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### Science and Warfare

IT has always pleased man in his humanity to set forth more or less periodically and kill a number of his fellow humans. History shows that there has usually been a good reason for this—generally the other country has taken the first hostile step, particularly of later years, when it has appeared necessary to justify warfare as being waged for self-protection. As we know ourselves from our small daily disputes, the other man is always in the wrong, though he seldom, if ever, annoys us so much that we want to kill him: individual murder is discouraged, even appears to the Britisher as being silly and undignified, so that instead of sneaking on him in the dark, or killing him in a duel, we tell our sympathetic family just what we think of him and his actions.

In the same way the other country is always wrong, but there is no sympathetic family external to the nation to which the group of individuals can unburden themselves. Just as one man, compelled to keep to himself the wrongs, real or imaginary, done to him by someone he dislikes may eventually burst out and attack the person he imagines to be hostile to him, so may an entire nation go mad.

A fight between two people, if neither be annihilated, may result in the loss of many million living cells, due to abrasions and blood letting; when nations go to war the fight is on a bigger scale, and the "cells" are men. The living cells of the body may be replaced—nature makes big endeavours; the living "cells" of the nation also may be replaced, as a younger generation grows up; but men are organisations having mental attributes not possessed by the single cells, and irreparable damage must be done to the national body in every such period of violence.

Scientists are definitely and publicly opposed to warfare, and yet are generally blamed for making wars more general and more terrible. The accusation is not only that science produces weapons of greater destructive range, either intentionally or by the actions of people in misapplying its innocent discoveries, but also that the scientist is actively employed by his nation in studying methods by which their possible future foes, regimented or civilian, may be destroyed.

The public now recognises that every country has a large number of people mentally fitted to be enquirers into the nature of things; that many of these people



have received a specialised training, which gives to them knowledge and the ability to acquire more knowledge not within the immediate comprehension of others who have not their mental outlook and training, and it wonders if it is eventually to be destroyed by the casual publication to the world of discoveries daily more astounding to the older generation.

We have certainly passed from the old days when a few soldiers fought the wars, and bronze swords and daggers were employed. Ten thousand men—half a division—is a small number in modern battles, yet it would have made all the difference to the history of the world if Hannibal had had them in Italy, whilst a single battery of eighteen-pounder guns under his command would have brought the second Punic War to a very different conclusion. Yet, in spite of this, I do not think that it would have been any more pleasant to be an inhabitant of a town put to the sack by the soldiers of some 200 B.C. than it will be to be an inhabitant of a town gassed during the wars of some A.D. 2000 ; and it would appeal to most of us far more strongly to take our chance as an engineer on a modern battleship than to be chained, a whip-lashed, life-doomed slave on a Carthaginian galley, supplying the moving power by personal labour. We can all think of nice little wars that did not take place in England, and where only the professional soldiers of England were employed, but big wars of so-termed "pre-scientific" periods have always meant for some land the pillaging and destruction of its countryside, the burning of its villages, the sacking of its towns, and the rape and murder of its civilians, with most of those left living removed to slavery because energy had to be supplied by human labour. Fewer people were killed, because there were fewer to kill, but war always has been and always will be a ghastly and discreditable business, and it is no more disconcerting for us today to be disembowelled by a high explosive shell or bomb from an aeroplane than it would have been to have had a similar messy operation performed with a bronze sword. Science has merely provided different weapons which make it a quicker business to decimate a nation, and enable that to be carried out from a greater distance, so that the most "up-to-date" nation has the advantages.

The introduction of tanks in the Great War was no more terrible than the introduction of elephants in the earlier ones—and we are even unintentionally becoming more humane, as mechanisation leads us to refrain from dragging unfortunate animals into our conflicts.

This is in no way a defence of war, nor of the part played by science in the active assistance of offensive measures. It is to point out that the fundamental thing to attack is not the scientist, or the soldier, but warfare itself, however waged ; and that the difficulty the scientist of any country is up against is that of any other member of his nation : he wants freedom, liberty and happiness, and does not feel that he and his children are likely to enjoy it whilst there are less tranquil and peace-loving nations preparing or prepared to rob him of his liberty. The scientist may be British, French, German, Japanese or of any other nationality, and the suspect country may be any other of these or their combinations ; it is quite irrational, but there you are—the "other man" is wrong, may be annoying, possibly even dangerous—and we are back again at the opening paragraphs of this essay.

There are leagues and conferences in existence whose purpose is to stop war, to restrict armaments, to control the peace of the world. The writer is not going to say here whether they are completely successful or not. Most countries have agreed not to use poison gas in the next war ; again, the writer would not like to say whether they will or will not do so when the war actually comes. Can you therefore insist that the efforts of scientists, made as they are during times of peace practically entirely for the assistance of mankind, must not be misapplied by men (including, certainly, scientists themselves) during wartime for wartime destruction ? Will this also be arranged by a committee ?

Science has helped to raise humanity from oft-starving wandering tribes, swept by epidemics of disease when they congregated, superstitious, terrified and oppressed, living far more dangerously than we do today, to our present stage. We have a long way yet to go, and science will continue to be one of our greatest aids, in ways yet unimaginable. We must not turn and blame the scientist for faults not exclusive to himself, but common to the whole of humanity, and must remember that science may eventually find the cure which will enable us to live as one body of humans, with many minor disagreements, but viewing with horror akin to our present attitude to cannibalism the idea that we were ever able to indulge in wholesale human destruction.

Wars will yet come ; men will yet die terrible deaths—no more horrible than in the past—scientists will yet unite with their fellow citizens in fighting for their homes and country, with weapons either of the battlefield or of the workshop. It is a tragedy that this should be the fact, but it is a tragedy that has always existed, and which the world must continue to endeavour to bring to a close. The spread of scientific knowledge and thought, the abolition of national boundaries within the world by the use of machines produced by science, the removal of want and the further introduction of legitimate leisure in which we can have time to read and think will help to bring this about before man completely destroys the diminishing number of his descendants.

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