, gives a minute and curious history of his life and ideas between his nineteenth and his twenty-third birthdays. He was neither a very original nor a very brilliant man, but he had a trick of circumstantial writing; and though no authentic portrait was to survive for the information of posterity, he betrays by a score of casual phrases that he was short, sturdy, inclined to be plump, with a ‘rather blobby’ face, and full, rather projecting blue eyes. He belonged until the financial *débâcle* of 1956 to the class of fairly prosperous people, he was a student in London, he aeroplaned to Italy and then had a pedestrian tour from Genoa to Rome, crossed in the air to Greece and Egypt, and came back over the Balkans and Germany. His family fortunes, which were largely invested in bank shares, coal mines, and house property, were destroyed. Reduced to penury, he sought to earn a living. He suffered great hardship, and was then caught up by the war and had a year of soldiering, first as an officer in the English infantry and then in the army of

pacification. His book tells all these things so simply and at the same time so explicitly, that it remains, as it were, an eye by which future generations may have at least one man's vision of the years of the Great Change.

And he was, he tells us, a 'Modern State' man 'by instinct' from the beginning. He breathed in these ideas in the class rooms and laboratories of the Carnegie Foundation school that rose, a long and delicately beautiful facade, along the South Bank of the Thames opposite the ancient dignity of Somerset House. Such thought was interwoven with the very fabric of that pioneer school in the educational renascence in England. After the customary exchange years in Heidelberg and Paris, he went into the classical school of London University. The older so-called 'classical' education of the British pedagogues, probably the most paralysing, ineffective, and foolish routine that ever wasted human life, had already been swept out of this great institution in favour of modern methods; and he learnt Greek and Latin as well as he had learnt German, Spanish, and French, so that he wrote and spoke them freely, and used them with an unconscious ease in his study of the foundation civilisations of the European system to which they were the key. (This change was still so recent that he mentions an encounter in Rome with an 'Oxford don' who 'spoke Latin with a Wiltshire accent and manifest discomfort, wrote Greek letters with his tongue out, and seemed to think a Greek sentence a charm when it was a quotation and an impropriety when it wasn't.')

Barnet saw the last days of the coal-steam engines upon the English railways and the gradual cleansing of the London atmosphere as the smoke-creating sea-coal fires gave place to electric heating. The building of laboratories at Kensington was still in progress, and he took part in the students' riots that delayed the removal of the Albert Memorial. He carried a banner with 'We like Funny Statuary' on one side, and on the other 'Seats and Canopies for Statues, Why should our Great Departed Stand in the Rain?' He learnt the rather athletic aviation of those days at the University grounds at Sydenham, and he was fined for flying over the new prison for political libellers at Wormwood Scrubs, 'in a manner calculated to exhilarate the prisoners while at exercise.' That was the time of the attempted suppression of any criticism of the public judicature and the place was crowded with journalists who had ventured to call attention to the dementia of Chief Justice Abrahams. Barnet was not a very good aviator, he confesses he was always a little afraid of his machine—there was excellent reason for every one to be afraid of those clumsy early types—and he never attempted steep descents or very high flying. He also, he records, owned one of those oil-driven motor-bicycles whose clumsy complexity and extravagant filthiness still astonish the visitors to the museum of machinery at South Kensington. He mentions running over a

dog and complains of the ruinous price of ‘spatchcocks’ in Surrey. ‘Spatchcocks,’ it seems, was a slang term for crushed hens.

He passed the examinations necessary to reduce his military service to a minimum, and his want of any special scientific or technical qualification and a certain precocious corpulence that handicapped his aviation indicated the infantry of the line as his sphere of training. That was the most generalised form of soldiering. The development of the theory of war had been for some decades but little assisted by any practical experience. What fighting had occurred in recent years, had been fighting in minor or uncivilised states, with peasant or barbaric soldiers and with but a small equipment of modern contrivances, and the great powers of the world were content for the most part to maintain armies that sustained in their broader organisation the traditions of the European wars of thirty and forty years before. There was the infantry arm to which Barnet belonged and which was supposed to fight on foot with a rifle and be the main portion of the army. There were cavalry forces (horse soldiers), having a ratio to the infantry that had been determined by the experiences of the Franco-German war in 1871. There was also artillery, and for some unexplained reason much of this was still drawn by horses; though there were also in all the European armies a small number of motor-guns with wheels so constructed that they could go over broken ground. In addition there were large developments of the engineering arm, concerned with motor transport, motor-bicycle scouting, aviation, and the like.

No first-class intelligence had been sought to specialise in and work out the problem of warfare with the new appliances and under modern conditions, but a succession of able jurists, Lord Haldane, Chief Justice Briggs, and that very able King’s Counsel, Philbrick, had reconstructed the army frequently and thoroughly and placed it at last, with the adoption of national service, upon a footing that would have seemed very imposing to the public of 1900. At any moment the British Empire could now put a million and a quarter of arguable soldiers upon the board of Welt-Politik. The traditions of Japan and the Central European armies were more princely and less forensic; the Chinese still refused resolutely to become a military power, and maintained a small standing army upon the American model that was said, so far as it went, to be highly efficient, and Russia, secured by a stringent administration against internal criticism, had scarcely altered the design of a uniform or the organisation of a battery since the opening decades of the century. Barnet’s opinion of his military training was manifestly a poor one, his Modern State ideas disposed him to regard it as a bore, and his common sense condemned it as useless. Moreover, his habit of body made him peculiarly sensitive to the fatigues and hardships of service.

‘For three days in succession we turned out before dawn and—for no earthly reason—without breakfast,’ he relates. ‘I suppose that is to show us that when the Day comes the first thing will be to get us thoroughly uncomfortable and rotten. We then proceeded to Kriegspiel, according to the mysterious ideas of those in authority over us. On the last day we spent three hours under a hot if early sun getting over eight miles of country to a point we could have reached in a motor omnibus in nine minutes and a half—I did it the next day in that—and then we made a massed attack upon entrenchments that could have shot us all about three times over if only the umpires had let them. Then came a little bayonet exercise, but I doubt if I am sufficiently a barbarian to stick this long knife into anything living. Anyhow in this battle I shouldn’t have had a chance. Assuming that by some miracle I hadn’t been shot three times over, I was far too hot and blown when I got up to the entrenchments even to lift my beastly rifle. It was those others would have begun the sticking….

‘For a time we were watched by two hostile aeroplanes; then our own came up and asked them not to, and—the practice of aerial warfare still being unknown—they very politely desisted and went away and did dives and circles of the most charming description over the Fox Hills.’

All Barnet’s accounts of his military training were written in the same half-contemptuous, half-protesting tone. He was of opinion that his chances of participating in any real warfare were very slight, and that, if after all he should participate, it was bound to be so entirely different from these peace manœuvres that his only course as a rational man would be to keep as observantly out of danger as he could until he had learnt the tricks and possibilities of the new conditions. He states this quite frankly. Never was a man more free from sham heroics.

Section 6

Barnet welcomed the appearance of the atomic engine with the zest of masculine youth in all fresh machinery, and it is evident that for some time he failed to connect the rush of wonderful new possibilities with the financial troubles of his family. ‘I knew my father was worried,’ he admits. That cast the smallest of shadows upon his delighted departure for Italy and Greece and Egypt with three congenial companions in one of the new atomic models. They flew over the Channel Isles and Touraine, he mentions, and circled about Mont Blanc—‘These new helicopters, we found,’ he notes, ‘had abolished all the danger and strain of sudden drops to which the old-time aeroplanes were liable’—and then he went on by way of Pisa, Paestum, Ghirgenti, and Athens, to visit the pyramids by moonlight, flying thither from Cairo, and to follow the Nile up to Khartum. Even by later standards, it must have been a very gleeful holiday

for a young man, and it made the tragedy of his next experiences all the darker. A week after his return his father, who was a widower, announced himself ruined, and committed suicide by means of an unscheduled opiate.

At one blow Barnet found himself flung out of the possessing, spending, enjoying class to which he belonged, penniless and with no calling by which he could earn a living. He tried teaching and some journalism, but in a little while he found himself on the underside of a world in which he had always reckoned to live in the sunshine. For innumerable men such an experience has meant mental and spiritual destruction, but Barnet, in spite of his bodily gravitation towards comfort, showed himself when put to the test, of the more valiant modern quality. He was saturated with the creative stoicism of the heroic times that were already dawning, and he took his difficulties and discomforts stoutly as his appointed material, and turned them to expression.

Indeed, in his book, he thanks fortune for them. 'I might have lived and died,' he says, 'in that neat fool's paradise of secure lavishness above there. I might never have realised the gathering wrath and sorrow of the ousted and exasperated masses. In the days of my own prosperity things had seemed to me to be very well arranged.' Now from his new point of view he was to find they were not arranged at all; that government was a compromise of aggressions and powers and lassitudes, and law a convention between interests, and that the poor and the weak, though they had many negligent masters, had few friends.

'I had thought things were looked after,' he wrote. 'It was with a kind of amazement that I tramped the roads and starved—and found that no one in particular cared.'

He was turned out of his lodging in a backward part of London.

'It was with difficulty I persuaded my landlady—she was a needy widow, poor soul, and I was already in her debt—to keep an old box for me in which I had locked a few letters, keepsakes, and the like. She lived in great fear of the Public Health and Morality Inspectors, because she was sometimes too poor to pay the customary tip to them, but at last she consented to put it in a dark tiled place under the stairs, and then I went forth into the world—to seek first the luck of a meal and then shelter.'

He wandered down into the thronging gayer parts of London, in which a year or so ago he had been numbered among the spenders.

London, under the Visible Smoke Law, by which any production of visible smoke with or without excuse was punishable by a fine, had already ceased to be the sombre smoke-darkened city of the Victorian time; it had been, and indeed was, constantly being rebuilt, and its main streets were already beginning to take on those

characteristics that distinguished them throughout the latter half of the twentieth century. The insanitary horse and the plebeian bicycle had been banished from the roadway, which was now of a resilient, glass-like surface, spotlessly clean; and the foot passenger was restricted to a narrow vestige of the ancient footpath on either side of the track and forbidden at the risk of a fine, if he survived, to cross the roadway. People descended from their automobiles upon this pavement and went through the lower shops to the lifts and stairs to the new ways for pedestrians, the Rows, that ran along the front of the houses at the level of the first story, and, being joined by frequent bridges, gave the newer parts of London a curiously Venetian appearance. In some streets there were upper and even third-story Rows. For most of the day and all night the shop windows were lit by electric light, and many establishments had made, as it were, canals of public footpaths through their premises in order to increase their window space.

Barnet made his way along this night-scene rather apprehensively since the police had power to challenge and demand the Labour Card of any indigent-looking person, and if the record failed to show he was in employment, dismiss him to the traffic pavement below.

But there was still enough of his former gentility about Barnet's appearance and bearing to protect him from this; the police, too, had other things to think of that night, and he was permitted to reach the galleries about Leicester Square—that great focus of London life and pleasure.

He gives a vivid description of the scene that evening. In the centre was a garden raised on arches lit by festoons of lights and connected with the Rows by eight graceful bridges, beneath which hummed the interlacing streams of motor traffic, pulsating as the current alternated between east and west and north and south. Above rose great frontages of intricate rather than beautiful reinforced porcelain, studded with lights, barred by bold illuminated advertisements, and glowing with reflections. There were the two historical music halls of this place, the Shakespeare Memorial Theatre, in which the municipal players revolved perpetually through the cycle of Shakespeare's plays, and four other great houses of refreshment and entertainment whose pinnacles streamed up into the blue obscurity of the night. The south side of the square was in dark contrast to the others; it was still being rebuilt, and a lattice of steel bars surmounted by the frozen gestures of monstrous cranes rose over the excavated sites of vanished Victorian buildings.

This framework attracted Barnet's attention for a time to the exclusion of other interests. It was absolutely still, it had a dead rigidity, a stricken inaction, no one was

at work upon it and all its machinery was quiet; but the constructor's globes of vacuum light filled its every interstice with a quivering green moonshine and showed alert but motionless—soldier sentinels!

He asked a passing stroller, and was told that the men had struck that day against the use of an atomic riveter that would have doubled the individual efficiency and halved the number of steel workers.

'Shouldn't wonder if they didn't get chucking bombs,' said Barnet's informant, hovered for a moment, and then went on his way to the Alhambra music hall.

Barnet became aware of an excitement in the newspaper kiosks at the corners of the square. Something very sensational had been flashed upon the transparencies. Forgetting for a moment his penniless condition, he made his way over a bridge to buy a paper, for in those days the papers, which were printed upon thin sheets of metallic foil, were sold at determinate points by specially licensed purveyors. Half over, he stopped short at a change in the traffic below; and was astonished to see that the police signals were restricting vehicles to the half roadway. When presently he got within sight of the transparencies that had replaced the placards of Victorian times, he read of the Great March of the Unemployed that was already in progress through the West End, and so without expenditure he was able to understand what was coming.

He watched, and his book describes this procession which the police had considered it unwise to prevent and which had been spontaneously organised in imitation of the Unemployed Processions of earlier times. He had expected a mob but there was a kind of sullen discipline about the procession when at last it arrived. What seemed for a time an unending column of men marched wearily, marched with a kind of implacable futility, along the roadway underneath him. He was, he says, moved to join them, but instead he remained watching. They were a dingy, shabby, ineffective-looking multitude, for the most part incapable of any but obsolete and superseded types of labour. They bore a few banners with the time-honoured inscription: 'Work, not Charity,' but otherwise their ranks were unadorned.

They were not singing, they were not even talking, there was nothing truculent nor aggressive in their bearing, they had no definite objective they were just marching and showing themselves in the more prosperous parts of London. They were a sample of that great mass of unskilled cheap labour which the now still cheaper mechanical powers had superseded for evermore. They were being 'scrapped'—as horses had been 'scrapped.'

Barnet leant over the parapet watching them, his mind quickened by his own precarious condition. For a time, he says, he felt nothing but despair at the sight; what should be done, what could be done for this gathering surplus of humanity? They were so manifestly useless—and incapable—and pitiful.

What were they asking for?

They had been overtaken by unexpected things. Nobody had foreseen——

It flashed suddenly into his mind just what the multitudinous shambling enigma below meant. It was an appeal against the unexpected, an appeal to those others who, more fortunate, seemed wiser and more powerful, for something—for *intelligence*. This mute mass, weary footed, rank following rank, protested its persuasion that some of these others must have foreseen these dislocations—that anyhow they ought to have foreseen—and arranged.

That was what this crowd of wreckage was feeling and seeking so dumbly to assert.

'Things came to me like the turning on of a light in a darkened room,' he says. 'These men were praying to their fellow creatures as once they prayed to God! The last thing that men will realise about anything is that it is inanimate. They had transferred their animation to mankind. They still believed there was intelligence somewhere, even if it was careless or malignant.... It had only to be aroused to be conscience-stricken, to be moved to exertion.... And I saw, too, that as yet *there was no such intelligence*. The world waits for intelligence. That intelligence has still to be made, that will for good and order has still to be gathered together, out of scraps of impulse and wandering seeds of benevolence and whatever is fine and creative in our souls, into a common purpose. It's something still to come....'

It is characteristic of the widening thought of the time that this not very heroical young man who, in any previous age, might well have been altogether occupied with the problem of his own individual necessities, should be able to stand there and generalise about the needs of the race.

But upon all the stresses and conflicts of that chaotic time there was already dawning the light of a new era. The spirit of humanity was escaping, even then it was escaping, from its extreme imprisonment in individuals. Salvation from the bitter intensities of self, which had been a conscious religious end for thousands of years, which men had sought in mortifications, in the wilderness, in meditation, and by innumerable strange paths, was coming at last with the effect of naturalness into the talk of men, into the books they read, into their unconscious gestures, into their newspapers and daily purposes and everyday acts. The broad horizons, the magic possibilities that the spirit

of the seeker had revealed to them, were charming them out of those ancient and instinctive preoccupations from which the very threat of hell and torment had failed to drive them. And this young man, homeless and without provision even for the immediate hours, in the presence of social disorganisation, distress, and perplexity, in a blazing wilderness of thoughtless pleasure that blotted out the stars, could think as he tells us he thought.

‘I saw life plain,’ he wrote. ‘I saw the gigantic task before us, and the very splendour of its intricate and immeasurable difficulty filled me with exaltation. I saw that we have still to discover government, that we have still to discover education, which is the necessary reciprocal of government, and that all this—in which my own little speck of a life was so manifestly overwhelmed—this and its yesterday in Greece and Rome and Egypt were nothing, the mere first dust swirls of the beginning, the movements and dim murmurings of a sleeper who will presently be awake….’

Section 7

And then the story tells, with an engaging simplicity, of his descent from this ecstatic vision of reality.

‘Presently I found myself again, and I was beginning to feel cold and a little hungry.’

He bethought himself of the John Burns Relief Offices which stood upon the Thames Embankment. He made his way through the galleries of the booksellers and the National Gallery, which had been open continuously day and night to all decently dressed people now for more than twelve years, and across the rose-gardens of Trafalgar Square, and so by the hotel colonnade to the Embankment. He had long known of these admirable offices, which had swept the last beggars and matchsellers and all the casual indigent from the London streets, and he believed that he would, as a matter of course, be able to procure a ticket for food and a night’s lodgings and some indication of possible employment.

But he had not reckoned upon the new labour troubles, and when he got to the Embankment he found the offices hopelessly congested and besieged by a large and rather unruly crowd. He hovered for a time on the outskirts of the waiting multitude, perplexed and dismayed, and then he became aware of a movement, a purposive trickling away of people, up through the arches of the great buildings that had arisen when all the railway stations were removed to the south side of the river, and so to the covered ways of the Strand. And here, in the open glare of midnight, he found unemployed men begging, and not only begging, but begging with astonishing

assurance, from the people who were emerging from the small theatres and other such places of entertainment which abounded in that thoroughfare.

This was an altogether unexampled thing. There had been no begging in London streets for a quarter of a century. But that night the police were evidently unwilling or unable to cope with the destitute who were invading those well-kept quarters of the town. They had become stonily blind to anything but manifest disorder.

Barnet walked through the crowd, unable to bring himself to ask; indeed his bearing must have been more valiant than his circumstances, for twice he says that he was begged from. Near the Trafalgar Square gardens, a girl with reddened cheeks and blackened eyebrows, who was walking alone, spoke to him with a peculiar friendliness.

‘I’m starving,’ he said to her abruptly.

‘Oh! poor dear!’ she said; and with the impulsive generosity of her kind, glanced round and slipped a silver piece into his hand….

It was a gift that, in spite of the precedent of De Quincey, might under the repressive social legislation of those times, have brought Barnet within reach of the prison lash. But he took it, he confesses, and thanked her as well as he was able, and went off very gladly to get food.

Section 8

A day or so later—and again his freedom to go as he pleased upon the roads may be taken as a mark of increasing social disorganisation and police embarrassment—he wandered out into the open country. He speaks of the roads of that plutocratic age as being ‘fenced with barbed wire against unpropertied people,’ of the high-walled gardens and trespass warnings that kept him to the dusty narrowness of the public ways. In the air, happy rich people were flying, heedless of the misfortunes about them, as he himself had been flying two years ago, and along the road swept the new traffic, light and swift and wonderful. One was rarely out of earshot of its whistles and gongs and siren cries even in the field paths or over the open downs. The officials of the labour exchanges were everywhere overworked and infuriated, the casual wards were so crowded that the surplus wanderers slept in ranks under sheds or in the open air, and since giving to wayfarers had been made a punishable offence there was no longer friendship or help for a man from the rare foot passenger or the wayside cottage….

‘I wasn’t angry,’ said Barnet. ‘I saw an immense selfishness, a monstrous disregard for anything but pleasure and possession in all those people above us, but I saw how inevitable that was, how certainly if the richest had changed places with the poorest, that things would have been the same. What else can happen when men use science and every new thing that science gives, and all their available intelligence and energy to manufacture wealth and appliances, and leave government and education to the rustling traditions of hundreds of years ago? Those traditions come from the dark ages when there was really not enough for every one, when life was a fierce struggle that might be masked but could not be escaped. Of course this famine grabbing, this fierce dispossession of others, must follow from such a disharmony between material and training. Of course the rich were vulgar and the poor grew savage and every added power that came to men made the rich richer and the poor less necessary and less free. The men I met in the casual wards and the relief offices were all smouldering for revolt, talking of justice and injustice and revenge. I saw no hope in that talk, nor in anything but patience....’

But he did not mean a passive patience. He meant that the method of social reconstruction was still a riddle, that no effectual rearrangement was possible until this riddle in all its tangled aspects was solved. ‘I tried to talk to those discontented men,’ he wrote, ‘but it was hard for them to see things as I saw them. When I talked of patience and the larger scheme, they answered, “But then we shall all be dead”—and I could not make them see, what is so simple to my own mind, that that did not affect the question. Men who think in lifetimes are of no use to statesmanship.’

He does not seem to have seen a newspaper during those wanderings, and a chance sight of the transparency of a kiosk in the market-place at Bishop’s Stortford announcing a ‘Grave International Situation’ did not excite him very much. There had been so many grave international situations in recent years.

This time it was talk of the Central European powers suddenly attacking the Slav Confederacy, with France and England going to the help of the Slavs.

But the next night he found a tolerable meal awaiting the vagrants in the casual ward, and learnt from the workhouse master that all serviceable trained men were to be sent back on the morrow to their mobilisation centres. The country was on the eve of war. He was to go back through London to Surrey. His first feeling, he records, was one of extreme relief that his days of ‘hopeless battering at the underside of civilisation’ were at an end. Here was something definite to do, something definitely provided for. But his relief was greatly modified when he found that the mobilisation arrangements had been made so hastily and carelessly that for nearly thirty-six hours at the

improvised depôt at Epsom he got nothing either to eat or to drink but a cup of cold water. The depôt was absolutely unprovisioned, and no one was free to leave it.

CHAPTER THE SECOND
THE LAST WAR

Section I

Viewed from the standpoint of a sane and ambitious social order, it is difficult to understand, and it would be tedious to follow, the motives that plunged mankind into the war that fills the histories of the middle decades of the twentieth century.

It must always be remembered that the political structure of the world at that time was everywhere extraordinarily behind the collective intelligence. That is the central fact of that history. For two hundred years there had been no great changes in political or legal methods and pretensions, the utmost change had been a certain shifting of boundaries and slight readjustment of procedure, while in nearly every other aspect of life there had been fundamental revolutions, gigantic releases, and an enormous enlargement of scope and outlook. The absurdities of courts and the indignities of representative parliamentary government, coupled with the opening of vast fields of opportunity in other directions, had withdrawn the best intelligences more and more from public affairs. The ostensible governments of the world in the twentieth century were following in the wake of the ostensible religions. They were ceasing to command the services of any but second-rate men. After the middle of the eighteenth century there are no more great ecclesiastics upon the world's memory, after the opening of the twentieth no more statesmen. Everywhere one finds an energetic, ambitious, short-sighted, common-place type in the seats of authority, blind to the new possibilities and litigiously reliant upon the traditions of the past.

Perhaps the most dangerous of those outworn traditions were the boundaries of the various 'sovereign states,' and the conception of a general predominance in human affairs on the part of some one particular state. The memory of the empires of Rome and Alexander squatted, an unlaid carnivorous ghost, in the human imagination—it bored into the human brain like some grisly parasite and filled it with disordered thoughts and violent impulses. For more than a century the French system exhausted its vitality in belligerent convulsions, and then the infection passed to the German-speaking peoples who were the heart and centre of Europe, and from them onward to the Slavs. Later ages were to store and neglect the vast insane literature of this obsession, the intricate treaties, the secret agreements, the infinite knowingness of the political writer, the cunning refusals to accept plain facts, the strategic devices, the tactical manœuvres, the records of mobilisations and counter-mobilisations. It

ceased to be credible almost as soon as it ceased to happen, but in the very dawn of the new age their state craftsmen sat with their historical candles burning, and, in spite of strange, new reflections and unfamiliar lights and shadows, still wrangling and planning to rearrange the maps of Europe and the world.

It was to become a matter for subtle inquiry how far the millions of men and women outside the world of these specialists sympathised and agreed with their portentous activities. One school of psychologists inclined to minimise this participation, but the balance of evidence goes to show that there were massive responses to these suggestions of the belligerent schemer. Primitive man had been a fiercely combative animal; innumerable generations had passed their lives in tribal warfare, and the weight of tradition, the example of history, the ideals of loyalty and devotion fell in easily enough with the incitements of the international mischief-maker. The political ideas of the common man were picked up haphazard, there was practically nothing in such education as he was given that was ever intended to fit him for citizenship as such (that conception only appeared, indeed, with the development of Modern State ideas), and it was therefore a comparatively easy matter to fill his vacant mind with the sounds and fury of exasperated suspicion and national aggression.

For example, Barnet describes the London crowd as noisily patriotic when presently his battalion came up from the depôt to London, to entrain for the French frontier. He tells of children and women and lads and old men cheering and shouting, of the streets and rows hung with the flags of the Allied Powers, of a real enthusiasm even among the destitute and unemployed. The Labour Bureaux were now partially transformed into enrolment offices, and were centres of hotly patriotic excitement. At every convenient place upon the line on either side of the Channel Tunnel there were enthusiastic spectators, and the feeling in the regiment, if a little stiffened and darkened by grim anticipations, was none the less warlike.

But all this emotion was the fickle emotion of minds without established ideas; it was with most of them, Barnet says, as it was with himself, a natural response to collective movement, and to martial sounds and colours, and the exhilarating challenge of vague dangers. And people had been so long oppressed by the threat of and preparation for war that its arrival came with an effect of positive relief.

Section 2

The plan of campaign of the Allies assigned the defence of the lower Meuse to the English, and the troop-trains were run direct from the various British depôts to the points in the Ardennes where they were intended to entrench themselves.

Most of the documents bearing upon the campaign were destroyed during the war, from the first the scheme of the Allies seems to have been confused, but it is highly probable that the formation of an aerial park in this region, from which attacks could be made upon the vast industrial plant of the lower Rhine, and a flanking raid through Holland upon the German naval establishments at the mouth of the Elbe, were integral parts of the original project. Nothing of this was known to such pawns in the game as Barnet and his company, whose business it was to do what they were told by the mysterious intelligences at the direction of things in Paris, to which city the Whitehall staff had also been transferred. From first to last these directing intelligences remained mysterious to the body of the army, veiled under the name of 'Orders.' There was no Napoleon, no Cæsar to embody enthusiasm. Barnet says, 'We talked of Them. *They* are sending us up into Luxembourg. *They* are going to turn the Central European right.'

Behind the veil of this vagueness the little group of more or less worthy men which constituted Headquarters was beginning to realise the enormity of the thing it was supposed to control....

In the great hall of the War Control, whose windows looked out across the Seine to the Trocadero and the palaces of the western quarter, a series of big-scale relief maps were laid out upon tables to display the whole seat of war, and the staff-officers of the control were continually busy shifting the little blocks which represented the contending troops, as the reports and intelligence came drifting in to the various telegraphic bureaux in the adjacent rooms. In other smaller apartments there were maps of a less detailed sort, upon which, for example, the reports of the British Admiralty and of the Slav commanders were recorded as they kept coming to hand. Upon these maps, as upon chessboards, Marshal Dubois, in consultation with General Viard and the Earl of Delhi, was to play the great game for world supremacy against the Central European powers. Very probably he had a definite idea of his game; very probably he had a coherent and admirable plan.

But he had reckoned without a proper estimate either of the new strategy of aviation or of the possibilities of atomic energy that Holsten had opened for mankind. While he planned entrenchments and invasions and a frontier war, the Central European generalship was striking at the eyes and the brain. And while, with a certain diffident hesitation, he developed his gambit that night upon the lines laid down by Napoleon and Moltke, his own scientific corps in a state of mutinous activity was preparing a blow for Berlin. 'These old fools!' was the key in which the scientific corps was thinking.

The War Control in Paris, on the night of July the second, was an impressive display of the paraphernalia of scientific military organisation, as the first half of the twentieth century understood it. To one human being at least the consulting commanders had the likeness of world-wielding gods.

She was a skilled typist, capable of nearly sixty words a minute, and she had been engaged in relay with other similar women to take down orders in duplicate and hand them over to the junior officers in attendance, to be forwarded and filed. There had come a lull, and she had been sent out from the dictating room to take the air upon the terrace before the great hall and to eat such scanty refreshment as she had brought with her until her services were required again.

From her position upon the terrace this young woman had a view not only of the wide sweep of the river below her, and all the eastward side of Paris from the Arc de Triomphe to Saint Cloud, great blocks and masses of black or pale darkness with pink and golden flashes of illumination and endless interlacing bands of dotted lights under a still and starless sky, but also the whole spacious interior of the great hall with its slender pillars and gracious arching and clustering lamps was visible to her. There, over a wilderness of tables, lay the huge maps, done on so large a scale that one might fancy them small countries; the messengers and attendants went and came perpetually, altering, moving the little pieces that signified hundreds and thousands of men, and the great commander and his two consultants stood amidst all these things and near where the fighting was nearest, scheming, directing. They had but to breathe a word and presently away there, in the world of reality, the punctual myriads moved. Men rose up and went forward and died. The fate of nations lay behind the eyes of these three men. Indeed they were like gods.

Most godlike of the three was Dubois. It was for him to decide; the others at most might suggest. Her woman's soul went out to this grave, handsome, still, old man, in a passion of instinctive worship.

Once she had taken words of instruction from him direct. She had awaited them in an ecstasy of happiness—and fear. For her exaltation was made terrible by the dread that some error might dishonour her....

She watched him now through the glass with all the unpenetrating minuteness of an impassioned woman's observation.

He said little, she remarked. He looked but little at the maps. The tall Englishman beside him was manifestly troubled by a swarm of ideas, conflicting ideas; he craned his neck at every shifting of the little red, blue, black, and yellow pieces on the board,

and wanted to draw the commander's attention to this and that. Dubois listened, nodded, emitted a word and became still again, brooding like the national eagle.

His eyes were so deeply sunken under his white eyebrows that she could not see his eyes; his moustache overhung the mouth from which those words of decision came. Viard, too, said little; he was a dark man with a drooping head and melancholy, watchful eyes. He was more intent upon the French right, which was feeling its way now through Alsace to the Rhine. He was, she knew, an old colleague of Dubois; he knew him better, she decided, he trusted him more than this unfamiliar Englishman....

Not to talk, to remain impassive and as far as possible in profile; these were the lessons that old Dubois had mastered years ago. To seem to know all, to betray no surprise, to refuse to hurry—itself a confession of miscalculation; by attention to these simple rules, Dubois had built up a steady reputation from the days when he had been a promising junior officer, a still, almost abstracted young man, deliberate but ready. Even then men had looked at him and said: 'He will go far.' Through fifty years of peace he had never once been found wanting, and at manœuvres his impassive persistence had perplexed and hypnotised and defeated many a more actively intelligent man. Deep in his soul Dubois had hidden his one profound discovery about the modern art of warfare, the key to his career. And this discovery was that *nobody knew*, that to act therefore was to blunder, that to talk was to confess; and that the man who acted slowly and steadfastly and above all silently, had the best chance of winning through. Meanwhile one fed the men. Now by this same strategy he hoped to shatter those mysterious unknowns of the Central European command. Delhi might talk of a great flank march through Holland, with all the British submarines and hydroplanes and torpedo craft pouring up the Rhine in support of it; Viard might crave for brilliance with the motor bicycles, aeroplanes, and ski-men among the Swiss mountains, and a sudden swoop upon Vienna; the thing was to listen—and wait for the other side to begin experimenting. It was all experimenting. And meanwhile he remained in profile, with an air of assurance—like a man who sits in an automobile after the chauffeur has had his directions.

And every one about him was the stronger and surer for that quiet face, that air of knowledge and unruffled confidence. The clustering lights threw a score of shadows of him upon the maps, great bunches of him, versions of a commanding presence, lighter or darker, dominated the field, and pointed in every direction. Those shadows symbolised his control. When a messenger came from the wireless room to shift this or that piece in the game, to replace under amended reports one Central European regiment by a score, to draw back or thrust out or distribute this or that force of the

Allies, the Marshal would turn his head and seem not to see, or look and nod slightly, as a master nods who approves a pupil's self-correction. 'Yes, that's better.'

How wonderful he was, thought the woman at the window, how wonderful it all was. This was the brain of the western world, this was Olympus with the warring earth at its feet. And he was guiding France, France so long a resentful exile from imperialism, back to her old predominance.

It seemed to her beyond the desert of a woman that she should be privileged to participate....

It is hard to be a woman, full of the stormy impulse to personal devotion, and to have to be impersonal, abstract, exact, punctual. She must control herself....

She gave herself up to fantastic dreams, dreams of the days when the war would be over and victory enthroned. Then perhaps this harshness, this armour would be put aside and the gods might unbend. Her eyelids drooped....

She roused herself with a start. She became aware that the night outside was no longer still. That there was an excitement down below on the bridge and a running in the street and a flickering of searchlights among the clouds from some high place away beyond the Trocadero. And then the excitement came surging up past her and invaded the hall within.

One of the sentinels from the terrace stood at the upper end of the room, gesticulating and shouting something.

And all the world had changed. A kind of throbbing. She couldn't understand. It was as if all the water-pipes and concealed machinery and cables of the ways beneath, were beating—as pulses beat. And about her blew something like a wind—a wind that was dismay.

Her eyes went to the face of the Marshal as a frightened child might look towards its mother.

He was still serene. He was frowning slightly, she thought, but that was natural enough, for the Earl of Delhi, with one hand gauntly gesticulating, had taken him by the arm and was all too manifestly disposed to drag him towards the great door that opened on the terrace. And Viard was hurrying towards the huge windows and doing so in the strangest of attitudes, bent forward and with eyes upturned.

Something up there?

And then it was as if thunder broke overhead.

The sound struck her like a blow. She crouched together against the masonry and looked up. She saw three black shapes swooping down through the torn clouds, and from a point a little below two of them, there had already started curling trails of red....

Everything else in her being was paralysed, she hung through moments that seemed infinities, watching those red missiles whirl down towards her.

She felt torn out of the world. There was nothing else in the world but a crimson-purple glare and sound, deafening, all-embracing, continuing sound. Every other light had gone out about her and against this glare hung slanting walls, pirouetting pillars, projecting fragments of cornices, and a disorderly flight of huge angular sheets of glass. She had an impression of a great ball of crimson-purple fire like a maddened living thing that seemed to be whirling about very rapidly amidst a chaos of falling masonry, that seemed to be attacking the earth furiously, that seemed to be burrowing into it like a blazing rabbit....

She had all the sensations of waking up out of a dream.

She found she was lying face downward on a bank of mould and that a little rivulet of hot water was running over one foot. She tried to raise herself and found her leg was very painful. She was not clear whether it was night or day nor where she was; she made a second effort, wincing and groaning, and turned over and got into a sitting position and looked about her.

Everything seemed very silent. She was, in fact, in the midst of a vast uproar, but she did not realise this because her hearing had been destroyed.

At first she could not join on what she saw to any previous experience.

She seemed to be in a strange world, a soundless, ruinous world, a world of heaped broken things. And it was lit—and somehow this was more familiar to her mind than any other fact about her—by a flickering, purplish-crimson light. Then close to her, rising above a confusion of *débris*, she recognised the Trocadero; it was changed, something had gone from it, but its outline was unmistakable. It stood out against a streaming, whirling uprush of red-lit steam. And with that she recalled Paris and the Seine and the warm, overcast evening and the beautiful, luminous organisation of the War Control....

She drew herself a little way up the slope of earth on which she lay, and examined her surroundings with an increasing understanding....

The earth on which she was lying projected like a cape into the river. Quite close to her was a brimming lake of dammed-up water, from which these warm rivulets and

torrents were trickling. Wisps of vapour came into circling existence a foot or so from its mirror-surface. Near at hand and reflected exactly in the water was the upper part of a familiar-looking stone pillar. On the side of her away from the water the heaped ruins rose steeply in a confused slope up to a glaring crest. Above and reflecting this glare towered pillowed masses of steam rolling swiftly upward to the zenith. It was from this crest that the livid glow that lit the world about her proceeded, and slowly her mind connected this mound with the vanished buildings of the War Control.

'*Mais!*' she whispered, and remained with staring eyes quite motionless for a time, crouching close to the warm earth.

Then presently this dim, broken human thing began to look about it again. She began to feel the need of fellowship. She wanted to question, wanted to speak, wanted to relate her experience. And her foot hurt her atrociously. There ought to be an ambulance. A little gust of querulous criticisms blew across her mind. This surely was a disaster! Always after a disaster there should be ambulances and helpers moving about....

She craned her head. There was something there. But everything was so still!

'*Monsieur!*' she cried. Her ears, she noted, felt queer, and she began to suspect that all was not well with them.

It was terribly lonely in this chaotic strangeness, and perhaps this man—if it was a man, for it was difficult to see—might for all his stillness be merely insensible. He might have been stunned....

The leaping glare beyond sent a ray into his corner and for a moment every little detail was distinct. It was Marshal Dubois. He was lying against a huge slab of the war map. To it there stuck and from it there dangled little wooden objects, the symbols of infantry and cavalry and guns, as they were disposed upon the frontier. He did not seem to be aware of this at his back, he had an effect of inattention, not indifferent attention, but as if he were thinking....

She could not see the eyes beneath his shaggy brows, but it was evident he frowned. He frowned slightly, he had an air of not wanting to be disturbed. His face still bore that expression of assured confidence, that conviction that if things were left to him France might obey in security....

She did not cry out to him again, but she crept a little nearer. A strange surmise made her eyes dilate. With a painful wrench she pulled herself up so that she could see

completely over the intervening lumps of smashed-up masonry. Her hand touched something wet, and after one convulsive movement she became rigid.

It was not a whole man there; it was a piece of a man, the head and shoulders of a man that trailed down into a ragged darkness and a pool of shining black....

And even as she stared the mound above her swayed and crumbled, and a rush of hot water came pouring over her. Then it seemed to her that she was dragged downward....

Section 3

When the rather brutish young aviator with the bullet head and the black hair close-cropped *en brosse*, who was in charge of the French special scientific corps, heard presently of this disaster to the War Control, he was so wanting in imagination in any sphere but his own, that he laughed. Small matter to him that Paris was burning. His mother and father and sister lived at Caudebec; and the only sweetheart he had ever had, and it was poor love-making then, was a girl in Rouen. He slapped his second-in-command on the shoulder. 'Now,' he said, 'there's nothing on earth to stop us going to Berlin and giving them tit-for-tat.... Strategy and reasons of state—they're over.... Come along, my boy, and we'll just show these old women what we can do when they let us have our heads.'

He spent five minutes telephoning and then he went out into the courtyard of the chateau in which he had been installed and shouted for his automobile. Things would have to move quickly because there was scarcely an hour and a half before dawn. He looked at the sky and noted with satisfaction a heavy bank of clouds athwart the pallid east.

He was a young man of infinite shrewdness, and his material and aeroplanes were scattered all over the country-side, stuck away in barns, covered with hay, hidden in woods. A hawk could not have discovered any of them without coming within reach of a gun. But that night he only wanted one of the machines, and it was handy and quite prepared under a tarpaulin between two ricks not a couple of miles away; he was going to Berlin with that and just one other man. Two men would be enough for what he meant to do....

He had in his hands the black complement to all those other gifts science was urging upon unregenerate mankind, the gift of destruction, and he was an adventurous rather than a sympathetic type....

He was a dark young man with something negroid about his gleaming face. He smiled like one who is favoured and anticipates great pleasures. There was an exotic richness, a chuckling flavour, about the voice in which he gave his orders, and he pointed his remarks with the long finger of a hand that was hairy and exceptionally big.

'We'll give them tit-for-tat,' he said. 'We'll give them tit-for-tat. No time to lose, boys....'

And presently over the cloud-banks that lay above Westphalia and Saxony the swift aeroplane, with its atomic engine as noiseless as a dancing sunbeam and its phosphorescent gyroscopic compass, flew like an arrow to the heart of the Central European hosts.

It did not soar very high; it skimmed a few hundred feet above the banked darknesses of cumulus that hid the world, ready to plunge at once into their wet obscurities should some hostile flier range into vision. The tense young steersman divided his attention between the guiding stars above and the level, tumbled surfaces of the vapour strata that hid the world below. Over great spaces those banks lay as even as a frozen lava-flow and almost as still, and then they were rent by ragged areas of translucency, pierced by clear chasms, so that dim patches of the land below gleamed remotely through abysses. Once he saw quite distinctly the plan of a big railway station outlined in lamps and signals, and once the flames of a burning rick showing livid through a boiling drift of smoke on the side of some great hill. But if the world was masked it was alive with sounds. Up through that vapour floor came the deep roar of trains, the whistles of horns of motor-cars, a sound of rifle fire away to the south, and as he drew near his destination the crowing of cocks....

The sky above the indistinct horizons of this cloud sea was at first starry and then paler with a light that crept from north to east as the dawn came on. The Milky Way was invisible in the blue, and the lesser stars vanished. The face of the adventurer at the steering-wheel, darkly visible ever and again by the oval greenish glow of the compass face, had something of that firm beauty which all concentrated purpose gives, and something of the happiness of an idiot child that has at last got hold of the matches. His companion, a less imaginative type, sat with his legs spread wide over the long, coffin-shaped box which contained in its compartments the three atomic bombs, the new bombs that would continue to explode indefinitely and which no one so far had ever seen in action. Hitherto Carolinum, their essential substance, had been tested only in almost infinitesimal quantities within steel chambers embedded in lead. Beyond the thought of great destruction slumbering in the black spheres between his legs, and a keen resolve to follow out very exactly the instructions that

had been given him, the man's mind was a blank. His aquiline profile against the starlight expressed nothing but a profound gloom.

The sky below grew clearer as the Central European capital was approached.

So far they had been singularly lucky and had been challenged by no aeroplanes at all. The frontier scouts they must have passed in the night; probably these were mostly under the clouds; the world was wide and they had had luck in not coming close to any soaring sentinel. Their machine was painted a pale gray, that lay almost invisibly over the cloud levels below. But now the east was flushing with the near ascent of the sun, Berlin was but a score of miles ahead, and the luck of the Frenchmen held. By imperceptible degrees the clouds below dissolved....

Away to the north-eastward, in a cloudless pool of gathering light and with all its nocturnal illuminations still blazing, was Berlin. The left finger of the steersman verified roads and open spaces below upon the mica-covered square of map that was fastened by his wheel. There in a series of lake-like expansions was the Havel away to the right; over by those forests must be Spandau; there the river split about the Potsdam island; and right ahead was Charlottenburg cleft by a great thoroughfare that fell like an indicating beam of light straight to the imperial headquarters. There, plain enough, was the Thiergarten; beyond rose the imperial palace, and to the right those tall buildings, those clustering, beflagged, bemasted roofs, must be the offices in which the Central European staff was housed. It was all coldly clear and colourless in the dawn.

He looked up suddenly as a humming sound grew out of nothing and became swiftly louder. Nearly overhead a German aeroplane was circling down from an immense height to challenge him. He made a gesture with his left arm to the gloomy man behind and then gripped his little wheel with both hands, crouched over it, and twisted his neck to look upward. He was attentive, tightly strung, but quite contemptuous of their ability to hurt him. No German alive, he was assured, could outfly him, or indeed any one of the best Frenchmen. He imagined they might strike at him as a hawk strikes, but they were men coming down out of the bitter cold up there, in a hungry, spiritless, morning mood; they came slanting down like a sword swung by a lazy man, and not so rapidly but that he was able to slip away from under them and get between them and Berlin. They began challenging him in German with a megaphone when they were still perhaps a mile away. The words came to him, rolled up into a mere blob of hoarse sound. Then, gathering alarm from his grim silence, they gave chase and swept down, a hundred yards above him perhaps, and a couple of hundred behind. They were beginning to understand what he was. He ceased to watch

them and concentrated himself on the city ahead, and for a time the two aeroplanes raced....

A bullet came tearing through the air by him, as though some one was tearing paper. A second followed. Something tapped the machine.

It was time to act. The broad avenues, the park, the palaces below rushed widening out nearer and nearer to them. 'Ready!' said the steersman.

The gaunt face hardened to grimness, and with both hands the bomb-thrower lifted the big atomic bomb from the box and steadied it against the side. It was a black sphere two feet in diameter. Between its handles was a little celluloid stud, and to this he bent his head until his lips touched it. Then he had to bite in order to let the air in upon the inducive. Sure of its accessibility, he craned his neck over the side of the aeroplane and judged his pace and distance. Then very quickly he bent forward, bit the stud, and hoisted the bomb over the side.

'Round,' he whispered inaudibly.

The bomb flashed blinding scarlet in mid-air, and fell, a descending column of blaze eddying spirally in the midst of a whirlwind. Both the aeroplanes were tossed like shuttlecocks, hurled high and sideways and the steersman, with gleaming eyes and set teeth, fought in great banking curves for a balance. The gaunt man clung tight with hand and knees; his nostrils dilated, his teeth biting his lips. He was firmly strapped....

When he could look down again it was like looking down upon the crater of a small volcano. In the open garden before the Imperial castle a shuddering star of evil splendour spurted and poured up smoke and flame towards them like an accusation. They were too high to distinguish people clearly, or mark the bomb's effect upon the building until suddenly the facade tottered and crumbled before the flare as sugar dissolves in water. The man stared for a moment, showed all his long teeth, and then staggered into the cramped standing position his straps permitted, hoisted out and bit another bomb, and sent it down after its fellow.

The explosion came this time more directly underneath the aeroplane and shot it upward edgeways. The bomb box tipped to the point of disgorgement, and the bomb-thrower was pitched forward upon the third bomb with his face close to its celluloid stud. He clutched its handles, and with a sudden gust of determination that the thing should not escape him, bit its stud. Before he could hurl it over, the monoplane was slipping sideways. Everything was falling sideways. Instinctively he gave himself up to gripping, his body holding the bomb in its place.

Then that bomb had exploded also, and steersman, thrower, and aeroplane were just flying rags and splinters of metal and drops of moisture in the air, and a third column of fire rushed eddying down upon the doomed buildings below....

Section 4

Never before in the history of warfare had there been a continuing explosive; indeed, up to the middle of the twentieth century the only explosives known were combustibles whose explosiveness was due entirely to their instantaneousness; and these atomic bombs which science burst upon the world that night were strange even to the men who used them. Those used by the Allies were lumps of pure Carolinum, painted on the outside with unoxidised cydonator inducive enclosed hermetically in a case of membranium. A little celluloid stud between the handles by which the bomb was lifted was arranged so as to be easily torn off and admit air to the inducive, which at once became active and set up radio-activity in the outer layer of the Carolinum sphere. This liberated fresh inducive, and so in a few minutes the whole bomb was a blazing continual explosion. The Central European bombs were the same, except that they were larger and had a more complicated arrangement for animating the inducive.

Always before in the development of warfare the shells and rockets fired had been but momentarily explosive, they had gone off in an instant once for all, and if there was nothing living or valuable within reach of the concussion and the flying fragments then they were spent and over. But Carolinum, which belonged to the β-Group of Hyslop's so-called 'suspended degenerator' elements, once its degenerative process had been induced, continued a furious radiation of energy and nothing could arrest it. Of all Hyslop's artificial elements, Carolinum was the most heavily stored with energy and the most dangerous to make and handle. To this day it remains the most potent degenerator known. What the earlier twentieth-century chemists called its half period was seventeen days; that is to say, it poured out half of the huge store of energy in its great molecules in the space of seventeen days, the next seventeen days' emission was a half of that first period's outpouring, and so on. As with all radio-active substances this Carolinum, though every seventeen days its power is halved, though constantly it diminishes towards the imperceptible, is never entirely exhausted, and to this day the battle-fields and bomb fields of that frantic time in human history are sprinkled with radiant matter, and so centres of inconvenient rays.

What happened when the celluloid stud was opened was that the inducive oxidised and became active. Then the surface of the Carolinum began to degenerate. This degeneration passed only slowly into the substance of the bomb. A moment or so after its explosion began it was still mainly an inert sphere exploding superficially, a

big, inanimate nucleus wrapped in flame and thunder. Those that were thrown from aeroplanes fell in this state, they reached the ground still mainly solid, and, melting soil and rock in their progress, bored into the earth. There, as more and more of the Carolinum became active, the bomb spread itself out into a monstrous cavern of fiery energy at the base of what became very speedily a miniature active volcano. The Carolinum, unable to disperse, freely drove into and mixed up with a boiling confusion of molten soil and superheated steam, and so remained spinning furiously and maintaining an eruption that lasted for years or months or weeks according to the size of the bomb employed and the chances of its dispersal. Once launched, the bomb was absolutely unapproachable and uncontrollable until its forces were nearly exhausted, and from the crater that burst open above it, puffs of heavy incandescent vapour and fragments of viciously punitive rock and mud, saturated with Carolinum, and each a centre of scorching and blistering energy, were flung high and far.

Such was the crowning triumph of military science, the ultimate explosive that was to give the 'decisive touch' to war....

Section 5

A recent historical writer has described the world of that time as one that 'believed in established words and was invincibly blind to the obvious in things.' Certainly it seems now that nothing could have been more obvious to the people of the earlier twentieth century than the rapidity with which war was becoming impossible. And as certainly they did not see it. They did not see it until the atomic bombs burst in their fumbling hands. Yet the broad facts must have glared upon any intelligent mind. All through the nineteenth and twentieth centuries the amount of energy that men were able to command was continually increasing. Applied to warfare that meant that the power to inflict a blow, the power to destroy, was continually increasing. There was no increase whatever in the ability to escape. Every sort of passive defence, armour, fortifications, and so forth, was being outmastered by this tremendous increase on the destructive side. Destruction was becoming so facile that any little body of malcontents could use it; it was revolutionising the problems of police and internal rule. Before the last war began it was a matter of common knowledge that a man could carry about in a handbag an amount of latent energy sufficient to wreck half a city. These facts were before the minds of everybody; the children in the streets knew them. And yet the world still, as the Americans used to phrase it, 'fooled around' with the paraphernalia and pretensions of war.

It is only by realising this profound, this fantastic divorce between the scientific and intellectual movement on the one hand, and the world of the lawyer-politician on the

other, that the men of a later time can hope to understand this preposterous state of affairs. Social organisation was still in the barbaric stage. There were already great numbers of actively intelligent men and much private and commercial civilisation, but the community, as a whole, was aimless, untrained and unorganised to the pitch of imbecility. Collective civilisation, the 'Modern State,' was still in the womb of the future....

Section 6

But let us return to Frederick Barnet's *Wander Jahre* and its account of the experiences of a common man during the war time. While these terrific disclosures of scientific possibility were happening in Paris and Berlin, Barnet and his company were industriously entrenching themselves in Belgian Luxembourg.

He tells of the mobilisation and of his summer day's journey through the north of France and the Ardennes in a few vivid phrases. The country was browned by a warm summer, the trees a little touched with autumnal colour, and the wheat already golden. When they stopped for an hour at Hirson, men and women with tricolour badges upon the platform distributed cakes and glasses of beer to the thirsty soldiers, and there was much cheerfulness. 'Such good, cool beer it was,' he wrote. 'I had had nothing to eat nor drink since Epsom.'

A number of monoplanes, 'like giant swallows,' he notes, were scouting in the pink evening sky.

Barnet's battalion was sent through the Sedan country to a place called Virton, and thence to a point in the woods on the line to Jemelle. Here they detrained, bivouacked uneasily by the railway—trains and stores were passing along it all night—and next morning he marched eastward through a cold, overcast dawn, and a morning, first cloudy and then blazing, over a large spacious country-side interspersed by forest towards Arlon.

There the infantry were set to work upon a line of masked entrenchments and hidden rifle pits between St Hubert and Virton that were designed to check and delay any advance from the east upon the fortified line of the Meuse. They had their orders, and for two days they worked without either a sight of the enemy or any suspicion of the disaster that had abruptly decapitated the armies of Europe, and turned the west of Paris and the centre of Berlin into blazing miniatures of the destruction of Pompeii.

And the news, when it did come, came attenuated. 'We heard there had been mischief with aeroplanes and bombs in Paris,' Barnet relates; 'but it didn't seem to follow that "They" weren't still somewhere elaborating their plans and issuing orders. When the

enemy began to emerge from the woods in front of us, we cheered and blazed away, and didn't trouble much more about anything but the battle in hand. If now and then one cocked up an eye into the sky to see what was happening there, the rip of a bullet soon brought one down to the horizontal again....

That battle went on for three days all over a great stretch of country between Louvain on the north and Longwy to the south. It was essentially a rifle and infantry struggle. The aeroplanes do not seem to have taken any decisive share in the actual fighting for some days, though no doubt they effected the strategy from the first by preventing surprise movements. They were aeroplanes with atomic engines, but they were not provided with atomic bombs, which were manifestly unsuitable for field use, nor indeed had they any very effective kind of bomb. And though they manœuvred against each other, and there was rifle shooting at them and between them, there was little actual aerial fighting. Either the airmen were indisposed to fight or the commanders on both sides preferred to reserve these machines for scouting....

After a day or so of digging and scheming, Barnet found himself in the forefront of a battle. He had made his section of rifle pits chiefly along a line of deep dry ditch that gave a means of inter-communication, he had had the earth scattered over the adjacent field, and he had masked his preparations with tussocks of corn and poppy. The hostile advance came blindly and unsuspiciously across the fields below and would have been very cruelly handled indeed, if some one away to the right had not opened fire too soon.

'It was a queer thrill when these fellows came into sight,' he confesses; 'and not a bit like manœuvres. They halted for a time on the edge of the wood and then came forward in an open line. They kept walking nearer to us and not looking at us, but away to the right of us. Even when they began to be hit, and their officers' whistles woke them up, they didn't seem to see us. One or two halted to fire, and then they all went back towards the wood again. They went slowly at first, looking round at us, then the shelter of the wood seemed to draw them, and they trotted. I fired rather mechanically and missed, then I fired again, and then I became earnest to hit something, made sure of my sighting, and aimed very carefully at a blue back that was dodging about in the corn. At first I couldn't satisfy myself and didn't shoot, his movements were so spasmodic and uncertain; then I think he came to a ditch or some such obstacle and halted for a moment. "*Got* you," I whispered, and pulled the trigger.

'I had the strangest sensations about that man. In the first instance, when I felt that I had hit him I was irradiated with joy and pride....

'I sent him spinning. He jumped and threw up his arms....

‘Then I saw the corn tops waving and had glimpses of him flapping about. Suddenly I felt sick. I hadn’t killed him....

‘In some way he was disabled and smashed up and yet able to struggle about. I began to think....

‘For nearly two hours that Prussian was agonising in the corn. Either he was calling out or some one was shouting to him....

‘Then he jumped up—he seemed to try to get up upon his feet with one last effort; and then he fell like a sack and lay quite still and never moved again.

‘He had been unendurable, and I believe some one had shot him dead. I had been wanting to do so for some time....’

The enemy began sniping the rifle pits from shelters they made for themselves in the woods below. A man was hit in the pit next to Barnet, and began cursing and crying out in a violent rage. Barnet crawled along the ditch to him and found him in great pain, covered with blood, frantic with indignation, and with the half of his right hand smashed to a pulp. ‘Look at this,’ he kept repeating, hugging it and then extending it. ‘Damned foolery! Damned foolery! My right hand, sir! My right hand!’

For some time Barnet could do nothing with him. The man was consumed by his tortured realisation of the evil silliness of war, the realisation which had come upon him in a flash with the bullet that had destroyed his skill and use as an artificer for ever. He was looking at the vestiges with a horror that made him impenetrable to any other idea. At last the poor wretch let Barnet tie up his bleeding stump and help him along the ditch that conducted him deviously out of range....

When Barnet returned his men were already calling out for water, and all day long the line of pits suffered greatly from thirst. For food they had chocolate and bread.

‘At first,’ he says, ‘I was extraordinarily excited by my baptism of fire. Then as the heat of the day came on I experienced an enormous tedium and discomfort. The flies became extremely troublesome, and my little grave of a rifle pit was invaded by ants. I could not get up or move about, for some one in the trees had got a mark on me. I kept thinking of the dead Prussian down among the corn, and of the bitter outcries of my own man. Damned foolery! It *was* damned foolery. But who was to blame? How had we got to this? . . .

‘Early in the afternoon an aeroplane tried to dislodge us with dynamite bombs, but she was hit by bullets once or twice, and suddenly dived down over beyond the trees.

“‘From Holland to the Alps this day,” I thought, “there must be crouching and lying between half and a million of men, trying to inflict irreparable damage upon one another. The thing is idiotic to the pitch of impossibility. It is a dream. Presently I shall wake up.” . . .

‘Then the phrase changed itself in my mind. “Presently mankind will wake up.”

‘I lay speculating just how many thousands of men there were among these hundreds of thousands, whose spirits were in rebellion against all these ancient traditions of flag and empire. Weren’t we, perhaps, already in the throes of the last crisis, in that darkest moment of a nightmare’s horror before the sleeper will endure no more of it—and wakes?

‘I don’t know how my speculations ended. I think they were not so much ended as distracted by the distant thudding of the guns that were opening fire at long range upon Namur.’

Section 7

But as yet Barnet had seen no more than the mildest beginnings of modern warfare. So far he had taken part only in a little shooting. The bayonet attack by which the advanced line was broken was made at a place called Croix Rouge, more than twenty miles away, and that night under cover of the darkness the rifle pits were abandoned and he got his company away without further loss.

His regiment fell back unpressed behind the fortified lines between Namur and Sedan, entrained at a station called Mettet, and was sent northward by Antwerp and Rotterdam to Haarlem. Hence they marched into North Holland. It was only after the march into Holland that he began to realise the monstrous and catastrophic nature of the struggle in which he was playing his undistinguished part.

He describes very pleasantly the journey through the hills and open land of Brabant, the repeated crossing of arms of the Rhine, and the change from the undulating scenery of Belgium to the flat, rich meadows, the sunlit dyke roads, and the countless windmills of the Dutch levels. In those days there was unbroken land from Alkmaar and Leiden to the Dollart. Three great provinces, South Holland, North Holland, and Zuiderzeeland, reclaimed at various times between the early tenth century and 1945 and all many feet below the level of the waves outside the dykes, spread out their lush polders to the northern sun and sustained a dense industrious population. An intricate web of laws and custom and tradition ensured a perpetual vigilance and a perpetual defence against the beleaguering sea. For more than two hundred and fifty

miles from Walcheren to Friesland stretched a line of embankments and pumping stations that was the admiration of the world.

If some curious god had chosen to watch the course of events in those northern provinces while that flanking march of the British was in progress, he would have found a convenient and appropriate seat for his observation upon one of the great cumulus clouds that were drifting slowly across the blue sky during all these eventful days before the great catastrophe. For that was the quality of the weather, hot and clear, with something of a breeze, and underfoot dry and a little inclined to be dusty. This watching god would have looked down upon broad stretches of sunlit green, sunlit save for the creeping patches of shadow cast by the clouds, upon sky-reflecting meres, fringed and divided up by masses of willow and large areas of silvery weeds, upon white roads lying bare to the sun and upon a tracery of blue canals. The pastures were alive with cattle, the roads had a busy traffic, of beasts and bicycles and gaily coloured peasants' automobiles, the hues of the innumerable motor barges in the canal vied with the eventfulness of the roadways; and everywhere in solitary steadings, amidst ricks and barns, in groups by the wayside, in straggling villages, each with its fine old church, or in compact towns laced with canals and abounding in bridges and clipped trees, were human habitations.

The people of this country-side were not belligerents. The interests and sympathies alike of Holland had been so divided that to the end she remained undecided and passive in the struggle of the world powers. And everywhere along the roads taken by the marching armies clustered groups and crowds of impartially observant spectators, women and children in peculiar white caps and old-fashioned sabots, and elderly, clean-shaven men quietly thoughtful over their long pipes. They had no fear of their invaders; the days when 'soldiering' meant bands of licentious looters had long since passed away....

That watcher among the clouds would have seen a great distribution of khaki-uniformed men and khaki-painted material over the whole of the sunken area of Holland. He would have marked the long trains, packed with men or piled with great guns and war material, creeping slowly, alert for train-wreckers, along the north-going lines; he would have seen the Scheldt and Rhine choked with shipping, and pouring out still more men and still more material; he would have noticed halts and provisionings and detrainments, and the long, bustling caterpillars of cavalry and infantry, the maggot-like wagons, the huge beetles of great guns, crawling under the poplars along the dykes and roads northward, along ways lined by the neutral, unmolested, ambiguously observant Dutch. All the barges and shipping upon the

canals had been requisitioned for transport. In that clear, bright, warm weather, it would all have looked from above like some extravagant festival of animated toys.

As the sun sank westward the spectacle must have become a little indistinct because of a golden haze; everything must have become warmer and more glowing, and because of the lengthening of the shadows more manifestly in relief. The shadows of the tall churches grew longer and longer, until they touched the horizon and mingled in the universal shadow; and then, slow, and soft, and wrapping the world in fold after fold of deepening blue, came the night—the night at first obscurely simple, and then with faint points here and there, and then jewelled in darkling splendour with a hundred thousand lights. Out of that mingling of darkness and ambiguous glares the noise of an unceasing activity would have arisen, the louder and plainer now because there was no longer any distraction of sight.

It may be that watcher drifting in the pellucid gulf beneath the stars watched all through the night; it may be that he dozed. But if he gave way to so natural a proclivity, assuredly on the fourth night of the great flank march he was aroused, for that was the night of the battle in the air that decided the fate of Holland. The aeroplanes were fighting at last, and suddenly about him, above and below, with cries and uproar rushing out of the four quarters of heaven, striking, plunging, oversetting, soaring to the zenith and dropping to the ground, they came to assail or defend the myriads below.

Secretly the Central European power had gathered his flying machines together, and now he threw them as a giant might fling a handful of ten thousand knives over the low country. And amidst that swarming flight were five that drove headlong for the sea walls of Holland, carrying atomic bombs. From north and west and south, the allied aeroplanes rose in response and swept down upon this sudden attack. So it was that war in the air began. Men rode upon the whirlwind that night and slew and fell like archangels. The sky rained heroes upon the astonished earth. Surely the last fights of mankind were the best. What was the heavy pounding of your Homeric swordsmen, what was the creaking charge of chariots, beside this swift rush, this crash, this giddy triumph, this headlong swoop to death?

And then athwart this whirling rush of aerial duels that swooped and locked and dropped in the void between the lamp-lights and the stars, came a great wind and a crash louder than thunder, and first one and then a score of lengthening fiery serpents plunged hungrily down upon the Dutchmen's dykes and struck between land and sea and flared up again in enormous columns of glare and crimsoned smoke and steam.

And out of the darkness leapt the little land, with its spires and trees, aghast with terror, still and distinct, and the sea, tumbled with anger, red-foaming like a sea of blood....

Over the populous country below went a strange multitudinous crying and a flurry of alarm bells....

The surviving aeroplanes turned about and fled out of the sky, like things that suddenly know themselves to be wicked....

Through a dozen thunderously flaming gaps that no water might quench, the waves came roaring in upon the land....

Section 8

'We had cursed our luck,' says Barnet, 'that we could not get to our quarters at Alkmaar that night. There, we were told, were provisions, tobacco, and everything for which we craved. But the main canal from Zaandam and Amsterdam was hopelessly jammed with craft, and we were glad of a chance opening that enabled us to get out of the main column and lie up in a kind of little harbour very much neglected and weedgrown before a deserted house. We broke into this and found some herrings in a barrel, a heap of cheeses, and stone bottles of gin in the cellar; and with this I cheered my starving men. We made fires and toasted the cheese and grilled our herrings. None of us had slept for nearly forty hours, and I determined to stay in this refuge until dawn and then if the traffic was still choked leave the barge and march the rest of the way into Alkmaar.

'This place we had got into was perhaps a hundred yards from the canal and underneath a little brick bridge we could see the flotilla still, and hear the voices of the soldiers. Presently five or six other barges came through and lay up in the mere near by us, and with two of these, full of men of the Antrim regiment, I shared my find of provisions. In return we got tobacco. A large expanse of water spread to the westward of us and beyond were a cluster of roofs and one or two church towers. The barge was rather cramped for so many men, and I let several squads, thirty or forty perhaps altogether, bivouac on the bank. I did not let them go into the house on account of the furniture, and I left a note of indebtedness for the food we had taken. We were particularly glad of our tobacco and fires, because of the numerous mosquitoes that rose about us.

'The gate of the house from which we had provisioned ourselves was adorned with the legend, *Vreugde bij Vrede*, "Joy with Peace," and it bore every mark of the busy retirement of a comfort-loving proprietor. I went along his garden, which was gay and

delightful with big bushes of rose and sweet brier, to a quaint little summer-house, and there I sat and watched the men in groups cooking and squatting along the bank. The sun was setting in a nearly cloudless sky.

‘For the last two weeks I had been a wholly occupied man, intent only upon obeying the orders that came down to me. All through this time I had been working to the very limit of my mental and physical faculties, and my only moments of rest had been devoted to snatches of sleep. Now came this rare, unexpected interlude, and I could look detachedly upon what I was doing and feel something of its infinite wonderfulness. I was irradiated with affection for the men of my company and with admiration at their cheerful acquiescence in the subordination and needs of our positions. I watched their proceedings and heard their pleasant voices. How willing those men were! How ready to accept leadership and forget themselves in collective ends! I thought how manfully they had gone through all the strains and toil of the last two weeks, how they had toughened and shaken down to comradeship together, and how much sweetness there is after all in our foolish human blood. For they were just one casual sample of the species—their patience and readiness lay, as the energy of the atom had lain, still waiting to be properly utilised. Again it came to me with overpowering force that the supreme need of our race is leading, that the supreme task is to discover leading, to forget oneself in realising the collective purpose of the race. Once more I saw life plain....’

Very characteristic is that of the ‘rather too corpulent’ young officer, who was afterwards to set it all down in the *Wander Jahre*. Very characteristic, too, it is of the change in men’s hearts that was even then preparing a new phase of human history.

He goes on to write of the escape from individuality in science and service, and of his discovery of this ‘salvation.’ All that was then, no doubt, very moving and original; now it seems only the most obvious commonplace of human life.

The glow of the sunset faded, the twilight deepened into night. The fires burnt the brighter, and some Irishmen away across the mere started singing. But Barnet’s men were too weary for that sort of thing, and soon the bank and the barge were heaped with sleeping forms.

‘I alone seemed unable to sleep. I suppose I was over-weary, and after a little feverish slumber by the tiller of the barge I sat up, awake and uneasy....

‘That night Holland seemed all sky. There was just a little black lower rim to things, a steeple, perhaps, or a line of poplars, and then the great hemisphere swept over us.

As at first the sky was empty. Yet my uneasiness referred itself in some vague way to the sky.

‘And now I was melancholy. I found something strangely sorrowful and submissive in the sleepers all about me, those men who had marched so far, who had left all the established texture of their lives behind them to come upon this mad campaign, this campaign that signified nothing and consumed everything, this mere fever of fighting. I saw how little and feeble is the life of man, a thing of chances, preposterously unable to find the will to realise even the most timid of its dreams. And I wondered if always it would be so, if man was a doomed animal who would never to the last days of his time take hold of fate and change it to his will. Always, it may be, he will remain kindly but jealous, desirous but discursive, able and unwisely impulsive, until Saturn who begot him shall devour him in his turn….

‘I was roused from these thoughts by the sudden realisation of the presence of a squadron of aeroplanes far away to the north-east and very high. They looked like little black dashes against the midnight blue. I remember that I looked up at them at first rather idly—as one might notice a flight of birds. Then I perceived that they were only the extreme wing of a great fleet that was advancing in a long line very swiftly from the direction of the frontier and my attention tightened.

‘Directly I saw that fleet I was astonished not to have seen it before.

‘I stood up softly, undesirous of disturbing my companions, but with my heart beating now rather more rapidly with surprise and excitement. I strained my ears for any sound of guns along our front. Almost instinctively I turned about for protection to the south and west, and peered; and then I saw coming as fast and much nearer to me, as if they had sprung out of the darkness, three banks of aeroplanes; a group of squadrons very high, a main body at a height perhaps of one or two thousand feet, and a doubtful number flying low and very indistinct. The middle ones were so thick they kept putting out groups of stars. And I realised that after all there was to be fighting in the air.

‘There was something extraordinarily strange in this swift, noiseless convergence of nearly invisible combatants above the sleeping hosts. Every one about me was still unconscious; there was no sign as yet of any agitation among the shipping on the main canal, whose whole course, dotted with unsuspicious lights and fringed with fires, must have been clearly perceptible from above. Then a long way off towards Alkmaar I heard bugles, and after that shots, and then a wild clamour of bells. I determined to let my men sleep on for as long as they could….

‘The battle was joined with the swiftness of dreaming. I do not think it can have been five minutes from the moment when I first became aware of the Central European air fleet to the contact of the two forces. I saw it quite plainly in silhouette against the luminous blue of the northern sky. The allied aeroplanes—they were mostly French—came pouring down like a fierce shower upon the middle of the Central European fleet. They looked exactly like a coarser sort of rain. There was a crackling sound—the first sound I heard—it reminded one of the Aurora Borealis, and I supposed it was an interchange of rifle shots. There were flashes like summer lightning; and then all the sky became a whirling confusion of battle that was still largely noiseless. Some of the Central European aeroplanes were certainly charged and overset; others seemed to collapse and fall and then flare out with so bright a light that it took the edge off one’s vision and made the rest of the battle disappear as though it had been snatched back out of sight.

‘And then, while I still peered and tried to shade these flames from my eyes with my hand, and while the men about me were beginning to stir, the atomic bombs were thrown at the dykes. They made a mighty thunder in the air, and fell like Lucifer in the picture, leaving a flaring trail in the sky. The night, which had been pellucid and detailed and eventful, seemed to vanish, to be replaced abruptly by a black background to these tremendous pillars of fire....

‘Hard upon the sound of them came a roaring wind, and the sky was filled with flickering lightnings and rushing clouds....

‘There was something discontinuous in this impact. At one moment I was a lonely watcher in a sleeping world; the next saw every one about me afoot, the whole world awake and amazed....

‘And then the wind had struck me a buffet, taken my helmet and swept aside the summerhouse of *Vreugde bij Vrede*, as a scythe sweeps away grass. I saw the bombs fall, and then watched a great crimson flare leap responsive to each impact, and mountainous masses of red-lit steam and flying fragments clamber up towards the zenith. Against the glare I saw the country-side for miles standing black and clear, churches, trees, chimneys. And suddenly I understood. The Central Europeans had burst the dykes. Those flares meant the bursting of the dykes, and in a little while the sea-water would be upon us....’

He goes on to tell with a certain prolixity of the steps he took—and all things considered they were very intelligent steps—to meet this amazing crisis. He got his men aboard and hailed the adjacent barges; he got the man who acted as barge engineer at his post and the engines working, he cast loose from his moorings. Then

he bethought himself of food, and contrived to land five men, get in a few dozen cheeses, and ship his men again before the inundation reached them.

He is reasonably proud of this piece of coolness. His idea was to take the wave head-on and with his engines full speed ahead. And all the while he was thanking heaven he was not in the jam of traffic in the main canal. He rather, I think, overestimated the probable rush of waters; he dreaded being swept away, he explains, and smashed against houses and trees.

He does not give any estimate of the time it took between the bursting of the dykes and the arrival of the waters, but it was probably an interval of about twenty minutes or half an hour. He was working now in darkness—save for the light of his lantern—and in a great wind. He hung out head and stern lights....

Whirling torrents of steam were pouring up from the advancing waters, which had rushed, it must be remembered, through nearly incandescent gaps in the sea defences, and this vast uprush of vapour soon veiled the flaring centres of explosion altogether.

'The waters came at last, an advancing cascade. It was like a broad roller sweeping across the country. They came with a deep, roaring sound. I had expected a Niagara, but the total fall of the front could not have been much more than twelve feet. Our barge hesitated for a moment, took a dose over her bows, and then lifted. I signalled for full speed ahead and brought her head upstream, and held on like grim death to keep her there.

'There was a wind about as strong as the flood, and I found we were pounding against every conceivable buoyant object that had been between us and the sea. The only light in the world now came from our lamps, the steam became impenetrable at a score of yards from the boat, and the roar of the wind and water cut us off from all remoter sounds. The black, shining waters swirled by, coming into the light of our lamps out of an ebony blackness and vanishing again into impenetrable black. And on the waters came shapes, came things that flashed upon us for a moment, now a half-submerged boat, now a cow, now a huge fragment of a house's timberings, now a muddle of packing-cases and scaffolding. The things clapped into sight like something shown by the opening of a shutter, and then bumped shatteringly against us or rushed by us. Once I saw very clearly a man's white face....

'All the while a group of labouring, half-submerged trees remained ahead of us, drawing very slowly nearer. I steered a course to avoid them. They seemed to gesticulate a frantic despair against the black steam clouds behind. Once a great

branch detached itself and tore shuddering by me. We did, on the whole, make headway. The last I saw of *Vreugde bij Vrede* before the night swallowed it, was almost dead astern of us....'

Section 9

Morning found Barnet still afloat. The bows of his barge had been badly strained, and his men were pumping or baling in relays. He had got about a dozen half-drowned people aboard whose boat had capsized near him, and he had three other boats in tow. He was afloat, and somewhere between Amsterdam and Alkmaar, but he could not tell where. It was a day that was still half night. Gray waters stretched in every direction under a dark gray sky, and out of the waves rose the upper parts of houses, in many cases ruined, the tops of trees, windmills, in fact the upper third of all the familiar Dutch scenery; and on it there drifted a dimly seen flotilla of barges, small boats, many overturned, furniture, rafts, timbering, and miscellaneous objects.

The drowned were under water that morning. Only here and there did a dead cow or a stiff figure still clinging stoutly to a box or chair or such-like buoy hint at the hidden massacre. It was not till the Thursday that the dead came to the surface in any quantity. The view was bounded on every side by a gray mist that closed overhead in a gray canopy. The air cleared in the afternoon, and then, far away to the west under great banks of steam and dust, the flaming red eruption of the atomic bombs came visible across the waste of water.

They showed flat and sullen through the mist, like London sunsets. 'They sat upon the sea,' says Barnet, 'like frayed-out waterlilies of flame.'

Barnet seems to have spent the morning in rescue work along the track of the canal, in helping people who were adrift, in picking up derelict boats, and in taking people out of imperilled houses. He found other military barges similarly employed, and it was only as the day wore on and the immediate appeals for aid were satisfied that he thought of food and drink for his men, and what course he had better pursue. They had a little cheese, but no water. 'Orders,' that mysterious direction, had at last altogether disappeared. He perceived he had now to act upon his own responsibility.

'One's sense was of a destruction so far-reaching and of a world so altered that it seemed foolish to go in any direction and expect to find things as they had been before the war began. I sat on the quarter-deck with Mylius my engineer and Kemp and two others of the non-commissioned officers, and we consulted upon our line of action. We were foodless and aimless. We agreed that our fighting value was extremely small, and that our first duty was to get ourselves in touch with food and

instructions again. Whatever plan of campaign had directed our movements was manifestly smashed to bits. Mylius was of opinion that we could take a line westward and get back to England across the North Sea. He calculated that with such a motor barge as ours it would be possible to reach the Yorkshire coast within four-and-twenty hours. But this idea I overruled because of the shortness of our provisions, and more particularly because of our urgent need of water.

'Every boat we drew near now hailed us for water, and their demands did much to exasperate our thirst. I decided that if we went away to the south we should reach hilly country, or at least country that was not submerged, and then we should be able to land, find some stream, drink, and get supplies and news. Many of the barges adrift in the haze about us were filled with British soldiers and had floated up from the Nord See Canal, but none of them were any better informed than ourselves of the course of events. "Orders" had, in fact, vanished out of the sky.

'"Orders" made a temporary reappearance late that evening in the form of a megaphone hail from a British torpedo boat, announcing a truce, and giving the welcome information that food and water were being hurried down the Rhine and were to be found on the barge flotilla lying over the old Rhine above Leiden.'...

We will not follow Barnet, however, in the description of his strange overland voyage among trees and houses and churches by Zaandam and between Haarlem and Amsterdam, to Leiden. It was a voyage in a red-lit mist, in a world of steamy silhouette, full of strange voices and perplexity, and with every other sensation dominated by a feverish thirst. 'We sat,' he says, 'in a little huddled group, saying very little, and the men forward were mere knots of silent endurance. Our only continuing sound was the persistent mewing of a cat one of the men had rescued from a floating hayrick near Zaandam. We kept a southward course by a watch-chain compass Mylius had produced....

'I do not think any of us felt we belonged to a defeated army, nor had we any strong sense of the war as the dominating fact about us. Our mental setting had far more of the effect of a huge natural catastrophe. The atomic bombs had dwarfed the international issues to complete insignificance. When our minds wandered from the preoccupations of our immediate needs, we speculated upon the possibility of stopping the use of these frightful explosives before the world was utterly destroyed. For to us it seemed quite plain that these bombs and the still greater power of destruction of which they were the precursors might quite easily shatter every relationship and institution of mankind.

“‘What will they be doing,” asked Mylius, “what will they be doing? It’s plain we’ve got to put an end to war. It’s plain things have to be run some way. *This*—all this—is impossible.”

‘I made no immediate answer. Something—I cannot think what—had brought back to me the figure of that man I had seen wounded on the very first day of actual fighting. I saw again his angry, tearful eyes, and that poor, dripping, bloody mess that had been a skilful human hand five minutes before, thrust out in indignant protest. “Damned foolery,” he had stormed and sobbed, “damned foolery. My right hand, sir!
My *right* hand. . . .”

‘My faith had for a time gone altogether out of me. “I think we are too—too silly,” I said to Mylius, “ever to stop war. If we’d had the sense to do it, we should have done it before this. I think this——” I pointed to the gaunt black outline of a smashed windmill that stuck up, ridiculous and ugly, above the blood-lit waters—“this is the end.”’

Section 10

But now our history must part company with Frederick Barnet and his barge-load of hungry and starving men.

For a time in western Europe at least it was indeed as if civilisation had come to a final collapse. These crowning buds upon the tradition that Napoleon planted and Bismarck watered, opened and flared ‘like waterlilies of flame’ over nations destroyed, over churches smashed or submerged, towns ruined, fields lost to mankind for ever, and a million weltering bodies. Was this lesson enough for mankind, or would the flames of war still burn amidst the ruins?

Neither Barnet nor his companions, it is clear, had any assurance in their answers to that question. Already once in the history of mankind, in America, before its discovery by the whites, an organised civilisation had given way to a mere cult of warfare, specialised and cruel, and it seemed for a time to many a thoughtful man as if the whole world was but to repeat on a larger scale this ascendancy of the warrior, this triumph of the destructive instincts of the race.

The subsequent chapters of Barnet’s narrative do but supply body to this tragic possibility. He gives a series of vignettes of civilisation, shattered, it seemed, almost irreparably. He found the Belgian hills swarming with refugees and desolated by cholera; the vestiges of the contending armies keeping order under a truce, without actual battles, but with the cautious hostility of habit, and a great absence of plan everywhere.

Overhead aeroplanes went on mysterious errands, and there were rumours of cannibalism and hysterical fanaticisms in the valleys of the Semoy and the forest region of the eastern Ardennes. There was the report of an attack upon Russia by the Chinese and Japanese, and of some huge revolutionary outbreak in America. The weather was stormier than men had ever known it in those regions, with much thunder and lightning and wild cloud-bursts of rain....

CHAPTER THE THIRD
THE ENDING OF WAR

Section 1

On the mountain-side above the town of Brissago and commanding two long stretches of Lake Maggiore, looking eastward to Bellinzona, and southward to Luino, there is a shelf of grass meadows which is very beautiful in springtime with a great multitude of wild flowers. More particularly is this so in early June, when the slender asphodel Saint Bruno's lily, with its spike of white blossom, is in flower. To the westward of this delightful shelf there is a deep and densely wooded trench, a great gulf of blue some mile or so in width out of which arise great precipices very high and wild. Above the asphodel fields the mountains climb in rocky slopes to solitudes of stone and sunlight that curve round and join that wall of cliffs in one common skyline. This desolate and austere background contrasts very vividly with the glowing serenity of the great lake below, with the spacious view of fertile hills and roads and villages and islands to south and east, and with the hotly golden rice flats of the Val Maggia to the north. And because it was a remote and insignificant place, far away out of the crowding tragedies of that year of disaster, away from burning cities and starving multitudes, bracing and tranquillising and hidden, it was here that there gathered the conference of rulers that was to arrest, if possible, before it was too late, the *débâcle* of civilisation. Here, brought together by the indefatigable energy of that impassioned humanitarian, Leblanc, the French ambassador at Washington, the chief Powers of the world were to meet in a last desperate conference to 'save humanity.'

Leblanc was one of those ingenuous men whose lot would have been insignificant in any period of security, but who have been caught up to an immortal *rôle* in history by the sudden simplification of human affairs through some tragical crisis, to the measure of their simplicity. Such a man was Abraham Lincoln, and such was Garibaldi. And Leblanc, with his transparent childish innocence, his entire self-forgetfulness, came into this confusion of distrust and intricate disaster with an invincible appeal for the manifest sanities of the situation. His voice, when he spoke, was 'full of remonstrance.' He was a little bald, spectacled man, inspired by that

intellectual idealism which has been one of the peculiar gifts of France to humanity. He was possessed of one clear persuasion, that war must end, and that the only way to end war was to have but one government for mankind. He brushed aside all other considerations. At the very outbreak of the war, so soon as the two capitals of the belligerents had been wrecked, he went to the president in the White House with this proposal. He made it as if it was a matter of course. He was fortunate to be in Washington and in touch with that gigantic childishness which was the characteristic of the American imagination. For the Americans also were among the simple peoples by whom the world was saved. He won over the American president and the American government to his general ideas; at any rate they supported him sufficiently to give him a standing with the more sceptical European governments, and with this backing he set to work—it seemed the most fantastic of enterprises—to bring together all the rulers of the world and unify them. He wrote innumerable letters, he sent messages, he went desperate journeys, he enlisted whatever support he could find; no one was too humble for an ally or too obstinate for his advances; through the terrible autumn of the last wars this persistent little visionary in spectacles must have seemed rather like a hopeful canary twittering during a thunderstorm. And no accumulation of disasters daunted his conviction that they could be ended.

For the whole world was flaring then into a monstrous phase of destruction. Power after Power about the armed globe sought to anticipate attack by aggression. They went to war in a delirium of panic, in order to use their bombs first. China and Japan had assailed Russia and destroyed Moscow, the United States had attacked Japan, India was in anarchistic revolt with Delhi a pit of fire spouting death and flame; the redoubtable King of the Balkans was mobilising. It must have seemed plain at last to every one in those days that the world was slipping headlong to anarchy. By the spring of 1959 from nearly two hundred centres, and every week added to their number, roared the unquenchable crimson conflagrations of the atomic bombs, the flimsy fabric of the world's credit had vanished, industry was completely disorganised and every city, every thickly populated area was starving or trembled on the verge of starvation. Most of the capital cities of the world were burning; millions of people had already perished, and over great areas government was at an end. Humanity has been compared by one contemporary writer to a sleeper who handles matches in his sleep and wakes to find himself in flames.

For many months it was an open question whether there was to be found throughout all the race the will and intelligence to face these new conditions and make even an attempt to arrest the downfall of the social order. For a time the war spirit defeated every effort to rally the forces of preservation and construction. Leblanc seemed to be

protesting against earthquakes, and as likely to find a spirit of reason in the crater of Etna. Even though the shattered official governments now clamoured for peace, bands of irreconcilables and invincible patriots, usurpers, adventurers, and political desperadoes, were everywhere in possession of the simple apparatus for the disengagement of atomic energy and the initiation of new centres of destruction. The stuff exercised an irresistible fascination upon a certain type of mind. Why should any one give in while he can still destroy his enemies? Surrender? While there is still a chance of blowing them to dust? The power of destruction which had once been the ultimate privilege of government was now the only power left in the world—and it was everywhere. There were few thoughtful men during that phase of blazing waste who did not pass through such moods of despair as Barnet describes, and declare with him: 'This is the end....'

And all the while Leblanc was going to and fro with glittering glasses and an inexhaustible persuasiveness, urging the manifest reasonableness of his view upon ears that ceased presently to be inattentive. Never at any time did he betray a doubt that all this chaotic conflict would end. No nurse during a nursery uproar was ever so certain of the inevitable ultimate peace. From being treated as an amiable dreamer he came by insensible degrees to be regarded as an extravagant possibility. Then he began to seem even practicable. The people who listened to him in 1958 with a smiling impatience, were eager before 1959 was four months old to know just exactly what he thought might be done. He answered with the patience of a philosopher and the lucidity of a Frenchman. He began to receive responses of a more and more hopeful type. He came across the Atlantic to Italy, and there he gathered in the promises for this congress. He chose those high meadows above Brissago for the reasons we have stated. 'We must get away,' he said, 'from old associations.' He set to work requisitioning material for his conference with an assurance that was justified by the replies. With a slight incredulity the conference which was to begin a new order in the world, gathered itself together. Leblanc summoned it without arrogance, he controlled it by virtue of an infinite humility. Men appeared upon those upland slopes with the apparatus for wireless telegraphy; others followed with tents and provisions; a little cable was flung down to a convenient point upon the Locarno road below. Leblanc arrived, sedulously directing every detail that would affect the tone of the assembly. He might have been a courier in advance rather than the originator of the gathering. And then there arrived, some by the cable, most by aeroplane, a few in other fashions, the men who had been called together to confer upon the state of the world. It was to be a conference without a name. Nine monarchs, the presidents of four republics, a number of ministers and ambassadors, powerful journalists, and

such-like prominent and influential men, took part in it. There were even scientific men; and that world-famous old man, Holsten, came with the others to contribute his amateur statecraft to the desperate problem of the age. Only Leblanc would have dared so to summon figure heads and powers and intelligence, or have had the courage to hope for their agreement....