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THE EXTINCTION
OF
War, Poverty, and Infectious Diseases.

CONTAINING ESSAYS ON
HOME RULE AND FEDERATION;
CAN WAR BE SUPPRESSED?;
STATE REMEDIES FOR POVERTY;
AND
THE EXTINCTION OF INFECTIOUS DISEASES.

BY
A DOCTOR OF MEDICINE,
Author of "The Elements of Social Science."

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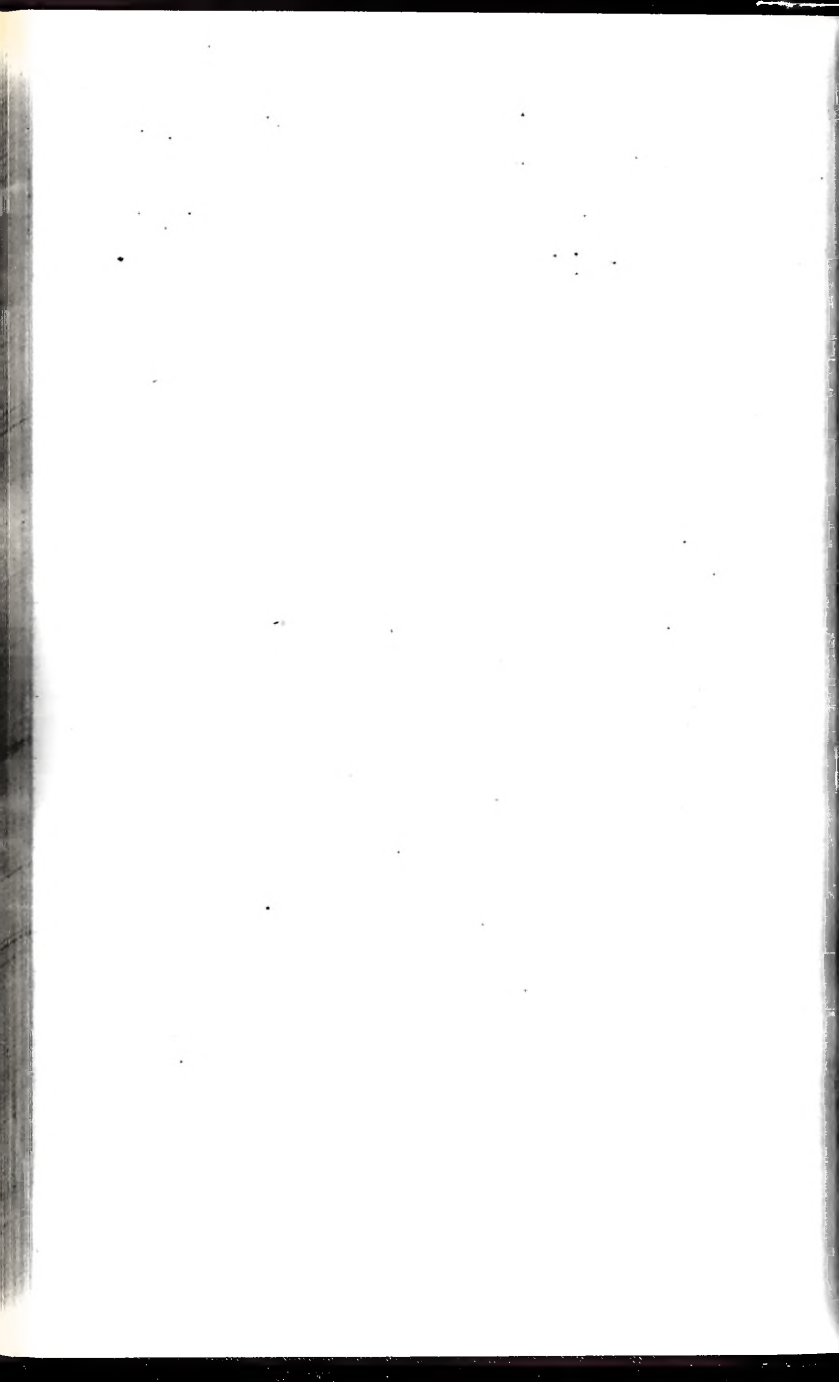
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HOME RULE AND FEDERATION.

WITH REMARKS ON
LAW AND GOVERNMENT AND INTERNATIONAL ANARCHY;
AND WITH A PROPOSAL FOR THE
FEDERAL UNION OF FRANCE AND ENGLAND,
AS THE MOST IMPORTANT STEP TO
THE FEDERATION OF THE WORLD.



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“The time may come when the aspirations and wishes of some among us may be realised, and we shall see all the possessions and the colonies of England united in one great federation. When that time comes we may have a great federal authority which will be prepared to take the place, the supreme place, in the government of our Empire which is now occupied by the Imperial Parliament.”—LORD HARTINGTON (*Speech at Norwich, Feb. 27, 1889*).

“Some of us who look with hope to a possible federation of the whole of the dominions now nominally or really subject to British rule, recognise that we shall then have to face the huge difficulty of constitution-making.”—MR. BRADLAUGH (*National Reformer, Feb. 10, 1889*).

“I consider that the federation of Europe, with its railways and telegraphs, would not be more ridiculous than was the federation of the United States of America.”—M. JULES SIMON (*Nouvelle Revue Internationale, Jan., 1891*).

THE QUESTION OF IRISH HOME RULE.

I.

As a warm friend of Ireland, though an opponent of Home Rule in the sense of an Irish Parliament separate from that of Great Britain, I may perhaps be permitted here to make a few remarks on the great and complicated Irish question. I know that on this subject I have the misfortune to differ in certain respects from some whose opinion I value very highly and with whom I am anxious to be agreed; but I think that the differences are partly owing to the ambiguity in the phrase "Home Rule" or "local self-government", which is used in at least three widely different senses, and that at bottom we have the same earnest desire—that the supremacy of the Imperial Parliament and the unity of the kingdom should be preserved, and that Ireland should not be separated from Great Britain.

The Irish question has been divided into the three parts of local self-government, or Home Rule, the land system, and social order—including under the first terms not only an Irish parliament, whether on the colonial or the federal model, but also minor forms and degrees of local self-government, and meaning by "social order" compliance with law and the repression of outrages and boycotting; and besides the above there is a fourth question which should, I think, be attentively considered, namely, the Irish Churches, Catholic and Protestant, and their relation to the State. I need scarcely say here, moreover, what Mr. Bradlaugh and Mrs. Besant have so nobly and strenuously contended for, that the population question lies at the very root of the social evils, in Ireland as in all other old countries, and should be carefully taken into account.

The most serious objection to an Irish Parliament, I venture to think, is this—that if such a parliament were "independent", or in other words if it were neither subject to the British Government nor subject along with it to a higher common government, it would make Ireland an independent, separate

or foreign State like France or Holland; while if, on the other hand, it were "dependent" on the British Government, it would put Ireland in an inferior position to that which she now occupies, and it would therefore not content Mr. Parnell and his followers but would be used by them as an instrument for effecting entire separation. Mr. Parnell claims for Ireland "legislative independence" and "the full and complete right to arrange our own affairs, to make our land a nation, and to secure for her, free from outside control, the right to direct her own course among the peoples of the world". But an independent legislature free from outside control could not possibly, as it seems to me, exist in Ireland unless it were entirely separated from Great Britain. The word "independent" sometimes means distinct or detached, but its proper sense, and the sense in which it is evidently here used by Mr. Parnell, is "not dependent" or "not subject to outside control". An independent legislature or government is therefore equivalent to a supreme or sovereign government, and means a government which is not subordinate or subject to the commands of any higher authority. Such a government can only exist in a separate or independent State, for the very meaning of an independent State is a political society consisting of a sovereign government and its subjects, and there cannot be two sovereign governments in the same State. "By 'an independent political society', or 'an independent and sovereign nation'," says Mr. John Austin in his lectures on jurisprudence, "we mean a political society consisting of a sovereign and subjects, as opposed to a political society which is merely subordinate". Mr. W. A. Hunter, M.P., a high legal authority, says also in his work on Roman Law, "Since the time of Hobbes, the proposition that sovereign power is one, that there cannot be two sovereign powers in one State, has become a political commonplace". There may be many distinct legislatures or governments in the same political community, as we see for instance in the United States and in the British Empire, but there can be only one independent and sovereign government to which all the rest are subject, for otherwise the community could not form a single State.

The great majority of Englishmen who are in favor of a separate Parliament for Ireland have, I believe, radically different views and aims on the subject from Mr. Parnell. They do not wish that the Irish Parliament should be independent and free from outside control, which would inevitably have the effect of making Ireland a foreign country. Thus Mr. Bradlaugh holds that there should be a *federal* union in these islands, as in the United States, and that Ireland should be fully and constantly represented in the Imperial Parliament. He said at a Home Rule meeting in St. James's Hall, in

explaining his views on the subject, "Let Ireland share in Imperial legislation. It was asked 'How will you prevent the Irish members from voting on English, Scotch, and Welsh questions?' Let English, Scotch, and Welsh questions go to English, Scotch and Welsh assemblies. Let the Parliament of England be an Imperial Parliament." "I contend", he writes in another place, "that Ireland ought not in any event to be deprived of its fair and constant representation in the Imperial Parliament. As I have often said, my desire is that all local affairs should be withdrawn from the Imperial Parliament and dealt with under wide powers of local self-government." A political community like the United States is often called a composite State and is said to be under a supreme Federal Government. Mr. Austin carefully examines the constitution of the United States with the view of determining where the sovereignty resides, and he shows that all the different legislatures, both State and Federal, form *together* the sovereign government, to which each of these legislatures, taken singly, is subject or subordinate; just as in our own constitution, and in all other cases where the sovereign power is vested not in a single person but in a body of persons, each member of the body, taken singly, is subject to the whole body taken collectively. "In the case of a *composite State* or a *supreme Federal Government*", says Mr. Austin, "the several united governments of the several united societies, together with a government common to those several societies, are jointly sovereign in each of these several societies, and also in the larger society arising from the Federal union. Or, since the political powers of the common or general government were relinquished and conferred upon it by those several united governments, the nature of a composite State may be described more accurately thus: As compacted by the common government which they have concurred in creating, and to which they have severally delegated portions of their several sovereignties, the several governments of the several united societies are jointly sovereign in each and all." To this aggregate and sovereign body, he says, "each of its constituent members is properly in a state of subjection". Under a Federal system, therefore, though the Irish Parliament would be a part of the sovereign body, it would not be independent, but would on the contrary, if taken singly, be in a state of subjection to the whole body; and hence Mr. Parnell has always, I believe, been opposed to the Federal scheme, when regarded as an ultimate aim or policy for Ireland.

The other leading scheme of Home Rule which has been proposed, and of which Mr. Parnell is (or was until lately) an adherent, is that called the *colonial*, from its resemblance to the form of government in many of the English colonies. Under it the Irish members would be excluded from the House of

Commons, or would at most only take part in debates on Imperial questions, and Ireland would have her own legislature for the management of Irish affairs, with an executive or administrative government responsible to it. This is evidently a proposal of a widely different and far more separatist character, repealing as it does the union of the British and Irish Parliaments, and I believe that comparatively very few English Liberals or Radicals are in favor of it. They object to the exclusion of the Irish members, or to their taking part only in certain debates, even if the latter suggestion could be carried out in practice. Mr. Bradlaugh, for instance, says of such a suggestion, "with this part we utterly disagree. We contend that every member of the House of Commons should have equal right, but that purely local questions should be relegated to local assemblies." It was keenly debated in the House of Commons whether the Imperial supremacy would be retained, or whether the two countries would be separated, if the Irish members were excluded, and the controversy evidently turns upon the question whether or not the Irish Parliament would be independent. If it were dependent on the British Government, the supremacy of the latter would be retained and the countries would remain united, but Ireland would be placed in the same intolerable position of inferiority as she occupied prior to 1782; if it were independent, on the other hand, then Ireland as we have just seen would be a foreign country. In the course of the debate, Sir Henry James defined supremacy as "the power of making laws for the whole dominions of the Crown". He also defined sovereignty (which, he said, is another phase of supremacy) as consisting in two things, namely, that a Sovereign Parliament "must be subject to the control or decision of no man or body", and that "it must be able to alter and re-model its own constitution"; and he maintained that if the Imperial Parliament, after the departure of the Irish members, had no longer the power of legislating for Ireland, its supremacy would be gone and the countries would be entirely separated from one another. "I am content", he said, "to take my stand upon the dictum that if you give up the abstract right—and I make no distinction between abstract right and right—of legislation, the country over which you give it up becomes an independent and foreign State". It is true that the two countries would still be connected as regards their *foreign* affairs which would be entirely under British control, but Ireland would here be reduced to the humiliating condition of an inferior having no voice in the management. What tends to obscure this question is the peculiar position of the British Colonies, which are *nominally* dependencies but *really* independent States, connected with the mother-country by a voluntary alliance and not by the legal or compulsory tie

of subject and governor. The eminent judge, Sir James Stephen, lately pointed out that the colonies might separate from this country if they chose, without any attempt being made to retain them by force; and that the superior power nominally reserved, and indeed not unfrequently exercised, by the Imperial Parliament of making laws to bind the colonies is at bottom "merely theory", since no laws would be imposed on them against their will, and if any serious conflict arose the English law would give way. "As to the great colonies" says Sir James Stephen, "it is plain that wherever, as in Canada, South Africa, Australia, and New Zealand, constitutional government has been granted, the grant has involved, as indeed it was meant to involve, the consequence that from that time forth the connexion between such a colony and the British Islands should depend ultimately on the good will of both parties, and that every idea of retaining it by force in any event whatever, and in the last resort, should be definitively renounced. That the Dominion of Canada could, if the Canadian Parliament thought proper, separate from the United Kingdom as effectually and completely as the United States, and that if it determined to do so no civil war would take place, can be denied by no reasonable man." Where countries are connected together but have the power of separating if any of them please, it is evident that their connexion, in its essence, is not a legal or compulsory union but only an alliance, and that they really stand to each other in the relation of free and independent States.

II.

But the words "freedom and independence" are used in very different senses when applied to individuals and when applied to States, and this ambiguity of language should be carefully noticed, as it seems to me the source of endless confusion and of the most dangerous errors. As applied to individuals, the words mean freedom and independence *under law and government*, but as applied to States they mean freedom and independence in the *absence* of law and government, or in what jurists call "the state of nature" or of anarchy. The former may be called legal or political, and the latter lawless or anarchical freedom and independence. The wide difference between them will be seen if we reflect that freedom and independence, when the words are used with reference to individuals (as for instance in speaking of a freeborn person or an emancipated slave) are *legal rights* which are protected or secured, like

all other such rights, by means of corresponding *duties* imposed by the law on other persons, forbidding them under penalties to violate the rights in question. "What, for example", says Mr. Hunter, "is the meaning of a 'right to liberty'? It means that all men are bound to abstain from interfering with a man's freedom of action, except in the case where such constraint is authorised by law." "In the civil law", he says again, "duty and right are correlative terms. No duty is imposed except in the interest of some specified person, who thus has a right, and no right can exist except by imposing on another some duty. The subject-matter of the civil law may thus be described as rights and duties."

The position of free and independent States, however, is very different from this. As regards their international relations, or their dealings with one another, independent nations live together in the peculiar kind of anarchy called by Hobbes, Locke, Bentham, and other writers "the state of nature", or the "natural" condition of society; that is to say, the anarchy which does not consist in resistance to, but in the total absence of, law and government. They have no common government, no international laws, and no courts of justice for the settlement of international disputes. In such a state of things, legal right and legal duty do not exist, for there is no government to protect the one or to impose the other. Each nation has to protect itself as best it can by its own strength and resources; and hence the so-called freedom and independence of nations, being unprotected by law, are not legal rights, and are quite spurious and illusory. "As Mr. Locke has well observed," says Blackstone in his Commentaries, "where there is no law, there is no freedom". And in the passage here quoted from his essay on Government, Locke says: "In all the states of created beings capable of laws, where there is no law, there is no freedom; for liberty is to be free from restraint and violence from others; which cannot be where there is not law".

Law and government are by far the greatest and most valuable of all institutions, while anarchy with its attendant war is among the most terrible of evils. So great an evil is the anarchy or "state of nature" existing between independent nations, that it has filled all past history with wars, and the endeavor to put an end to it and to bring mankind under a common government has been a main cause of foreign conquests and the subjugation of vast territories by single States, especially by ancient Rome, and by Russia and England in modern times. But conquest, in addition to the bloodshed and misery it occasions, is attended with the immense evil that it reduces free States to the condition of *dependencies* under a foreign rule; although their subjection is not unfrequently of the greatest benefit to the conquered race if they are much

inferior in civilisation to their conquerors, and the two peoples may in time become united on terms of equality. All nations, like all individuals, should be equal, and have equal political rights, as soon as they are sufficiently civilised to use them with advantage; and therefore the true and ultimate mode of putting an end to the anarchy between nations is not by conquest and the dependency of one State upon another, but by the *legal union* of different States on *equal* terms. Now States cannot be legally united together unless they are brought under the same government, for all laws proceed from government, and a government can only make laws for its own subjects. It cannot establish legal relations between those who are not under its authority and jurisdiction, and thus the unity of a kingdom or empire depends on the unity of its government. "The real unity of a kingdom", says Sir Henry James in the debate already referred to, "must depend upon the unity of its laws. I do not mean by that that there must be an identity of laws. But what I mean is that there must be one power of making laws for a kingdom supposed to be united. It is not the identity of manufacture, it is the identity of the manufacturer that makes the unity of a kingdom." In order, therefore, that two or more free and independent nations should be legally united together, they must have the same government; and to be united on equal terms, each of them must have a share in the government, and a share in proportion to its population. They cannot, as we have seen, be legally united at all unless one of them has the power of making laws for the others; and they cannot be united on equal terms unless each of them has this power and can make laws for the others as well as for itself; that is to say, unless they have a common government and are mutually subordinate to one another. Mutual legislation, and mutual subordination or subjection, are the requisites for a legal union between free and independent States under representative institutions.

These conditions are fulfilled by the two great and invaluable methods of uniting nations, called the complete union and the federal union; which agree in the cardinal point that they are not mere alliances but real legal unions, since in each of them a single State, consisting of one sovereign government and its subjects, is formed by the junction of two or more separate States. They differ, however, in this respect, that in the complete union the sovereign powers of the State thus formed are vested in a single body of persons, while in the federal union they are divided between several distinct assemblies, which together make up the sovereign government, and each of which, taken singly, is a subordinate or non-sovereign legislative body. It is by means of a complete union, or in other words, by incorporation under one central government (whether consisting

of a sovereign assembly or of a single person or monarch), that the great majority of modern States, such as France, Italy, and the United Kingdom, have been gradually built up out of the host of petty independent kingdoms, principalities, tribes, or clans, perpetually at war with each other, which at early times existed in every part of the world. As to the federal union, which is more complicated, it is of comparatively recent origin, having been first planned and instituted by the eminent men who founded the United States, and it has since been adopted in several other countries, including Switzerland, Canada, and Germany. Under both systems of government in advanced countries, as, for instance, in the United States and the United Kingdom, there is complete political equality between the different states or nations taking part in the union. Thus Ireland has exactly the same political rights and privileges as England or Scotland; she is just as free and independent as they are; each country has a share in the government in proportion to its population, so that they mutually legislate for and are mutually subject to one another; the colonies and dependencies of the empire belong to Ireland no less than to Great Britain, and the one has the same privileges and duties as the other with respect to them; it is not the "British" or the "English" Government and Empire (though often so called for shortness), but the British-Irish Government, and the British-Irish Empire which are common to all the three countries alike, and in which each of them has an equal part and interest. Many Irishmen, however, have sought to sever this connexion, and hold that Ireland has in strict justice a *right* to separate and be independent if she prefers separation to union. Mr. Dicey, professor of law at Oxford, in his work on "England's case against Home Rule", alludes to those "Nationalists who still occupy the position held in 1848 by Sir Charles Gavan Duffy and his friends, and who either openly contend for the right of Ireland to be an independent nation, or accept Home Rule (as they may with perfect fairness) simply as a step towards the independence of their country." Mr. Parnell too, in the passage already quoted, claims for Ireland legislative independence, freedom from outside control, and the full and complete right to manage her own affairs, which are just the distinctive characteristics of a separate and independent State. On the contrary, Mr. Bradlaugh and almost all Englishmen and Scotchmen to whatever party they belong, strenuously deny the right of separation. Some months ago Mr. Bradlaugh said in the House of Commons that "he had preached the doctrine of Home Rule for twenty-five years. He preached it in New York in 1873, when he was attacked by Irishmen in a perfectly friendly spirit, because, though he supported Home Rule, he declared that he would resist separation by force if

force were employed to bring it about." The question as to the true relations between England and Ireland is evidently only a part of a far wider question which concerns every country in the world; namely, is it a good thing for *any* nation, and has any nation a right in morality and justice, to be independent and separate from others, and to have a sovereign government to itself apart? I venture to think that no nation has such a right, but that all nations ought to be legally united together; and that the rights which Mr. Parnell claims for Ireland, of legislative independence, freedom from outside control, and exclusive management of her own affairs, are not a good or a blessing either to Ireland or to any other country, but on the contrary enormous evils to mankind.

The only kind of freedom or liberty which is really a blessing is *political* or *civil* liberty—that is to say, the freedom which exists under the reign of law and government, and whose nature is thus described by Mr. Austin: "Political or civil liberty", he says, "is the liberty from legal obligation which is left or granted by a sovereign government to any of its own subjects". Moreover, before we can call liberty a blessing it must be such liberty as is consistent with the welfare of society, or, in other words, the acts permitted by government must not be of a mischievous character and hurtful to other people. "The liberty", says Bentham, "which the law *ought* to allow of and leave in existence—leave uncoerced, unremoved—is the liberty which concerns those acts only by which, if exercised, no damage would be done to the community as a whole". Now, the liberty of independent States in their dealings with one another is not political or civil, but *anarchical* or *lawless*, liberty, that is to say, the liberty which is unrestrained by government and law; for independent nations, as already remarked, have no common government, and therefore no international laws properly so called, but live together in a state of nature or of anarchy. Hence each nation is free to make war upon others, to oppress them, to violate their rights, to defraud them, and to do them any act, good or bad, which lies in its power, and which it may think conducive to its own interests. Such liberty as this is evidently not a blessing, but an incalculable evil to mankind.

Again, the truly desirable kind of independence and sovereignty is not that which a nation possesses for itself apart, but that which it shares with others, and which, moreover, is coupled with dependence or subjection in such a manner that each sharer in the sovereignty is both independent and dependent, sovereign and subject. The states of the American Union, and the different parts of the United Kingdom, did not lose their sovereignty or independence when they combined together, but shared it with others by forming in each case one

independent and sovereign State. Moreover, it is only in their collective capacity that the supreme governments in England and America are sovereign and independent, while each of their constituent parts or members, taken singly, is dependent or subject to the will of the whole. The countries which really lose their independence by being united with others are *dependencies* such as India, which have no share in the government, and this is an evil which we should seek earnestly though cautiously to remedy till at last we can become united with them on equal terms. But the sovereignty or independence which is shared with others is not an evil but a good, whereas that which is held by a nation for itself apart is anarchical independence and is attended by all the frightful evils and dangers of anarchy ; for whenever there is more than one supreme or sovereign government it is evident that the different sovereign governments are in a state of nature or of anarchy with respect to each other. It is independence in *union*, and not in separation, that is a real blessing to mankind.

III.

As to the question whether a nation has a *right*, in morality and justice, to be separate from others and to have the exclusive management of its own affairs, it seems to me that in justice nations should be legally united together and that each nation should have a voice in the management of affairs which concern them all. There is a wide difference, as Mr. Mill points out, between those of a man's acts which affect himself alone, and those which affect other people ; the former are really his own affairs, and he should be allowed to manage them for himself ; but the latter are just as much the affairs of others as of himself, and they have an equal right with him to a share in the management. The most important of the affairs which concern all mankind and in which therefore all should have a voice, are the rules of justice, whose essential character is that they are the rules which forbid a man or a nation to hurt others—to kill or enslave, to rob, cheat, or oppress them. “The moral rules”, says Mr. Mill, “which forbid mankind to hurt one another (in which we must never forget to include wrongful interference with each other's freedom) are more vital to human well-being than any maxims, however important, which only point out the best mode of managing some department of human affairs. Now it is these moralities primarily which compose the obligations of justice.” Each nation, I venture to think, should have a share in laying down and enforcing the

essential rules of justice not only between nation and nation, but between man and man and between rulers and their subjects, all over the world. The first rights of man, the security of person and property and the fair and equal treatment of individuals, concern everyone deeply, and should be under the common protection of all. But law and government are institutions whose main object is to lay down and enforce the rules of justice among mankind. How then can it be just for a nation, how can a nation have a right, to separate and remain apart from others, when by so doing it puts an end to law and government between itself and them, and thus saps the very foundations of justice?

Instead of seeking to make Ireland "free and independent" in the spurious and anarchical sense of these terms, we ought rather to seek that no country whatever should be independent in this sense, but that all should have the true freedom and independence which can only exist under the reign of government and law. It seems to me that one of the grandest aims ever conceived—indeed, next to the removal of poverty and the other population evils, the very greatest reform that could be effected in human affairs—is to get rid gradually of the present system of independent or sovereign States, which is attended with complete international anarchy, and to substitute for it a system of law and mutual subordination by bringing all mankind under a common government; in such a way that there should be only one supreme or sovereign federal government, of which the national governments in the different countries, together with a general congress composed of representatives from them all, would form parts or members, and to which each of these governments, taken singly, would be subject or subordinate. All States would thus be legally united or confederated with one another, while the component parts of each State would be joined together either by a complete or by a federal union; and the condition of dependencies, in which less civilised races are governed by others more civilised, would gradually be done away with as the backward populations grew in enlightenment, till at length all nations were placed on a footing of political equality, and endowed with equal rights and privileges. This, I believe, is the great goal to which humanity should aspire and is actually tending, as is warmly urged by many of the ablest and most prominent members of the Freethought party, including Mrs. Besant, "D.", Mr. J. M. Robertson, and Mr. W. P. Ball, in late numbers of the *National Reformer*. Mrs. Besant said at the Home Rule Meeting in St. James's Hall: "They hoped that this union with Ireland would be the forecast of a wider union which, in days to come, should bind together every land in one great commonwealth. What the Radicals hoped for was that

every nation might manage its local affairs in its own way, and that over and above every nation there should be one vast Parliament where all should make their voices heard—the Parliament of that English commonwealth which spreads over every part of the habitable globe.” “Can any clear-headed Liberal”, “D.” writes, “doubt for one moment that the future of Liberal politics lies with the development of the Federal idea”? and he adds, quoting Tennyson, that “The hope of the future lies with ‘the Parliament of Man, the Federation of the World’”. “True federation”, says Mr. Robertson, “is a great ideal—an ideal only to be fully realised, indeed, when nations hitherto armed against each other agree to bury their jealousies”. And in a letter on the subject of the Channel Tunnel, Mr. Ball says, “Possibly the Tunnel might be a good thing in the long run by helping to bring about the United States of Europe. But I should prefer that the United States of Europe brought about the Tunnel by rendering it safe for us.” Imperial federation of England and her colonies has grown rapidly in public favor within the last few years, and would be an immense step in advance, but the federation of independent or foreign nations, between whom there is the risk of war, such as the States of Europe, seems to me of even greater importance. It is not merely for the sake of strengthening the Empire that federation is to be desired, but above all, in order to introduce law and government into the society of nations and do away with the state of nature or of anarchy.

Until there is a common international government among mankind, there can be no international *law*, in the proper sense of the term, nor any *legal* rights and duties between nations, but only *moral* rights and duties; there can be no legal limits to the power of existing sovereign governments over their subjects, nor can the former have any legal rights and duties towards the latter, but only moral rights and duties; in short, the dealings of nations with one another, and of sovereign governments with their subjects must be uncontrolled by law and must remain as at present in a state of anarchy. There can be no legal union between countries which are not under the same government, but only a moral unions; and as regard the latter, it seems to me impossible that nations under different supreme governments should really love and trust each other, for they have no common superior to lay down and enforce the rules of justice between them, to settle their disputes, and redress their mutual wrongs; and therefore, whenever they cannot agree and will not yield to one another, so that a compulsory settlement is needed, their only resource is the terrible expedient of war. How can there be real love and trust between nations who have, as it is called, “the right of making war” on one another, that is to say, war between whom is not

solemnly declared to be a legal crime, and forbidden under threat of punishment by a government able and willing to execute the threat against offenders? The huge standing armies and navies, the wars and dread of war, the oppression of weak States by strong ones, and the hatred, jealousy, and distrust between nations, are really due to the want of a common government and the consequent international anarchy now prevailing over the world.

These considerations are so extremely important that, in order to throw additional light upon the subject, I may perhaps be permitted here to examine a little more closely the essential nature of law and government together with the nature and consequences of anarchy, and to quote, in support of the foregoing statements, a few passages from the writings of the great jurists Jeremy Bentham and John Austin, and also from the celebrated treatises, the "Leviathan" and the essay on "Government", by Hobbes and Locke.

What then are the essentials of law and government? Law may be defined as consisting in a set of commands issued by governments to their subjects, conferring on them rights and imposing on them duties; obedience to these commands being compelled by means of sanctions or threatened penalties which are enforced by the power of the State. Thus Sir Henry Maine in his work on "Ancient Law" observes that "Bentham in his 'Fragment on Government', and Austin in his 'Province of Jurisprudence determined', resolve every law into a *command* of the law-giver, an *obligation* imposed thereby on the citizen, and a *sanction* threatened in the event of disobedience; and it is further predicated of the *command* which is the first element in a law, that it must prescribe, not a single act, but a series or number of acts of the same class or kind. The results of this separation of ingredients tally exactly with the facts of mature jurisprudence." In like manner Mr. Hunter says: "The subject matter of law is commands—general rules intended to govern men in their conduct towards each other. 'Law' may be defined sufficiently for the present purpose as a command of the Sovereign to all persons in given circumstances to do or not to do something, which persons will be visited with some evil by the Sovereign if they disobey." From this definition it will be seen, in the first place, that laws are commands addressed by governments to their subjects, and hence that law is merely the creature or product of government, and where there is no government there can be no law, in the legal or political sense of the word; secondly, that all laws are compulsory, that is to say, they compel people to do or not to do certain acts by the threat of punishments or penalties in case of disobedience; and thirdly, that laws are enforced by an enormous and irresistible power, namely, by

the whole physical force of the community, which is placed, if need be, at the disposal of the government or supreme authority in order to execute its commands. Moreover, since government represents the nation and is chosen under the representative system by the great bulk of the people to make laws for them, the commands of government may be said to be virtually the commands of the nation or commonwealth, as is done by Hobbes in his definition of civil laws. "Civil law", he says, "is to every subject those rules which the commonwealth hath commanded him, by word, writing, or other sufficient sign of the will, to make use of for the distinction of right and wrong: that is to say, of what is contrary or not contrary to the rule".

The word "law", as Mr. Austin points out, is used in four widely different senses, which are often blended and confounded with one another but should be carefully distinguished. There are, in the first place, the laws, strictly and emphatically so called, which are set or prescribed by governments to their subjects; secondly, the laws or rules of morality which are set by public opinion; these laws together with the foregoing constitute law or morality as it *is*, and may be either good or bad, wisely or unwisely framed; thirdly, the moral law, or morality as it *ought to be*, that is to say, the standard of right to which legal and moral rules ought to conform, and must conform if they are to merit approbation; and, fourthly, the scientific laws, which are only called laws in a metaphorical or figurative sense, as they are not rules for conduct but uniformities or invariable relations existing between natural phenomena. The first and second classes of laws, which it is particularly important here to distinguish, are called respectively by Mr. Austin *positive law* and *positive morality* and are thus defined by him. "The essential difference", he says, "of a positive law (or the difference which severs it from a law which is not a positive law) may be stated generally in the following manner. Every positive law, or every law simply and strictly so called, is set by a sovereign person, or a sovereign body of persons, to a member or members of the independent political society, whereof that person or body is sovereign or supreme. Or (changing the phrase) it is set by a monarch or sovereign number to a person or persons in a state of subjection to its author." Of positive morality, or the laws imposed by opinion, he says: "No law belonging to the class is a direct or circuitous command of a monarch or sovereign number in the character of a political superior"; and he adds, "The character or essential difference of a law imposed by opinion is this: that the law is not a *command*, expressly or tacitly, but is merely an *opinion* or *sentiment*, relatively to conduct of a kind, which is held or felt by an uncertain body, or by a

determinate party". Positive law gives rise to *legal* rights and duties, but positive morality only to *moral* rights and duties, or in other words, to rights which are not protected and duties which are not enforced by the State. Now the rules which guide and influence sovereign governments in their dealings both with foreign nations and with their own subjects are not positive law but positive morality merely. "For example", says Mr. Austin, "the so-called law of nations consists of opinions or sentiments current among nations generally. It therefore is not law properly so called." The same may be said of those parts of constitutional and administrative law which concern the acts of the supreme government itself, and not of its political subordinates; in short, the conduct of sovereigns, whether they be single persons or bodies of persons, and whether in their foreign or their domestic relations, is not under the control of law but only of morality and public opinion.

IV.

The difference between *political* society, in which there exists a government, and *natural* society, or society in the state of nature, in which there is no government, is described as follows by Bentham and Austin, the latter of whom points out also the distinction between an independent political society, such as the United Kingdom, and a subordinate political society, or dependency, such as India, in the former of which the government is sovereign and independent, while in the latter it is subject to the control of another and higher government. "When a number of persons (whom we may style *subjects*)", says Bentham in his "Fragment on Government", "are supposed to be in the *habit* of paying *obedience* to a person, or an assemblage of persons, of a known and certain description (whom we may call *governor* or *governors*) such persons altogether (subjects and governors) are said to be in a state of *political society*". On the other hand, "When a number of persons are supposed to be in the habit of *conversing* with each other, at the same time that they are not in any such habit as mentioned above, they are said to be in a state of *natural society*". In criticising some remarks of Blackstone, Bentham says also: "If by 'a state of nature' a man means anything, it is the state, I take it, men are in or supposed to be in before they are under *government*, the state men quit when they enter into a state of government, and in which, were it not for government, they would remain". As examples of men living together in a

state of nature or of anarchy, without any common government, Bentham instances not only tribes of savages amongst themselves, but also all independent nations and governments in their foreign or international relations. Thus he speaks of "the kings of France and Spain" as being "in a *perfect* state of nature with respect to each other", and observes that the Spanish provinces of the Netherlands, having effected their independence, "are now in a state of nature with regard to Spain". In fact, all men are in a state of nature in relation to those who do not belong to the same political society with themselves; to all who are under a different supreme government to their own, they are foreigners or aliens.

The following is the definition of sovereignty and independent political society given by Mr. Austin. "The superiority which is styled sovereignty", he says, "and the independent political society which sovereignty implies, are distinguished from other superiority and from other society by the following marks or characters. 1. The *bulk* of the given society are in a *habit* of obedience or submission to a *determinate* and *common* superior; let that common superior be a certain individual person, or a certain body or aggregate of individual persons. 2. That certain individual, or that certain body of individuals, is *not* in a habit of obedience to a determinate human superior. Or the notions of sovereignty and independent political society", he continues, "may be expressed concisely thus: If a *determinate* human superior, *not* in a habit of obedience to a like superior, receive *habitual* obedience from the *bulk* of a given society, that determinate superior is sovereign in that society, and the society (including the superior) is a society political and independent. To that determinate superior the other members of the society are *subject*; or on that determinate superior the other members of the society are *dependent*." As to the distinction between an independent and a subordinate political society Mr. Austin says: "By 'an independent political society' or 'an independent and sovereign nation', we mean a society consisting of a sovereign and subjects, as opposed to a political society which is merely subordinate; that is to say, which is merely a limb or member of another political society, and which therefore consists entirely of persons in a state of subjection". And with regard to a society in the state of nature or anarchy, he says: "A natural society, a society in a state of nature, or a society independent but natural, is composed of a number of persons who are connected by mutual intercourse, but are not members, sovereign or subject, of a political society. None of the persons who compose it live in the positive state which is styled a state of subjection." He shows that from the absence of a common international government, independent nations are really in a state of nature with regard to one another, and

thus the so-called law of nations or international law is not properly law at all. "Society formed by the intercourse of independent political societies", he says, "is the province of international law or of the law obtaining between nations. For (adopting a current expression) international law, or the law obtaining between nations, is conversant about the conduct of independent political societies, considered as entire communities. Speaking with greater precision, international law, or the law obtaining between nations, regards the conduct of sovereigns, considered as related to one another. And hence it inevitably follows that the law obtaining between nations is not positive law; for every positive law is set, by a given sovereign, to a person or persons in a state of subjection to its author." In a similar manner Sir James Stephen says: "It is because nations have no common superior that international law commonly so called is not really law at all, but only a form of morality". Mr. Austin divides the existing systems or forms of society into the four classes described above, namely, "societies political and independent; societies independent but natural, society formed by the intercourse of independent political societies, and societies political but subordinate". The great object of those who aim at the federation of mankind, is gradually to change the existing systems and to unite all nations into one independent political society, consisting of a sovereign federal government and its subjects, so that there should be no longer any foreigners or aliens, and that a true international law should put an end to war and secure peace and justice throughout the world.

It should be remarked that by "the sovereign", jurists commonly mean the *sovereign government*, whether it consists of a single person or a body of persons. In Europe the only single persons who are sovereigns in this, the true sense of the word, are the Emperor of Russia and the Sultan of Turkey, while all the other royal and imperial persons, though members of the sovereign bodies, and though their actual shares in the sovereignty vary greatly in different countries, are, when considered singly, not really sovereigns but subjects. The constitutional king or emperor in a so-called limited monarchy does not differ in this cardinal point from the president of a republic, and is really subject to the assembly which has the power to limit him. "Unlike a monarch in the proper acceptation of the term", says Mr. Austin, "that single individual is not sovereign, but is one of the sovereign number. Considered singly, he is subject to the sovereign body of which he is a limb. Limited monarchy therefore is not monarchy." Each member of a sovereign assembly, taken singly, is subject to the assembly itself, taken collectively, and can be bound by laws enacted by the whole. He is thus at once a sharer in the

sovereignty and a subject, a political superior and inferior; and this constitutes a most important difference between governments of one and of many persons. "In the case of a monarchy or government of one", says Mr. Austin, "the sovereign portion of the community is simply or purely sovereign. In the case of an aristocracy or government of a number, that sovereign portion is sovereign as viewed from one aspect, but is also subject as viewed from another." Under the representative system of government, moreover, the whole body of electors are virtually sharers in the sovereignty, and form, as it were, an ulterior sovereign behind the immediate or legal sovereign. Thus, in England, the legal sovereign is the assembly composed of the Queen and the two Houses of Parliament; but the House of Commons, by far the most powerful branch of the legislature, is itself elected by the constituencies, who are thus the ultimate controlling body in the State, and whose desires and mandates are sure in the end to be obeyed. "The electorate", says Mr. Dicey, in his lectures on the Law of the Constitution, "is, in fact, the sovereign of England". One of the immense benefits of the representative system is, that it does away with any degradation connected with habitual obedience to the commands of a political superior. Political subjection is only degrading when it is one-sided, as in the subjects of an absolute monarch or in a dependency ruled by another country; but when the position of superior and inferior is reciprocal, and when each person commands as well as obeys, and is at once a sharer in the sovereignty and a subject, there is no degradation to any one, nor anything repugnant to the great principle of equality between all mankind. The nation itself is author of the laws which every one is obliged to obey.

Every sovereign government, whether it consists of a single person or a body of persons, is absolute and uncontrolled by law, or, in other words, it is in a state of nature or of anarchy with regard both to foreign nations and to its own subjects. This is a necessary consequence of its being supreme, and not subject to the commands of any higher government. "It follows from the essential difference of a positive law, and from the nature of sovereignty and independent political society", says Mr. Austin, "that the power of a monarch, properly so called, or the power of a sovereign number in its collegiate and sovereign capacity, is incapable of *legal* limitation. A monarch or sovereign number bound by a legal duty, were subject to a higher or supreme sovereign; that is to say, a monarch or sovereign number bound by a legal duty were sovereign and not sovereign. Supreme power limited by positive law is a flat contradiction in terms." In like manner Blackstone says of sovereign governments that "there is and must be in all of them a supreme, irresistible,

absolute, uncontrolled authority", that is, an authority which is not and cannot be limited by positive law. A sovereign government is controlled, not by law, but only by morality and public opinion in its dealings with its subjects, and has no *legal* rights and duties towards them, but only *moral* rights and duties. "Independence of political duty", says Mr. Austin, "is one of the essentials of sovereignty", and he observes further that a supreme government "has no legal rights (in the proper acceptation of the term) against its own subjects. To every legal right there are three several parties; namely, a party bearing the right; a party burthened with the relative duty; and a sovereign government setting the law through which the right and duty are respectively conferred and imposed". It is powers, and not legal rights, that a sovereign government possesses in respect of its subjects. On the other hand, subjects have no *legal* rights but only moral rights, together with legal and moral duties, towards the supreme government. Thus Mr. Austin says, "As against the government itself you can have no legal right", and "as against the sovereign there can be no right". Wherever subjects have legal rights against their government, it is because the latter is not sovereign but subordinate to another and higher government; as is the case, for example, with the different legislatures in the United States, each of which is subordinate or habitually obedient to the Constitution enacted by them all, and with the executive or administrative government in this country (often called emphatically "the Government") which habitually obeys the will of Parliament. "The power of Parliament", as Mr. Bradlaugh lately remarked, "is unlimited, but the powers of the executive are not unlimited".

As to the supreme powers or the powers belonging to a sovereign government, Mr. Austin observes that they are infinite in number and kind, and that the modes in which they may be shared among the different members of the sovereign body are also infinite; thus he describes them as "the political powers infinite in number and kind, which, partly brought into exercise, and partly lying dormant, belong to a sovereign or state". Some of these powers are exercised by the supreme government itself while it delegates others to political subordinates, as for instance to the executive authorities and to the judges. The branch of law which deals with the powers, rights, and duties of the supreme government and its political subordinates is commonly divided into *constitutional law* and *administrative law*; the former of which determines the constitution or structure of the government, that is to say, it determines who shall bear the sovereignty, and also, if the government consists of a number of persons, how the supreme powers shall be shared among them; while the latter deter-

mines the ends to which, and the modes in which, the powers shall be exercised, either by the government itself or by its subordinates. Now it is evident from the foregoing remarks that the parts of constitutional and administrative law which concern the acts of the supreme government itself, though included in legal treatises, are not properly law at all, but merely rules set by morality and public opinion, like the so-called law of nations. "As against the monarch properly so called, or as against the sovereign body in its collective and sovereign capacity", says Mr. Austin, "the so-called laws which determine the constitution of the State, or which determine the ends or modes to and in which the sovereign powers shall be exercised, are not properly positive laws, but are laws set by general opinion, or merely ethical maxims which the sovereign spontaneously adopts". "Against the monarch properly so called", he says also, "or against the sovereign number in its collegiate or sovereign capacity, constitutional law and the law of nations are nearly in the same predicament. Each is positive morality rather than positive law. The former is guarded by sentiments current in the given community, as the latter is guarded by sentiments current amongst nations generally." The individual members of a sovereign assembly may indeed be bound by laws, but not the assembly itself. "Considered collectively, or considered in its corporate character", continues Mr. Austin, "a sovereign number is sovereign and independent; but considered severally, the individuals and smaller aggregates composing that sovereign number are subject to the supreme body of which they are component parts. Consequently, though the body is inevitably independent of legal or political duty, any of the individuals or aggregates whereof the body is composed may be legally bound by laws of which the body is the author." The only possible way to bring the existing sovereign governments, while preserving their equality and real independence, under the control of law, and to give them legal rights and legal duties towards their subjects as well as towards foreign nations, is to make them all members of, and subordinate to, one supreme federal government: whereby the collective wisdom and justice of the common central authority might remedy the defects of local authorities, and the tyranny of national rulers over their subjects, together with revolutions and civil wars, might be effectually prevented in every country of the world.

V.

The great and permanent cause of government—the cause which has given rise to governments in the past, maintains them at present, and will ultimately, it may be hoped, unite all nations under a common federal government—is the perception of the enormous evils attendant on the state of nature or anarchy, and a wish to escape from these evils. “The only general cause of the *permanence* of political governments, and the only general cause of the *origin* of political governments”, says Mr. Austin, “are exactly or nearly alike. Though every government has arisen in part from specific or particular causes, almost every government must have arisen in part from the following general cause, namely, that the bulk of the natural society from which the political was formed were desirous of escaping to a state of government from a state of nature or anarchy.” I may quote also the words of Thomas Hobbes, the powerful thinker who has done more than almost any other to throw light on the theory of government, and of whom Mr. Austin says: “I know of no other writer (except our great contemporary Jeremy Bentham) who has uttered so many truths, at once new and important, concerning the necessary structure of supreme political government, and the larger of the necessary distinctions implied by positive law”. In his “Leviathan” (a figurative title by which he means a Commonwealth or State) Hobbes says: “The final cause, end, or design of men, who naturally love liberty and the dominion over others, in the introduction of that restraint upon themselves in which we see them live in Commonwealths, is the foresight of their own preservation and of a more contented life thereby; that is to say, of getting themselves out of that miserable condition of war, which is necessarily consequent to the natural passions of men, when there is no visible power to keep them in awe, and tie them by fear of punishment to the performance of their covenants and observance of the laws of nature”. In like manner the illustrious philosopher, John Locke, in his work on Civil Government, observes that “the end of civil government” is “to avoid and remedy these inconveniences of the state of nature, which necessarily follow from every man being judge in his own case”. No one has explained more clearly than Hobbes and Locke the evils of the state of nature or of anarchy; the former of whom deals chiefly with the anarchy, or absence of a common government, existing among savages and between independent political societies, while the latter draws attention also to the evils and dangers of the other kind of anarchy, namely, that consisting in the absolute power, uncontrolled and uncontrollable by law, which, as we have seen,

is possessed by all sovereign governments over their own subjects.

The chief evils of the state of nature arise from the want of a provision, such as government essentially is, for securing *peace* and *justice* among mankind. There is a want of a known and settled law or rule of justice, and of a sufficient power to compel obedience to it. Men's judgments with regard to right and wrong conduct differ widely, and are very often erroneous; and therefore, as in numberless cases they cannot agree on what is just, the only way to settle disputes and to keep the peace between them, is that an umpire or arbiter should be appointed to lay down beforehand and apply to each particular case the rules of justice, and that all parties should agree to abide by his decisions. "As when there is a controversy in an account", says Hobbes, "the parties must by their own accord set up, for right reason, the reason of some arbitrator or judge, to whose sentence they will both stand, or their controversy must either come to blows or be undecided for want of a right reason constituted by nature; so is it also in all debates of what kind soever." Moreover, since it is not mere advice or exhortation, but the compulsory settlement of disputes and redress of injuries, that are required from the arbiter, he must have sufficient power to compel obedience to his laws and sentences by the punishment of those who disobey them: for as Blackstone observes, "nothing is *compulsory* but punishment". What is needed therefore, to secure peace and justice in human society, is a supreme authority, or government, which all are obliged to obey, and which can lay down, apply, and enforce the rules of justice. Where no such authority exists to restrain the passions of mankind, and where each person is free to do to others whatever lies in his power, and is himself judge in his own case of what is just, there can be no real justice or real peace for anyone, but a perpetual war or the dread of war. "In the nature of man", says Hobbes, "we find three principal causes of quarrel. First, competition; secondly, diffidence" (that is, distrust or suspicion); "thirdly, glory. The first maketh men invade for gain; the second, for safety; and the third, for reputation. The first use violence to make themselves masters of other men's persons, wives, children, and cattle; the second, to defend them; the third, for trifles, as a word, a smile, a different opinion, and any other sign of undervalue, either direct in their persons, or by reflexion in their kindred, their friends, their nation, their profession, or their name. Hereby it is manifest that during the time men live without a common power to keep them all in awe, they are in that condition which is called war: and such a war as is of every man against every man. War consisteth not in battle only. For as the nature of foul weather lieth not in a

shower or two of rain, but in an inclination thereto of many days together; so the nature of war consisteth not in actual fighting, but in the known disposition thereto, during all the time there is no assurance to the contrary. All other time is *Peace*. Whatever therefore is consequent to a time of war, where every man is enemy to every man; the same is consequent to the time, wherein men live without other security than what their own strength and their own invention shall furnish them withal." It will be seen that in the above passage Hobbes includes under the term "war" not only actual fighting, but also the *dread* of war and the constant *danger* of it, as the characteristic evils of the state of nature or of anarchy.

A similar account of the evils arising from the want of a government is given by Locke. Men, he says, are led to quit the state of nature, and to "unite for the mutual preservation of their lives, liberties, and estates, which I call by the general name, property. The great and chief end therefore of men's uniting into commonwealths and putting themselves under government is the preservation of their property. To which in the state of nature there are many things wanting. First, there wants an established, settled, known law, received and allowed by common consent to be the standard of right and wrong. Secondly, in the state of nature, there wants a fair and indifferent judge, with authority to determine all differences according to the established law." Such an impartial judge is evidently needed to prevent men from being judges in their own cases, when they are so apt to be blinded by passion or self-interest. "That 'no man shall be judge in his own cause' (that is, in any matter in which he is interested)", says Mr. Samuel Warren in his Introduction to Law Studies, "is a great fundamental principle in the administration of justice". Locke continues: "Thirdly, in the state of nature, there often wants power to back and support the sentence when right, and to give it due execution. They who by any injustice offend, will seldom fail, where they are able by force, to make good their injustice; such resistance many times makes the punishment dangerous, and frequently destructive, to those who attempt it. To avoid these inconveniences, which disorder men's properties in the state of nature, men unite into societies that they may have the united strength of the whole society to secure and defend their properties and may have standing rules to bound it; by which every one may know what is his." In the state of nature no one knows clearly what is his and what another's, what is *mine* and *thine*, for there is no government either to define the rights of each individual or to protect them.

We have seen that, according to Bentham and Austin, the state of nature not only exists, or has at one time existed,

among savage tribes, but prevails at present over the whole world between independent political societies in their dealings with one another. Independent nations have no common government, no international law properly so called, nor any judges or courts of justice for the compulsory settlement of international disputes and redress of wrongs; but each nation is itself judge in its own case as to what is just towards others, and has absolute liberty to make war upon them and to do them any other harm within its power, unrestrained by the fear of legal punishment. Among nations the anarchy is between commonwealth and commonwealth, just as among savages it exists between man and man or between families. This is pointed out by Hobbes and Locke, who show that the effects of such a state of things are essentially similar to those described above, and that it necessarily leads to a want of real justice and of real peace, as well as of mutual love and trust, between nations, and to what may be called the condition of "war", if we understand by this term not only actual hostilities, but also the dread and danger of war, and habitual preparations against it. Thus Hobbes says, after referring to the anarchy among savages: "But though there had never been any time wherein particular men were in a condition of war, one against another; yet in all times, kings and persons of sovereign authority, because of their independency, are in continual jealousies, and in the state and posture of gladiators; having their weapons pointing and their eyes fixed on one another; that is, their forts, garrisons, and guns upon the frontiers of their kingdoms; and continual spies upon their neighbors; which is a posture of war". "And as small families did then", that is, among barbarous communities, he says in another place, "so now do cities and kingdoms, which are but greater families, enlarge their dominions upon all pretences of danger and fear of invasion or assistance that may be given to invaders, and endeavor as much as they can to subdue or weaken their neighbors by open force or secret arts." And again, in speaking of the liberty of independent states in their dealings with each other, he says that this "is not the liberty of particular men, but of the commonwealth, which is the same as that which every man then should have, if there were no civil laws nor commonwealth at all. And the effects of it also be the same. For as amongst masterless men there is perpetual war of every man against his neighbor, no inheritance to transmit to the son nor to expect from the father, no propriety of goods and lands, no security, but a full and absolute liberty in each particular man; so in states and commonwealths not dependent on one another, every commonwealth, not every man, has an absolute liberty to do what it shall judge, that is to say what that man or assembly that representeth it shall judge most conducive to

their benefit. But withal, they live in the condition of a perpetual war and upon the confines of battle, with their frontiers armed and cannon planted against their neighbors round about." The terrible truth of this may be seen from the history of Europe, which has never ceased to suffer either from a tual war, or from the dread and danger of it, and where the vast standing armies, far larger and provided with far deadlier w apons now than at any former time, are calculated to amount to about ten millions of men.

Locke points out in like manner the state of nature existing between independent rulers, and draws attention to the only effectual remedy for war and security for peace among mankind, namely, a common government. "Since all princes and rulers of independent governments, all through the world", he says, "are in a state of nature, it is plain the world never was, nor ever will be, without numbers of men in that state". With regard to war and the means of preventing it, he says that "force, or a declared design of force upon the person of another, where there is no common superior on earth to appeal to for relief, is the state of war. To avoid this state of war (wherein there is no appeal but to heaven, and wherein every the least difference is apt to end, where there is no authority to decide between the contenders) is one great reason of men's putting themselves into society and quitting the state of nature; for where there is an authority or power on earth from which relief can be had by appeal, there the continuance of the state of war is excluded, and the controversy is decided by that power." And as to peace, he observes that "civil society" is "a state of peace, amongst those who are of it, from whom the state of war is excluded by the umpirage which they have provided in their legislative for the ending all differences that may arise amongst any of them". In civil society, peace is further secured by forbidding under penalty all force or violence except in self-defence; and then too, only while the wrong is being actually committed, and there is no time to appeal to the law for assistance or redress. Men are not allowed forcibly to redress their own wrongs, or what they conceive to be their wrongs, and to exact any penalty they please, but must in all cases appeal for redress to a court of justice. "When the wrong is consummated, when the mischief is done", says Mr. Hunter, "it is never lawful to resort to force; the peaceful remedy of an action or criminal accusation can alone be employed. But if the invasion of my right, or the attack on my person is not completed, as a general rule force may be used in defence." Real peace, like real justice, real liberty, and real independence, can only exist under the reign of government and law; whereas the so-called peace which alternates with open strife in the state of nature or anarchy, and which is

accompanied by huge armaments and by hatred, jealousies, and distrust between nations, is but a veiled form of war.

VI.

We now come to the great permanent remedy for war and the other evils arising from the state of nature or anarchy, namely, the formation of a *common government*. The anarchy prevailing at the present day is not between individual men or single families as among savage tribes, but between independent political societies in their dealings with one another; and what is needed to put an end to it is the political union of different nations and of different sovereign governments, by methods which have already been repeatedly employed with success in building up the existing states and empires of the world. Whether between individuals or between nations, a true legal or political union is always essentially the same process, and consists in submitting all wills, and entrusting the whole strength of society, to the will and direction of *one* sovereign government, composed either of a single person or of one or more bodies of persons acting collectively, so as to avoid that division of wills and of physical force which leads to war and to the appalling evils characteristic of the state of nature or anarchy.

Thus Hobbes says, in describing the generation of a Commonwealth among a society living in the state of nature: "The only way to erect such a common power as may be able to defend them from the invasion of foreigners and the injuries of one another, and thereby to secure them in such sort as that by their own industry and by the fruits of the earth they may nourish themselves and live contentedly, is, to confer all their power and strength upon one man, or upon one assembly of men, that may reduce all their wills, by plurality of voices, into one will; which is as much as to say, to appoint one man or assembly of men to bear their person; and every one to own and acknowledge himself to be the author of whatsoever he that so beareth their person shall act, or cause to be acted, in those things which concern the common peace and safety; and therein to submit their wills, every one to his will, and their judgment to his judgment. This is more than consent or concord; it is a real unity of them all in one and the same person, made by covenant of every man with every man; in such a manner as if every man should say to every man, 'I authorise and give up my right of governing myself to this man, or to this assembly of men, on this condition, that thou

give up thy right to him and authorise all his actions in like manner'. This done, the multitude so united in one person is called a *Commonwealth*."

In a similar manner Blackstone observes that harmony of wills "can be no otherwise produced than by a *political union*; by the consent of all persons to submit their own private wills to the will of one man, or of one or more assemblies of men, to whom the supreme authority is entrusted; and this will of that one man, or assemblage of men, is, in different states, according to their different constitutions, understood to be *law*".

Locke says also in describing the formation of a Commonwealth: "This is done whenever any number of men, in the state of nature, enter into society to make one people or body politic, under one supreme government; or else when one joins himself to and incorporates with any government already made; for hereby he authorises the society, or, which is all one, the legislative thereof, to make laws for him as the public good of the society shall require; to the execution whereof his own assistance (as to his own decrees) is due. And this puts men out of a state of nature into that of a Commonwealth, by setting up a judge on earth with authority to determine all the controversies and redress the injuries that may happen to any members of the Commonwealth; which judge is the legislative or magistrate appointed by it." He adds that "whosoever out of a state of nature unite into a community, must be understood to give up all the power necessary for the ends for which they unite into society to the majority of the community, unless they expressly agreed in any number greater than the majority". The rule that if opinions differ among the members of a sovereign body, the majority or some other fixed proportion must decide, is evidently needed to secure the unity of will and action which is indispensable for the purposes of government.

From the necessity of submitting all wills and entrusting all power to one man or one assembly (or to any number of assemblies, at any distance apart, provided they act together by a majority of their body and arrive at joint decisions or enactments) in order to avoid the division of wills and of the forces of society; and from the fact, already noticed, that the power of a monarch properly so called or of a sovereign assembly cannot be limited by law, there arises the great inherent evil and danger of *government*, which, like the opposite evil of anarchy, has caused such countless miseries to mankind, namely, the abuse of their immense powers by rulers to plunder and oppress their subjects. This evil, though it has always to be most carefully guarded against, is far more severely felt under an absolute monarchy, which was the earliest form of government as the simplest way of obtaining one supreme will,

and which still prevails in most of the backward countries of the world. Thus Locke says, in replying to the advocates of monarchical rule: "I shall desire those who make this objection to remember that absolute monarchs are but men; and if government is to be the remedy for those evils which necessarily follow from men's being judges in their own cases, and the state of nature is therefore not to be endured, I desire to know what kind of government that is, and how much better it is than the state of nature, where one man, commanding a multitude, has the liberty to be judge in his own case, and may do to all his subjects whatever he pleases, without the least liberty to anyone to question or control those who execute his pleasure? and in whatsoever he doth, whether led by reason, mistake, or passion, must be submitted to?" "If it be asked", he says again, "what security, what fence is there in such a State against the violence and oppression of this absolute ruler? the very question can scarcely be borne. To ask how you may be guarded from harm or injury on that side where the strongest hand is to do it, is presently the voice of faction and rebellion; as if when men, quitting the state of nature, entered into society, they agreed that all of them but one should be under the constraint of laws, but that he should still retain all the liberty of the state of nature, increased with power and made licentious with impunity." In a sovereign assembly, though its power is as great as that of a monarch, being absolute and unlimited by law, Locke points out that there is this great safeguard against oppression, that each of the members, taken singly, is a *subject*, and is himself amenable to the laws which the assembly enacts. When the people, he says, found that monarchs abused their power, they "could never be safe nor at rest, till the legislative was placed in collective bodies of men, call them senate, parliament, or what you please. By which means every single person became subject, equally with other the meanest men, to those laws which he himself, as part of the legislative, had established." An even greater security against oppression under the representative system is that the constituencies, who form the bulk of the nation, are themselves virtually authors of the laws by which they are to be governed. Mr. Mill shows that in the representative system (though he points out grave defects in it as now existing, especially the want of a fair proportional representation of minorities and the denial of a share in the suffrage to women) the sovereignty, or ultimate controlling power, is really vested in the entire community, and that this is far superior to any other form of government. "There is no difficulty in showing", he says, "that the ideally best form of government is that in which the sovereignty, or supreme controlling power in the last resort, is vested in the entire

aggregate of the community; every citizen having not only a voice in the exercise of that ultimate sovereignty, but being, at least occasionally, called on to take an active part in the government by the personal discharge of some public function, local or general". From these improvements in government and from the growing feelings of brotherhood and of common interest between all mankind, aided powerfully by easier means of communication, the obstacles to the political union of nations have greatly diminished, while the beneficial effects of such union on the relations of governments, not only to each other but to their own subjects, cannot, I think, be exaggerated. The oppression of subjects by their rulers is largely due to the absolute power, uncontrolled and uncontrollable by law, which resides in every supreme government, whether it consist of a single person or a body of persons; and to reduce the evil as far as possible, there should be only *one* supreme or sovereign federal government, of which the existing legislatures in the different countries would be members (or might, if it were thought preferable, elect a part while the people elected the other part, of the members), and to which each of them, taken singly, would be subject or subordinate. In this way the national governments would be no longer isolated from one another, as at present, or sole judges in their own cases; but the common judgment and authority of all would be brought to bear on all, and oppression by local rulers, as well as rebellion among subjects, might be legally controlled and prevented in every part of the world.

A legal or political union between two or more independent states should be carefully distinguished from a mere *alliance*. An alliance is an agreement between them, while remaining separate states, that is, while remaining under different sovereign governments, to co-operate for certain purposes; all the acts of each of them, including the continuance of the alliance or its dissolution at any time, being determined by the will of its own government. A political union, on the other hand, is an agreement between them to unite together into one state, that is, to have one and the same sovereign government, by whose will all their acts, including the continuance of the union or its repeal at any time, are to be determined. Though an alliance is often very valuable for temporary purposes, it has no effect in putting an end to the state of nature or anarchy existing between independent communities. "It is not every compact which puts an end to the state of nature between men", says Locke, "but only this one of agreeing together mutually to enter into one community and make one body politic; other promises and compacts men may make one with another, and yet still be in a state of nature." In an alliance there are *different* supreme governments, or supreme wills, each claiming

obedience from its own subjects among the allied nations, which is the state of nature or anarchy; whereas in a political union there is only *one* supreme government with claim to obedience from the whole united people, and this submission of all wills to one is, as we have seen, the essence of government. Some alliances, of a more complicated character than others and intended to be more permanent, are particularly apt to be confounded with true political unions, and among them Mr. Austin instances the confederations of states existing in his time in Switzerland and in Germany before the formation of the present federal governments in these countries. Mr. Dicey also describes as a "permanent alliance rather than a union" the dual system of government in Austria-Hungary, which resembles in its main features the bond now connecting together the two kingdoms of Norway and Sweden. The distinction between a system of confederated states, like the former Swiss and German confederations or the dual system of Austria-Hungary, and a composite state or supreme federal government such as that of the United States of America, is thus pointed out by Mr. Austin. "A *composite state* and a *system of confederated states*", he says, "are broadly distinguished by the following essential difference. In the case of a *composite state*, the several united societies are one independent society, or are severally subject to one sovereign body; which through its minister the general government, and through its members and ministers the several united governments, is habitually and generally obeyed in each of the united societies, and also in the larger society arising from the union of all. In the case of a *system of confederated states*, the several compacted societies are not one society, and are not subject to a common sovereign; or (changing the phrase) each of the several societies is an independent political society, and each of their several governments is properly sovereign or supreme." The agreement to form the Confederation at the beginning, and the subsequent resolutions passed by it, are not enforced on the different governments or on their subjects by the collective will of the whole, but are *spontaneously* adopted by each government and enforced upon its own subjects. "In short", continues Mr. Austin, "a system of confederated states does not essentially differ from a number of independent governments connected by an ordinary alliance. If in the case of the German or the Swiss Confederation, the body of confederated governments enforces its own resolutions, those confederated governments are one composite state, rather than a system of confederated states. The body of confederated governments is properly sovereign; and to that aggregate and sovereign body, each of its constituent members is properly in a state of subjection." As to the dual government of Austria-

Hungary, Mr. Dicey says, after giving a detailed account of it: "The Austro-Hungarian system is therefore briefly this: two separate states, each having a separate administration, a separate parliament, and separate bodies of subjects or citizens, are each ruled by one and the same monarch; the two portions of the monarchy are linked together, mainly as regards their relations to foreign powers, by an assembly of delegates from each parliament, and by a ministry which is responsible to the delegations alone, and which acts in regard to a limited number of matters which are, of absolute necessity, the common concern of the monarchy." He says also that "the Hungarian Diet has, as such, no legislative authority in Austria, and the Reichsrath has no legislative authority in Hungary." The dual system of Austria-Hungary is really an alliance or agreement between two separate states, under different supreme governments, to manage together their foreign affairs and all matters relating to war and to finance; both countries having the same emperor, who though not a monarch or a sovereign in the true sense of the terms, but only a member of each of the two sovereign bodies, has considerably more political power, according to Mr. Dicey, than royalty possesses in England.

VII.

A true political union, on equal terms, between two or more independent states, can only be effected by uniting together into one their different sovereign governments, in such a manner that each state shall have a share, proportional to its population, in the common government thus resulting. The union of nations under a common supreme government, whether on a footing of equality or on that of sovereign and subordinate states, and whether by conquest or by mutual agreement, has already been carried out to such an extent in the course of ages, that, according to the Government Year Book for 1888, "the chief independent countries of the world, arranged on the basis of their nominal forms of government", are now only forty-four in number, eight of them being absolute monarchies, while the others have more or less fully developed representative institutions. "Theoretically", says the writer after giving a list of them, "thirty-six out of the forty-four states just enumerated are under various forms of popular government, having representative institutions, and executives based upon contracts between the governing and the governed". The most important difficulties now standing in the way of the equal political union of nations and its immense benefits, seem to me

to be the very backward condition of some populations, the existence of absolute monarchies, the distances of nations from one another, and difference of language. The last two of these, however, may be surmounted by some adaptation of the invaluable principle of *federal* government; as we see, for instance, in the United States, which are nearly as large as the whole of Europe, and where the local State legislatures, though far distant from one another, make up together one sovereign body; and in Canada, where a million and a half of French colonists are united with three millions of English under the same federal constitution and on terms of complete political equality. Absolute monarchies, on the other hand, though they may favor the reduction by conquest of many nations under the dominion of one supreme ruler as in Russia, are, I think, incompatible with their union on equal terms, the only conditions on which civilised states can be expected voluntarily to unite with one another. This follows from the essential character of an absolute monarch as contrasted with a sovereign assembly. "The difference between monarchies or governments of one and aristocracies or governments of a number", says Mr. Austin, "is of all the differences between governments the most precise and definite, and in regard to the pregnant distinction between positive law and morality incomparably the most important". An absolute monarch is purely sovereign, and cannot be bound by law; whereas each member of a sovereign assembly, taken singly, is a *subject*, and may be bound by laws enacted by the whole. By uniting therefore on equal terms with another government, a monarch ceases to be sovereign, becoming a member of a sovereign body, and thus amenable to the control of law. What is commonly called a "limited monarchy", as Mr. Austin points out, is not really monarchy at all, but is "one or another of those infinite forms of aristocracy which result from the infinite modes wherein the sovereign number may share the sovereign powers". A limited monarch, such as the Emperor of Germany or the Queen of England, is not a monarch or a sovereign in the true sense of these terms, but a member of a sovereign assembly, and either is or may be made, like the president of a republic, amenable to laws passed by the whole body. Limited monarchy is therefore no barrier to the equal political union of independent states, as is clearly shown by the fact that four kings, together with reigning princes, grand dukes, and others, are included in the great federal union forming the German empire. Amenability to law, it should be remarked, is a matter of the utmost importance, for one of the chief ends of civilisation is to bring mankind universally under the dominion of law and government, so that all acts whatever (except those of a supreme government in its collective capacity) should be either permitted, or

enjoined, or forbidden by law. This end has been attained in our own and other countries with regard to subjects or citizens, but not with regard to their rulers or to the mutual intercourse of different nations. As observed by Montesquieu, the relations of mankind in society may be divided into those existing either between subject and subject, or between subjects and their government, or between one sovereign government and another. Now it is only the relations of subject to subject, and of a subject towards his government, that have been brought under the dominion of law; whereas the relations of the existing supreme governments towards their subjects, and of one supreme government to another—as we have already seen—are quite uncontrolled by law, or in other words, are in a state of nature or anarchy. If all nations could be united under a common federal government, as is urged by those who aim at the federation of mankind, the reign of law, whether between individuals, between nations, or between national rulers and their subjects, would be universal, and the only acts which would, of necessity, remain exempt from legal control would be those of the supreme federal government itself.

Government is the organ, and the only legitimate organ, by which *compulsion* or *force* is employed in a community. It not only lays down in its laws or commands the duties of each individual, but *compels* him to perform them and to abstain from mischievous acts, or acts which are hurtful to other people. "The general object of all laws", says Bentham, "is to prevent mischief". Law does not exhort or entreat, but always compels, and the manner in which it exercises its compulsion is by the threat of *punishments* or *penalties* to be inflicted on those who disobey. Thus Mr. Mill observes that "penal sanction is the essence of law". In like manner Sir James Stephen says: "The distinctive and special characteristic of all law and government is force—coercion in some one of its shapes. It is this which draws the line between law and advice, between government and speculative discussion." He points out also that no other compulsion than that authorised by government (excepting of course the compulsion coming from public opinion or from one's own conscience) can rightfully be exercised over any individual; and that "the first principle of the supremacy of the law of the land is that it is the only form of coercion . . . which ought to be brought upon all, whether they like it or not". It is true that the great majority of people suffer no inconvenience from this legal control, feeling it as little, to use Mr. Hunter's striking simile, as "the weight of the atmosphere", because they are convinced in the main of the justice of the laws and have a voice in making them; but the control or compulsion exists nevertheless, and is absolutely indispensable to the happiness and

security of society. However willing or desirous men may be to abstain from mischievous acts, no free choice is given them in the matter, for it is felt that society cannot be sufficiently protected against such acts without the compulsion exercised on all persons alike, willing or unwilling, by the fear of legal punishment if they offend. If a man has not a sufficient love of justice and regard for the interests of his fellows to keep him from crime, he must be deterred from it by the fear of punishment; and, moreover, just laws are well known to have a most powerful effect in *making* men just, and giving them a genuine love of virtue for its own sake. These truths are well understood with regard to a particular society, and are quite as applicable to the great society of nations. Every national government in its dealings with other nations and with its own subjects ought, like every private individual, to be under the control of law as well as of morality and public opinion. It should be bound by compulsory rules, laid down and enforced by a common authority, not to injure other nations or to oppress its subjects. Now, a common authority, armed with the irresistible power which is needed to enable it to lay down and enforce the laws, is obtained in each community by the political union of all the citizens—or, in other words, by the submission of all wills and all physical force to the will and direction of *one* sovereign government—and in like manner in the general community of mankind such an authority can only be obtained by the political union of all the nations. A mere alliance between separate states is of no avail; what is needed is a legal or compulsory union under one sovereign government; for nations which are not under the same supreme government can have no *legal* relations, but only *moral* relations, to each other. The laws of one independent state have of themselves no validity whatever in another, though they are often, from motives of comity, allowed to take effect, or speaking more accurately, are spontaneously adopted by the courts of justice in trying cases between citizens of different states who are under different systems of law. Thus the eminent American judge, Story, in his work on "The Conflict of Laws", says: "It is plain that the laws of one country can have no intrinsic force, *proprio vigore*, except within the territorial limits and jurisdiction of that country. Whatever extra-territorial force they are to have is the result, not of any original power to extend them abroad, but of that respect which from motives of public policy other nations are disposed to yield them." This absence of any power to exercise legal compulsion over independent states, and of any code of international law prescribed by a common authority, seems to me the essential cause of wars and revolutions. Force or compulsion is so indispensably needed for the settlement of disputes in which the parties can-

not agree, and for the prevention and redress of injuries, that if it cannot be applied in a legal form it is sure to be resorted to in another. War, conquest, and the oppression of weak states by strong ones, are the barbarous and arbitrary methods, in the absence of a common superior, for effecting this compulsion between nations; while political union, law, and a common government where disputes can be settled by the voice of a majority, are the peaceable and civilised means for compelling one nation to be just to another and national rulers in every part of the world to abstain from tyranny over their subjects.

To form an equal political union and common government between independent states, it is the real and not merely the nominal rulers of each state who must be united together into one sovereign body. Now under the representative system, the form of government which is rapidly tending to become universal among civilised communities, the real rulers are the elected representatives of the nation. "The meaning of representative government", says Mr. Mill, "is that the whole people, or some numerous portion of them, exercise through deputies periodically elected by themselves, the ultimate controlling power, which, in every constitution, must reside somewhere". In England the real government is very different from the nominal one, and is in fact representative: for although by constitutional law the Crown has the power of refusing assent to Bills which have passed both Houses of Parliament, and also of appointing the members of the executive or administrative government, yet by custom and constitutional morality these powers have become practically obsolete, the Crown's veto not having been used since 1707, in the reign of Queen Anne, and the executive government being really appointed and removable by, or in common phrase being "responsible to", the House of Commons. "The constitutional morality of the country", says Mr. Mill, "nullifies these powers (of the Crown), preventing them from being ever used; and, by requiring that the head of the administration should always be virtually appointed by the House of Commons, makes that body the real sovereign of the state." In a similar manner Mr. Dicey says: "The executive of England is in fact placed in the hands of a committee called the Cabinet. If there be any one person in whose single hand the power of the state is placed, that one person is not the Queen, but the chairman of the committee, known as the Prime Minister." Moreover, the House of Lords, though nominally possessed of equal legislative powers, acts rather as a checking or restraining body to secure further discussion of disputed questions, and is really subordinate to the House of Commons, to whose will it is obliged sooner or later to conform. "The British government", says Mr. Mill, "is thus a representative government in the

correct sense of the term: and the powers which it leaves in hands not directly accountable to the people can only be considered as precautions which the ruling power is willing should be taken against its own errors." Mr. Dicey observes that the various rules and customs of constitutional morality, or as he calls them "the conventions of the constitution", which have been established in this country by the growing influence of the constituencies and have gradually changed the government in reality though not in name, "have all one ultimate object. Their end is to secure that Parliament or the Cabinet which is indirectly appointed by Parliament, shall in the long run give effect to that power which in modern England is the true political sovereign of the State--the majority of the electors, or (to use the popular though not quite accurate language) the nation." "The conventions of the constitution", he says again, "now consist of customs which (whatever their historical origin) are at the present day maintained for ensuring the supremacy of the House of Commons, and ultimately, through the elective House of Commons, of the nation."

Since, therefore, the elected representatives of the people are the real rulers in this and other countries having popular forms of government, an equal political union of such countries can only be effected by uniting their representatives into one sovereign body; whether that body consist of a single assembly as in the United Kingdom, or of several distinct assemblies acting collectively as in the United States. Nations, in fact, are politically united under the representative system in exactly the same way as the different parts of the same nation, namely, by bringing their representatives together into one supreme governing body, so that all matters requiring a compulsory settlement may be decided, not by war and violence or by diplomatic pressure, but by fair and open discussion and the vote of a majority. Thus the essential articles in the treaties of Union between England and Scotland, and between Great Britain and Ireland, are those which joined together their Parliaments, declaring in the former case that "The United Kingdom shall be represented by one Parliament", and in the latter, "That there shall be one Parliament, styled the Parliament of the United Kingdom of Great Britain and Ireland". On the other hand, the demand which is, or was, put forward by Mr. Parnell and the Nationalist Party for an Irish Parliament, to be formed by the withdrawal of the Irish members from the House of Commons, seems to me not really a demand for Home Rule, but for the separation of the countries. Home Rule properly so called means, I think, the rule of local legislatures, of a subject or subordinate character and possessing a delegated authority, in countries which are united with others on equal terms under the same supreme government. Countries

which are under different supreme governments are separate from one another; and a common supreme government, on equal terms, between states with representative institutions, can only be obtained by joining their representatives into one sovereign body. If their representatives are separated, the countries cannot be united on equal terms, but must either be separate from each other or united on the footing of sovereign and subordinate states, a form of union which would never again be tolerated between Great Britain and Ireland, and is fast becoming quite impracticable between any civilised nations. The great English colonies such as Canada and Australia, which have legislatures of their own, are only nominally subject to the English rule, and are really and essentially, as we have already seen, independent states which are connected with the mother country by a voluntary alliance, and have the power of separating from her if they please. To withdraw the Irish members from the House of Commons seems to me, therefore, really equivalent to the separation of Ireland from Great Britain.

VIII.

Nations which are independent and separate from others are not said to have "Home Rule", but only those nations which are politically united with others under a constitution of a peculiar kind. Every country which can properly be said to have Home Rule must, I think, like one of the states in the American union or in the German empire, be under two governments, namely, a common supreme government in which it has a share together with other states by the union of their representatives in one sovereign body, and a local subordinate government, composed exclusively of its own representatives, for the management of its domestic affairs. A *dependency*, if it has a legislature of its own, is often said to have Home Rule, but improperly, as it seems to me, or at least in a widely different sense of the term, for the legislature in such a case is subject to the government of the dominant country, in which the dependency has no share. Mr. Austin observes that all the laws made by a subordinate legislature require the consent or approval of the supreme legislature, and "derive their validity from its express or tacit authority. For either directly or remotely the sovereign or supreme legislator is the author of all law". But if the above definition is correct, and if independent and separate nations, as well as dependencies, though possessing parliaments of their own, cannot rightly be said to have "Home Rule", it follows that neither Ireland nor

the British colonies have ever yet had Home Rule in the true sense of the word; for Ireland up to the time of the Union was either a dependency of England or an independent nation, and the colonies, as we have seen, are nominally dependencies, but really and virtually independent states. In speaking of laws enacted by subordinate legislatures, Mr. Austin says: "Such were the laws made by the Irish Parliament before that Act of the British Parliament which acknowledged the independence of Ireland (1719-1782). In fact and practice, the Irish legislature (consisting of the King and the Irish Houses of Parliament) was in a state of subjection to the supreme legislature of Great Britain; that is to say, to the same King and the British Houses of Parliament." Neither Ireland nor the colonies could properly be said to have Home Rule in their relations with this country, unless they not only had local legislatures but were fully and fairly represented in the supreme imperial legislature, or in other words, unless they were *federated* with Great Britain.

Home Rule properly so called is thus identical with *Federalism* or the federal system of government. As to the very different system of government often called "the colonial form of Home Rule", in which countries having parliaments of their own are *not* represented along with others in a common supreme parliament, it should not, I think, be spoken of as "Home Rule" at all, since the countries in this case are necessarily either dependencies or independent and separate states. The federal form of Home Rule is the one advocated by Mr. Bradlaugh and I believe by the great majority of Englishmen and Scotchmen, as well as Americans, who are in favor of a separate Irish parliament; and it is the only kind of Home Rule to be desired among civilised nations, who should be united as equals, and not on the footing of dependencies and sovereign states. Inequality is only justifiable in dealing with backward and uncivilised populations, till they are sufficiently advanced to have equal political rights. The federal system, which was first introduced in the United States and has since been modified in other countries, especially in Germany, seems to me one of the greatest discoveries ever made, and of an importance to human happiness which cannot possibly be exaggerated; for it supplies the means of uniting independent nations under a common government, so as to do away with the state of nature or anarchy now existing between them, and to put an end to war. It fulfils the three main conditions of a satisfactory political union, for it unites nations legally and effectively by bringing them under the same sovereign government; it unites them on equal terms, by joining their representatives in one supreme body, and thus giving each nation a share in the government proportional to its population; and moreover it

secures to them the advantages of *self*-government or government exclusively by their own representatives, wherever this is thought desirable, by allowing them to retain their national legislatures for the management of their domestic affairs. Each nation is thus placed under a general supreme legislature composed of its own representatives along with those of other states, and a local subordinate legislature composed of its own representatives exclusively. The advocates of Federation hold that Home Rule in the above sense, or as meaning Federalism, ought to be extended over the whole world; and that all nations, besides having their national rulers, should be united together under one supreme federal government. The federal system is so important and so different in some respects from the government with which we are acquainted in this country that it deserves an attentive consideration.

The form of federation existing in the United States seems to me to differ in one very important point from that which has been adopted in Germany; namely, that in the former country the sovereign government consists, as already remarked, of all the State legislatures acting collectively, and that the general legislature or Congress, composed of the Senate and the House of Representatives, together with the President, is a subordinate body; whereas in Germany the Diet or general legislature, composed of the Bundesrath, the Reichstag, and the Emperor, is itself the sovereign government. This will appear, I think, if we consider the powers possessed by these bodies, and also the distinction between supreme and subordinate political powers, and between a sovereign and a subordinate government. Thus Mr. Austin observes with regard to political powers: "Of all the larger divisions of political powers, the division of these powers into *supreme* and *subordinate* is perhaps the only precise one. The former are the political powers, infinite in number and kind, which, partly brought into exercise and partly lying dormant, belong to a sovereign or state. The latter are the portions of the supreme powers which are delegated to political subordinates." Mr. Dicey in pointing out the signs or marks which distinguish a sovereign government, such as the English Parliament, from a subordinate government, such as Congress or a state legislature in the United States, says: "These then are the three parts of parliamentary sovereignty as it exists in England; first, the power of the legislature to alter any law, fundamental or otherwise, as freely and in the same manner as other laws; secondly, the absence of any legal distinction between constitutional and other laws; thirdly, the non-existence of any judicial or other authority having the right to nullify an Act of Parliament, or to treat it as void or unconstitutional". As to "the marks or notes of legislative subordination" he says: "These signs by which

you may recognise the subordination of a law-making body are, first, the existence of laws affecting its constitution, which such body must obey and cannot change; hence, secondly, the formation of a marked distinction between ordinary laws and fundamental laws; and lastly, the existence of some person or persons, judicial or otherwise, having authority to pronounce upon the validity or constitutionality of laws passed by such law-making body". Sir Henry James also, in a passage already quoted, reduces the distinctive marks of a sovereign government to these two—that it "must be subject to the control or decision of no man or body", and that it "must be able to alter and remodel its own constitution". Judging by these marks or tests, we can see at once that the American Congress is a subordinate government, whereas the German Diet appears to be a supreme or sovereign assembly. The Constitution of the United States (a written document which was agreed to as the fundamental law of their union by all the States in 1787-1789, soon after they acquired their independence of Great Britain) creates Congress and grants to it certain legislative powers strictly defined and limited, and creates also a supreme court of justice, with jurisdiction in all cases arising under the constitution and with an authority, which has not unfrequently been exercised, to declare void any law passed by Congress in excess of its powers; and moreover, changes in the constitution cannot be effected by Congress, but only by a majority of three-fourths of the state legislatures. Such changes or amendments may be proposed either in Congress or in a convention called by the States, and if approved of there, must be sent for ratification to all the state legislatures, and must be ratified by three-fourths of these bodies, before they are adopted. Hence Mr. Dicey observes that "the legal sovereignty of the United States resides in the majority of a body constituted by the joint action of three-fourths of the several States at any time belonging to the Union". On the other hand, although Germany also has a written constitution, adopted in 1871, which distributes the various powers and departments of legislation between the Diet or federal government and the State governments, there is, I believe, no judicial body corresponding to the Supreme Court in the United States with authority to declare void any act of the Diet, but the latter is itself judge in disputes between the States, and may settle them, if need be, by federal legislation; and the Diet, moreover, has itself the power of changing or amending the constitution. Thus the German Constitution (which is given in full in the Government Year Book for 1888) says: "Litigations between several States, in so far as they do not concern private rights and are not thereby within the competence of ordinary tribunals, will be adjudged by the Bundesrath, on the

demand of one of the parties. Disputes concerning the constitution, where there is no authority competent to decide such disputes, must be amicably adjusted by the Bundesrath, on the demand of one or other of the parties, and if this cannot be effected, they must be determined by federal legislation. Changes in the constitution are to be effected by Acts of the Assembly; but such modifications must receive in the Bundesrath the support of a majority of two-thirds of the representative votes." It thus appears to me that the German Diet, like the English Parliament, or like all the state legislatures in the United States acting collectively, is a sovereign government, and, as such, possesses powers which cannot be limited by law.

The leading characteristics of federalism are summed up as follows by Mr. Dicey, who has given a most valuable exposition of this system and other matters relating to government in his "Lectures on the Law of the Constitution" and in "England's case against Home Rule". "A Federal Constitution", he says, "must from its very nature be marked by the following characteristics. It must, at any rate in modern days, be a written constitution, for its very foundation is the 'Federal pact' or contract; the constitution must define with more or less precision the respective powers of the central government and the state governments, of the central legislature and of the local legislatures; it must provide some means (*e.g.*, reference to a popular vote) for bringing into play that ultimate sovereign power which is able to modify or reform the constitution itself; it must provide some arbiter, be it Council, Court, or Crown, with authority to decide whether the Federal pact has been observed; it must institute some means by which the principles of the constitution may be upheld, and the decrees of the arbiter or Court be enforced against the resistance (if need be) of one or more of the separate states". He says also in another place: "The essential characteristics of federalism—the supremacy of the constitution—the distribution of powers—the authority of the judiciary—reappear, though no doubt with modifications, in every true federal state." This description, however clearly it explains the form of government existing in the United States or in Switzerland, is not, I venture to think, equally applicable to the German Constitution, which, by making the Diet a sovereign body, seems to me a most important and valuable modification of the federal system. The essence of federalism in my opinion is the existence of a common supreme legislature, in which all the federated states are duly represented, together with local subordinate legislatures, consisting solely of local representatives, in the different states; while the other remarkable feature in the American Government, namely, that the sovereign power is vested in all the state legislatures taken together, and that Congress is a

subordinate body, unable to change its own constitution and subject to the control of a legal tribunal, does not appear to me to be necessarily or essentially a part of federalism. Governments which are not federal, such as the English Parliament, might in like manner be made subordinate bodies and might have their powers limited, if the constituencies who elect them chose to retain the legal sovereignty in their own hands. Mr. Austin points out that although the trust held by the House of Commons for the constituencies is at present enforced only by moral sanctions, it might be enforced by legal sanctions; and that for this purpose, a law or written constitution would need to be passed by the constituencies themselves, who would thus form an ulterior legislature. If such a constitution were enforced by the courts of justice, the legal sovereignty of the country would then reside in the constituencies or electors, and not as at present in Parliament. "In order that the members of the Commons House might be bound legally and completely to discharge their duties to the Commons", says Mr. Austin, "the law must be made directly by the Commons themselves" with the assistance of the king and the lords, or, in a republic, by the Commons alone. In that case, "the King and the lords with the electoral body of the Commons, or the electoral body of the Commons as being exclusively sovereign, would form an extraordinary and ulterior legislature". This is exactly what has been done in the United States and in Switzerland, where the body of the electors, or of the State legislatures, have tied down the federal government by a constitution enforced by the law courts, and have kept to themselves the ultimate sovereign power. But this electoral sovereignty seems to me unessential to federalism, and in many respects a less advantageous principle than parliamentary sovereignty. It unduly limits or cripples the power of the central legislature in a country, and makes the government more complicated; and also, as Mr. Dicey shows in a striking passage, it vests the legal sovereignty in an inactive and non-apparent body, and renders any change in the constitution a matter of much difficulty, especially in the United States, where so large a majority as three-fourths is required for the purpose. "From the necessity for placing ultimate legislative authority in some body outside the Constitution", says Mr. Dicey, "a remarkable consequence ensues. Under a federal as under a unitarian system there exists a sovereign power, but the sovereign is under a federal state a despot hard to rouse. The sovereign of the United States has been roused to serious action but once in the course of ninety years. But a monarch who slumbers for years is like a monarch who does not exist. A federal constitution is capable of change, but for all that a federal constitution is apt to be unchangeable."

If Congress were made supreme, these evils would be obviated; and I believe that the best means for securing the rights of the people throughout the world is not by any plan of electoral sovereignty, however valuable it may be in some respects, but by uniting the nations under one supreme federal government, whose combined authority could protect the people of each country from tyranny or oppression by their national rulers. One advantage of making Parliament supreme is that, as Hobbes remarks, "there needs no writing", or in other words, a written constitution is not needed for a sovereign government, because its powers are infinite and cannot be limited by law; and a constitution of this kind, which defines the delegated powers and can be enforced by the law courts, would be required only for subordinate bodies. Even where a written constitution assigns to a supreme government, as well as to its subordinates, certain functions or makes other conditions, the supreme government cannot be *legally* bound by these conditions, since it can change the constitution. For all these reasons it appears to me that parliamentary sovereignty is not only compatible with federalism but is the principle which might best be adopted in the federal union of different states.

IX.

If Parliamentary sovereignty were adopted as a part of federalism, and if the central legislature were made supreme, a federal government such as that of the United States would resemble much more closely a unified government as in England, and they would differ chiefly in the extent of the powers delegated to subordinate bodies. The question of Irish Home Rule would then be narrowed to the inquiry as to what powers should be delegated to a subordinate body or bodies in Ireland by a supreme parliament in which that country was fairly represented: for the so-called "colonial form of Home Rule", in which the Irish members would be excluded from the Imperial Parliament, seems now to be very generally abandoned. In a letter to Mr. Rhodes in last June, Mr. Parnell says; "I think you have correctly judged the exclusion of the Irish members from Westminster to have been a defect in the Home Rule measure of 1886"; and in the following July, Sir George Trevelyan observed that "two years ago the mass of the people were not willing to exclude Irish members from the English Parliament. Now the Liberal party were ready to keep those members". All parties are agreed, moreover, that the "minor representative bodies", which according to Mr.

Mill "ought to exist for purposes that regard only localities", as, for example, Town Councils, and the newly created County Councils, are of the greatest value, and that the latter should be extended to Ireland also as soon as circumstances permit. These minor bodies are the third kind of government by local representatives to which the term "Home Rule" has been applied, though it is usually reserved for the larger and more important assemblies coming under the designation of parliaments or legislatures. The real question at issue, therefore, in respect to Home Rule, is whether or not there should be a separate Irish Parliament on the federal model; and it should be borne in mind that while a state legislature in the United States is independent of Congress, and is a member of the ultimate sovereign government, the Irish parliament would be purely subordinate or subject to the Imperial parliament, supposing the latter to continue as at present a sovereign body. As regards the question of an Irish parliament, which lies at the bottom of the recent controversies, I confess it appears to me that the present system of unified government in these islands is a preferable one. Unification seems to me better than federation, except in cases where the countries to be united are very distant from one another, or where their inhabitants speak different languages, and it is chiefly, I think, by overcoming these two great obstacles to political union that the federal system is such an incalculable blessing to mankind. It also renders invaluable service as a first step by uniting together independent nations who, though near neighbors and having the same language, would not, for various reasons, consent to give up their national legislatures and to form at once a unified government, but who may in course of time see cause to do so, and to become thoroughly incorporated with one another. A single parliament is a more complete union than a plurality of parliaments, and in cases which admit of it, seems to me to have several important advantages.

Mr. Dicey points out, as in his opinion two of the chief drawbacks or dangers of federalism, the divided allegiance of the citizens, who owe obedience both to the central government and to the government of their own state, and the want of sufficient power in the central legislature to protect unpopular minorities in the different states. "Federalism", he says, "has in its very essence, and even as it exists in America, at least two special faults. It distracts the allegiance of citizens and, what is even more to the present point, it does not provide sufficient protection for the legal rights of unpopular minorities". To these causes, he considers, were greatly due the terrible civil wars in the United States and in Switzerland, from the history of which countries it will be seen that "the two most successful confederacies in the world have been kept

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together only by the decisive triumph through force of arms of the central power over real or alleged State rights." A signal instance of the want of sufficient protection for minorities and oppressed classes, is that Congress had no power to abolish slavery in the Southern States, and its total abolition could only be effected at the close of the civil war by a special amendment of the Constitution. It seems, indeed, to be the chief defect of the federal system as compared with a unified government, that the primary rules of justice, the rules for the security of person and property, which concern every one, and which all should have a voice in framing, are not discussed and settled by the representatives of the whole people collectively, but only by the representatives of each separate state; so that the common will of all is not brought to bear on all, and laws passed by particular states may be completely opposed to the feelings of justice and morality in the great majority of the nation. This defect, however, might to a great extent be remedied if the central government were made sovereign or supreme, and if it were to lay down a set of conditions in the written constitution granted to each subordinate legislature, to prevent the latter from oppressing any class or any individual of its subjects. Such a set of conditions, commonly called a "bill of rights", exists in the written constitution of every single state in the American Union, though it is there inserted by the body of local electors and not by the central government.

Another feature of federalism which seems open to objection is its tendency unduly to multiply the number of parliaments and of legal systems, thus increasing the labor and cost of legislation, and at the same time making law and government more complicated. In the United States there were originally thirteen and are now thirty-eight States, each of which has a parliament of its own, consisting, like Congress, of a Senate and a House of Representatives, together with a governor and executive staff; and this seems a large proportion, even when we consider the vast size of the country, which is nearly as extensive as the whole of Europe. Moreover, each of the State parliaments has substantially the same functions, namely, to lay down and administer the great bulk of the civil and criminal law, or in other words, to deal with all subjects of legislation and administration except the comparatively small number—including foreign affairs, the army and navy, national finance, the currency, the post-office, the bankruptcy laws, and other matters—which are delegated to Congress or to the President by the constitution. "The powers not surrendered to the Government of the United States", says Mr. Sterne, a barrister of New York, in his "Constitutional History of the United States", "are much more extensive and much more immediately related to the rights of the individual, and therefore affect him

more closely, than the delegated powers of the Federal Government. In all his functions as a citizen—in his amenability to the deprivation of life and liberty by the criminal law, in the assertion or denial of his rights through the civil administration of justice—the State, with but few exceptions, has absolute control over the life, liberty, and happiness of its subjects." Thus the work entrusted to the State legislatures is performed thirty-eight times while that entrusted to Congress is only performed once. In England all affairs, both foreign and domestic, are managed by one parliament; but if Ireland had a legislature of her own on the federal model, there would need to be at least three and not improbably five parliaments in the United Kingdom; for the Irish members at Westminster could no longer take part in the domestic legislation of England and Scotland, and to confine them to debates on Imperial questions has been shown to be impracticable. The only resource, therefore, would be to have a parliament for the management of domestic affairs in Great Britain also, or possibly in each of the three countries, England, Scotland, and Wales, as well as in Ireland, and to deal with Imperial questions in a separate assembly, as is done in all federal countries. Besides the difficulty of defining the spheres of the central and the local legislatures, which gives rise to frequent litigation under a federal constitution, another source of complexity is the multitude of legal systems created by the different parliaments: and the branch of jurisprudence called "private international law" or the "law of domicile", which is due to the difference of legal systems and deals with the rights and duties of persons living in other countries or states than their own—as, for instance, of Scotchmen residing in France, and even in England, since English law differs from Scotch law—is well known to be a very important and intricate one. The American Chief Justice Story, whose work on the "Conflict of Laws" is devoted to this subject, says: "The jurisprudence, then, arising from the conflict of the laws of different nations, in their actual application to modern commerce and intercourse, is a most interesting and important branch of public law. To no part of the world is it of more interest and importance than to the United States, since the union of a national government with already that of twenty-six (now thirty-eight) distinct states, and in some respects independent states, necessarily creates very complicated private relations and rights between the citizens of these states, which call for the constant administration of extra-municipal principles". The above seem to me some of the chief objections to the adoption of federalism between Great Britain and Ireland, but they do not apply to its past history in the United States, where the federal system has rendered the most immense services, and, consider-

ing the size of the country and the international jealousies at one time existing, is probably the only kind of common government which the states would have consented to enter into, or which would have held them together.

X.

The large and increasing numbers, in different countries, who advocate federation as the only true remedy for war, for huge armaments, and for the other evils arising from the want of a common international government, propose therefore that all nations should be federally united together. In other words, they hold that all nations should gradually be brought under one supreme federal government, consisting of representatives from each of them, who would legislate on the subjects affecting them all in common; and that they should also have subordinate national governments, consisting exclusively of national representatives, for the management of their internal or domestic affairs. M. de Laveleye in his recent work on the Balkan Peninsula, which has been translated into English, describes the federal system as "theoretically the best form of government", and says of it: "This form of government allows the formation of an immense and even indefinitely extensible State, by the union of forces, without sacrificing the special originality, the individual life, the local spontaneity of the provinces which compose the nation". Under a federal system, if it were extended throughout the world, all the existing sovereign governments would become subordinate or subject to a common supreme government; while the number of subordinate legislatures or governments would depend on various circumstances, and would in the long run, I venture to think, be chiefly determined by the consideration already alluded to, namely, that nations who are very distant from one another or who speak different languages should have separate parliaments of their own, but that for near neighbors speaking the same language it is in several important respects a great advantage to have one unified parliament. The common international government might be elected by the nations in the same manner as the federal legislatures in the United States or in Germany: that is to say, supposing it to consist of two Chambers, one of them might be chosen by the national governments and the other by the body of the people; each State sending to both Chambers, as in Germany, a number of representatives approximately in proportion to its population. This would apply, however, only to civilised or advanced communi-

ties, between whom there should always be completely *equal* federation. Backward and semi-civilised populations, on the other hand, could not have equal political rights, since their vast numbers would enable them to outvote all others; but it seems to me extremely desirable that no people whatever—much less the great nations of Asia, some of whom are in many respects highly polished, and are at the present day rapidly increasing in enlightenment under the influence of Western ideas—should be treated as a mere dependency of another State. All nations should, I think, be *federated* together, that is, they should all have a share both in the common supreme government and in the national government of their own country; but with backward communities the federation could at first only be on *unequal* terms, gradually changing to equality as the inhabitants grew in civilisation. The difficulty now felt in giving the great dependencies a share in the government arises from the weakness and isolation of the dominant States, who fear to lose their ascendancy; but if the latter were themselves federated with one another this difficulty would disappear, and all nations could be represented both in the central and in the local legislatures in such measure as justice and the real interests of each people might require.

The common supreme parliament, though containing representatives of all the nations, would not necessarily be larger than other parliaments, even if it consisted only of a single body, as its size would depend on the proportion of members to the populations who elected them. It would doubtless consist, however, not of a single assembly but of several assemblies in different parts of the world, who would act *collectively* and legislate by a majority of their whole number, like the State legislatures in the United States when they exercise their sovereign powers; an arrangement by which the difficulty of uniting very distant countries might be overcome and a fuller representation could be allowed to each people. The other great difficulty, arising from difference of language, might also be surmounted by this means; and wherever different nationalities were included in the same legislature each member should be allowed to address the assembly in his own language, as is the rule at present in several legislative bodies. In Canada, for example, where a million and a half of French inhabitants are federally united with three millions of English, either language may be employed in the Dominion Parliament; in the Cape Parliament, as mentioned in the Government Year Book for 1888, Dutch may be spoken as well as English; in the Hungarian Diet the deputies from Croatia may use their native tongue; and in Switzerland, where about a fourth of the people speak French, and nearly two-thirds German, both languages can be employed in addressing the Federal Assembly.

In Austria, which, apart from Hungary, seems to be really a federal State with a large share of the sovereignty vested in the Emperor, the nationalities are more mixed than in any other country of Europe, and there are seventeen local parliaments, many of them transacting their business in distinct languages, in addition to the common central parliament, or Reichsrath, in which, I believe, only German can be employed. Though there would doubtless be numerous difficulties in government from these and other causes, the experience of federal countries shows that they admit of being overcome by a spirit of fairness and mutual concession, together with a steadfast respect for law; and even at their greatest they do not seem to me to bear comparison with the difficulties consequent on the "state of nature" or of anarchy now existing between independent nations, and the perpetual risk of war. At present, international questions are not treated by the methods of law and government at all, but by secret diplomacy and other methods characteristic of the state of anarchy; whereas if mankind were federated, secret diplomacy would be done away with, and international affairs, like all others, would be openly discussed by parliament and the press, and settled in a legal and constitutional manner by the vote of a majority.

It is evident that a change of such vast extent as the federal union of all nations could only be effected by successive steps, and by the gradual federation of independent countries with each other, and of sovereign states with their dependencies, throughout the world; but I cannot think its final accomplishment so distant and so extraordinarily or insurparably difficult as is often supposed. If the dreadful calamity of another European war be averted, there seem good reasons for believing that great progress will be made before long in this direction. The junction of the numerous separate states in Italy and in Germany, in the one case by a complete and in the other by a federal union (which are really the same at bottom, since both consist in the fusion of two or more supreme governments into one, and in the formation of a single independent and sovereign state), has shown in the most striking manner the enormous benefits of political union; and Mr. Freeman, the distinguished historian, speaks of the change thus effected as "the greatest event of our times". If the states in Italy and in Germany have united together, and thereby greatly increased their strength and national importance, their security from attack, and the feelings of sympathy and brotherhood among the people as fellow-countrymen, why may not other European states unite with like results? Many of our most eminent politicians, both Liberal and Conservative, have declared themselves in favor of a federation between Turkey, Greece, Bul-

garia, and other countries of the Balkan Peninsula; which shows that they regard as perfectly feasible the union of nations who are separated by the widest differences in religion and in language, and by the memory of ages of war and oppression. M. de Laveleye warmly advocates a Balkan Confederation as the true solution of the Eastern question, and says that it is desired by the people of the countries themselves as well as by Austria-Hungary and by the English Liberals. "This solution, so just and natural", he says, "has been for many years advocated by the English Liberals. It is the only one which is conformed to the right of the populations to govern themselves, and which avoids giving a dangerous preponderance to one of the two large neighboring empires." What hinders the execution of this project is no want of feasibility, but the opposition of Russia, whose aim for generations has been to keep Turkey and the neighboring states weak and divided, so that she may seize the magnificent city of Constantinople.

Other countries whose federation seems especially desirable at present, and comparatively easy to effect from their near neighborhood and the identity or affinity of their languages, are the three Scandinavian kingdoms of Norway, Sweden, and Denmark; the kingdoms occupying the third great peninsula of southern Europe, Spain and Portugal; and the numerous independent Spanish republics in North and South America, whose separation from one another, and the state of nature or anarchy thus produced between them, have led to the most frightful evils in the shape of constant wars and revolutions. Political union is evidently most needed and most easily carried out between contiguous nations and those having the same language, from the frequency of their intercourse together; and hence each people should strive above all to be united with their nearest neighbors and with those akin to themselves in race and language in other parts of the globe. It is also much easier to effect a federation between a sovereign state and its dependencies than between independent countries, for the former are already united under the same government, and to the dependencies federation is a manifest gain; while it is not less important to the interests of the dominant state, for in the present day, when the great ideas of national equality and the equal rights of nations are spreading far and wide, no empire can long be held together on the footing of a sovereign state and dependencies, but if not federated will assuredly fall to pieces. This tendency to promote federation shows the great value to mankind at large, and not merely to the dominant nations themselves, of vast empires such as those of Russia and England. The policy which the truest friends and admirers of Russia would wish to see her pursue is not to engage in aggressive wars which might end in her own overthrow, but legally

and peacefully, or without revolution, to change by degrees her present absolute monarchy into a constitutional and representative system of government, and to *federate* her immense dominions. In England the extraordinary importance of Imperial Federation, or, in other words, the federation of the British Isles with their colonies, and eventually with India and the other great dependencies, is recognised by statesmen of all political parties, and Lord Rosebery lately declared the hope of its accomplishment to be "the dominant passion of his public life". The colonies themselves are desirous of being federally united with the mother country; and meanwhile, as stated in the Government Year Book, "the federation of colonial groups into dominions has made good progress. The confederation of British North America is all but complete. That of Australasia is accomplished in part; and in all probability the South African settlements will follow suit." It is not for themselves alone, but for mankind, that Russia and England would federate their empires, since other nations would doubtless sooner or later be admitted, and urgently invited, to join the federation.

But of all political unions, that which seems to me most important at present, and most ardently to be desired, is the federal union of France and England. The statesmen who could bring it about would render an inestimable service to both countries, and inaugurate a new era of peace and fraternity, for in itself and by its probable consequences it would go far towards making the federation of mankind, instead of a remote ideal, an actual and accomplished fact. The advantages to this country of such a union, and the weight of the reasons in its favor, cannot, I think, be exaggerated. The French are our nearest neighbors; they are one of the bravest and most powerful, and at the same time most highly cultivated, quick-witted, and charming nations on the face of the earth; a nation whom any people might be delighted to have as fellow-countrymen. From its proximity to England, France is the country with which we must always have most frequent intercourse, and with which therefore a union is most of all required; Paris and London are nearer together than any other great capitals, and indeed if the project of a Channel Tunnel were carried out, as could safely be done if the countries were united, the journey from London to Paris might be performed, without the discomforts of a sea voyage, in about seven hours. Our language, though of Teutonic origin, has become since the Norman Conquest so intimately mixed with the French that the latter is easier for an Englishman to acquire than German, and there are probably twenty persons among us who know French for one who is acquainted with any other continental language. The strength and resources of the two countries if united

would be twice as great as of either of them singly; France would gain England, and England would gain France; and what is particularly important for countries having distant possessions of such enormous extent (since the colonies and dependencies of each nation would then belong to both) their combined navy would have nothing to fear from any foreign foe. Moreover, the paramount reason for every political union, whether of individuals or of nations, is that it puts an end to the state of nature or anarchy previously existing between them, and substitutes for it the reign of government and law. Mr. Dicey remarks that a separation from Ireland would entail upon England three great evils, namely, a defeat and surrender of her traditional policy, a loss of power, and "the incalculable evil of the existence in the neighborhood of Great Britain of a new, a foreign, and possibly a hostile state". Is not the separation of France and England exactly in the same way an "incalculable evil" to both countries?

It appears to me that the union of France with the United Kingdom would tend to settle the Irish question and to bring about a thorough and permanent reconciliation with Ireland; that it would strengthen the foundations of the Empire, whose maintenance is of such vast importance, and for whose complete security against any hostile attack England urgently needs a *partner*; that it would render feasible Imperial Federation or federation with the colonies, and not improbably also a federal union with our kinsmen and former fellow-countrymen in the United States, both of which objects, however ardently to be desired, are at present surrounded with difficulties that seem to me insuperable; and that it would enable a share in the government, in the form of an unequal federation, to be granted without danger to India and the other great dependencies. It would do more than almost anything else to convince the Irish Nationalists that *separation* from Great Britain is neither practicable nor desirable, and that "national independence", in the sense of a separate supreme government, is only another name for the state of nature or anarchy between nations, and opposed to the most vital interests of all. Indeed, if we consider the matter closely, it will appear, I think, that political union and government are not at bottom founded on what can properly be called a *contract* or *consent*, but on a *moral duty*, namely, the duty of the minority, when opinions differ, to yield to the majority (which does not mean that the less numerous nation should yield to the more numerous, but that the minority of both nations taken together should yield to the majority) since this is at once just in itself, and the only way to secure peace among mankind. Moreover, France has at different times been allied with Ireland, and was for centuries the ally of Scotland, in their wars against England; and she is a Roman Catholic

country, and a country of peasant proprietors, which circumstances might be expected to aid in overcoming the hostility of the Irish priesthood and the Irish peasantry, and in enabling them to obtain the fullest satisfaction of all their legitimate rights and demands. As regards the federation of England with the colonies and with the United States, it seems to me that an insurmountable obstacle to this at present is the unwillingness of the latter countries to incur the risk of being involved in European wars, and obliged therefore, like the nations of Europe, to maintain huge standing armies and navies. Mr. Washburne, late Minister of the United States in France, observes: "It had been the traditional policy of our Government to keep out of all entangling alliances with foreign governments". Mr. Sterne also, a barrister of New York, from whose work I have already quoted, says: "Unlike the nations of Europe, the United States has no neighbor sufficiently powerful to affect its policy or to modify its constitution. It requires no standing army: and so long as England performs the police duties of the seas, it requires but little of a navy." Why should the United States, whose standing army is only twenty thousand strong, and why should the colonies, mix themselves up with the politics of a continent groaning under the weight of ten millions of armed men? But if France and England were united, the situation would be entirely changed. Their union would be a guarantee for peace, insomuch that both the colonies and the United States might safely federate with them, thus adding immensely to the strength and security of the confederation and promoting the spread of liberal ideas and representative government throughout the world. One very powerful motive for union arises from the peculiar circumstances of Canada. The French are already federally united with the English in Canada, and if they were similarly united in Europe the colony would be attracted with double force to the two mother countries; while the United States also has long been urgently desirous of federating with Canada, and it is evident that the only way to satisfy all these deeply-rooted desires is by the federation of all the four countries together. This would secure peace in Europe, not only by the union of so many powerful and peace-loving nations, but by showing how much greater results can be obtained by political union than by the terrible weapons of war. If all wars and conquests are to end sooner or later in federation, why not rather *begin* with federation and spare these horrors and miseries to mankind?

Whatever other nations may do, however, our own policy in my humble opinion should be to seek a federal union with France. It would lighten our difficulties, lead to peace and concord, and tend most powerfully to promote federation and to solve the problems of government in every part of the world.

I would conclude with the words of the great thinker, Thomas Hobbes, who may be regarded as in many respects the founder of the true theory of law and government, and who says that "the condition of mere nature, that is to say, of absolute liberty, such as is theirs that neither are sovereigns nor subjects, is anarchy and the condition of war", whereas "all other time is *Peace*".

CAN WAR BE SUPPRESSED ?

How long is war with its countless list of horrors and miseries to continue among us ? Every one must feel that war is an appalling evil and blot on civilisation, and must earnestly desire that means could be taken to put an end to it. War is lawlessness ; it is an appeal to might instead of right, in which parties decide their own quarrels by force of arms, instead of submitting them to an impartial tribunal to be decided according to reason and justice ; and hence it is utterly opposed to civilisation, which seeks to bring all actions under the dominion of law. War stands out alone, as an exception and a fearful remnant of barbarism in the midst of modern civilised life. But war is not merely lawlessness, it is murder. We can see this from the parallel case of duelling, which is absolutely prohibited and treated as murder by the law of England. "According to the law of England," said Sir John Holker, in a recent trial, "a man who kills another in a duel is a murderer and liable to be hanged." No matter what the merits of the quarrel may have been, whether a man be aggrieved or aggressor, if he fights a duel and kills his opponent he is punished by the law as a murderer. But if duelling be murder, what else is war ? War is simply duelling on a vast scale, and with this aggravation, that the crime of robbery, in the shape of annexations, indemnities, and other kinds of pillage, is usually added to that of murder. Moreover, in duelling the principals fight their own battles, and an attempt is made to put them, as far as possible, on a footing of equality : whereas in war, the rulers who give the command for it do not usually themselves fight, and every advantage is taken of superiority in number, skill, and military resources between the combatants. Is it not monstrous that now, after all the progress in humanity, one nation is allowed to attack another, perhaps a much weaker nation, to kill the people and seize their land and their goods ? How can the people of England, who have shown their respect for law and for human life in putting down the duel, tolerate war ?

Few of the great movements of the age are of such extraordinary importance as that for the suppression of war. The most noble efforts have been made of late years for this end by Mr. Bright, M. Victor Hugo, Mr. Henry Richard, Mr. Bradlaugh and others, and the Peace Societies in England already number several hundred thousand members. Various plans have also been put forward for superseding war and supplying its place by inter-

national arbitration, and these plans cannot be too carefully considered and discussed ; for it is not merely by the general advance of commerce and enlightenment and the growing abhorrence of war among thinking minds, but also, and above all, by the adoption in time of peace of active practical measures to prevent war, that we shall ever be able to free human society from this terrible and immemorial evil.

The more deeply the subject is reflected on, the more clearly I think will it be seen that the real cause of wars is the want of a *supreme and irresistible authority*, which could force the nations to conform to law in their dealings with one another and to settle their disputes by peaceable arbitration. The only effectual remedy for war, as has been well pointed out, is the introduction of *law*—or, in other words, of positive rules of conduct, applied by a court of justice, and enforced by a competent authority—into the mutual intercourse of nations. At present international relations are in an essentially lawless state ; there is no code of laws governing nations like that which governs individuals ; for what is called “international or public law” or “the law of nations”, as all writers on the subject admit, is not really law at all, in the legal sense of the word, but merely custom or usage, or else engagement by treaty. Nations may disregard these customs, or break their treaties in particular instances, if they choose to incur the risk of so doing, and they have what is called the “right of making war” on one another and deciding their quarrels by violent means—a right which is utterly subversive of the very idea of law. The essence of law is the *compulsory* adjudication of disputes by an impartial tribunal, and if parties are allowed to dispense with a tribunal altogether and settle their differences for themselves by the sword, it is evident that law does not exist between them. But wherever, in any department of human affairs, law is absent, or cannot be enforced from weakness of the executive, the most fatal consequences are sure to arise. Thus in the Middle Ages, before governments were strong enough to coerce the barons and feudal chiefs, private wars between them as well as national contests were so common that, as Mr. Buckle says, “there was never a week without war”. Even in our own day, when opinion is so much more advanced, if there were no laws regulating the succession to property, the fulfilment of contracts, etc., and if people were allowed to fight for their rights instead of having them determined by a court of justice, society would be a scene of continual bloodshed and confusion. War is the natural and inevitable result of the present lawless state of international relations, and the one and only remedy for it is to extend to nations, as well as individuals, the inestimable benefits of law. But how is this to be done ? If we examine the matter attentively we shall find that the element which is wanting to constitute a true legal system between nations, is a supreme authority with adequate executive force. There exists already a code of rules or usages commonly called inter-

national law, which has gradually become better defined and more binding, as well as juster and more humane, in the course of ages; an international tribunal could be established, consisting of judges skilled in public law, and chosen from the different States; but the grand difficulty to be overcome is the want of a supreme authority, to approve and, when necessary, add to the code, and strong enough to compel the nations, however powerful, to carry their disputes before the tribunal and abide by its decisions. It is a sanction, or enforcing authority of this kind that the international code really needs. "The independent societies of men, called States," says Mr. Wheaton, in his work on International Law, "acknowledge no common arbiter or judge, except such as are constituted by special compact. The law by which they are governed, or profess to be governed, is *deficient in those positive sanctions* which are annexed to the municipal code of each distinct society." If there were such sanctions, war between nations could be crushed out with the same certainty and completeness as the civil wars between the feudal nobles have been extinguished by the growing power of the law courts. The question, How is war to be suppressed, seems to me, therefore, to resolve itself mainly into this other question—How is a sufficient sanction, or executive authority, to be obtained for the law of nations?

We may now turn to the various practical proposals which have been brought forward with a view to the prevention of war; and of which the most important seem to be the following: a *general reduction of armaments*,¹ a *confederation of States*, and *international armies*. The first of these would be an immense boon if it could be obtained, as it would lighten an intolerable burden on the nations, and also make war less probable, since governments would no longer be so fully prepared for it. But there are evidently most formidable difficulties in the way of carrying out this proposal. The disarmament would need to be *general*, for if any of the great Powers refused to reduce their forces, it would be dangerous for others to do so; and some governments would be particularly averse to disarm, either from unwillingness to give up cherished schemes of ambition or revenge, or from the vast size of their dominions and fear of disaffection among their subjects. But even if these difficulties were overcome, disarmament would be only a palliative, and not a cure for present evils. It would still leave arbitration *optional*, whereas the object to be aimed at is that it should be *compulsory*, or, in other words, that law should be introduced in international affairs. "We hold," says Professor Cliffe Leslie, "that only a law of nations in the

¹ A resolution in favor of a general disarmament by the European States was proposed in Parliament by Mr. Cobden in 1849, and again recently in 1880 by Mr. Henry Richard. The latter also, in 1878, moved a resolution, which was adopted by the House of Commons, in favor of the arbitration of international disputes.

strict sense of the term, can terminate war". Without law, there is not only no guarantee for peace, but no provision for securing *justice*, between nations. Disputes between nations, as between individuals, arise on questions of contested right, or in consequence of injuries received; and if one party refuses to arbitrate, the other must either tamely submit to what it considers an injustice, or go to war to enforce its rights. But war, like the barbarous "trial by combat" in use among our ancestors, can never be a proper test of justice or of right, for a war does not show which cause is just, but only which of the combatants is the stronger. So long, therefore, as Governments may refuse arbitration and may go to war, injustice and lawless force are the final umpires in international disputes, and this must have a profoundly demoralising effect on mankind and their rulers. In order to have either peace or justice it is necessary to introduce law, which would compel arbitration, and secure even to the weakest among the nations, its rights and redress for its injuries. This, too, is the only sure means for bringing about a disarmament, for the real cause of the enormous armies (amounting at present in Europe alone to about ten millions of men) is the state of general insecurity and licence arising from the absence of law. As there is no law to protect or restrain them, nations arm partly to protect themselves and partly to carry out secret projects of conquest and aggrandisement; and we can scarcely hope to see any satisfactory reduction of armaments till there is a real and effective international law.

How, then, can such a law be obtained? We have seen that what is mainly needed for this purpose is a supreme authority, with adequate executive force to give effect to the present international code, which, as Mr. Cliffe Leslie observes, has the features of law "in its inchoate or rudimentary form". Now there is evidently only one way in which an authority of the kind can be established, namely, by means of a *combination between different States*. Nothing but the combined strength of many States can force single States to obey the law and to keep the peace. The real sanction of the law between individual and individual is the general community of individuals, and in like manner the sanction of the law between nation and nation can only be the community of nations. It seems to me the clearest and most urgent duty of nations to take measures for introducing positive law between them and putting an end to war. Until provision can be made for the legal settlement of international disputes, the responsibility for war with all its horrors rests in great part on the nations generally; and this leads to the utmost confusion of ideas with regard to the criminality of war. One of the most frightful of crimes is not generally seen to be a crime at all. Thus at present wars are commonly divided into *just* and *unjust*, because, in the absence of law, it is sometimes necessary, and even an act of the most heroic virtue in a nation to fight for its

rights and liberties; but if law were once firmly established, and means of legal arbitration afforded, war would simply be a *crime*, to be repressed and its chief authors punished, as in the case of other heinous offences. There would then be only one kind of lawful and justifiable war, namely, that which is analogous to the action of the police, and consists in putting down by force any resistance to the orders of the supreme authority. Not only can and ought the nations thus to put down war as a crime, but it is their most vital interest to do so. At present any nation is liable at some time or other to be involved in war, and even neutrals during a war often suffer most severely; for their commerce and communications are interrupted by blockades, sieges, and other military operations; and, besides, war has a great tendency to spread, and the best efforts on the part of neutral States are often unavailing to prevent their being dragged into it. Why should neutrals submit to these fearful evils and dangers at the hands of belligerents, who are morally bound to arbitrate their disputes, and are therefore committing a crime in going to war ?

These considerations are so immensely important that they must, I believe, before long lead to a combination among civilised States for the purpose of preventing war. But States may combine in different ways, either by *alliance* or by a more or less intimate *confederation*; and the great difficulty of the question is to decide which kind of combination is at once suited to effect the object in view and also capable of adoption by existing States. Professor Seeley, in a lecture delivered before the Peace Society, has held that nothing short of a close federal union, like that subsisting between the States of North America who are all under a common government, would be sufficient; and a similar view seems to be taken by those who advocate, as a remedy for war, the formation of what they term "the United States of Europe." [In the preceding essay, on "Home Rule and Federation," I have already given my reasons for entirely concurring in this view. As I there endeavoured to show, the only effectual remedy for war and for huge armaments is not a mere *alliance* or agreement between the nations for the purpose of promoting the arbitration of disputes, but a *political union* between them—in the form either of a complete union or of a federal union according to the circumstances of each case. It is only by this means that an end can be put to the present state of international anarchy, and that a law of nations or international law, in the true legal sense of the word, can be obtained.]

The extension of law to nations as well as individuals, and the abolition of the barbarous "right of making war," seem to me beyond all comparison the greatest improvements which could be effected in international politics, and would be a glorious triumph of statesmanship. If statesmen of different countries could do something towards the realisation of these hopes, it would be a

priceless boon to a world sick of war and bloodshed, and longing for the advent of a new era of settled peace, law, and real brotherhood among mankind.

STATE REMEDIES FOR POVERTY.

“Poverty, in any sense implying suffering, may be completely extinguished by the wisdom of society, combined with the good sense and providence of individuals.”—*John Stuart Mill.*

STATE REMEDIES FOR POVERTY.

THERE is a subject which has hitherto been little discussed, but on which many have doubtless, like myself, thought long and anxiously, and which seems to me urgently in need of an earnest consideration. However strongly opposed to the prevailing opinions and sentiments, it will sooner or later, I believe, become the most momentous of practical questions in every country of the world. I refer to the endeavor to extinguish poverty by *direct legal enactment* in the only way in which this could possibly be done, namely, by means of a statute limiting the size of families, and forbidding anyone, whether rich or poor, to have more than a certain small number of children.

Mr. John Stuart Mill, the great thinker whose loss we deplore, was strongly in favor of such a measure. He says in his *Political Economy*, "It would be possible for the State to guarantee employment at ample wages to all who are born. But if it does this, it is bound, in self-protection, and for the sake of every purpose for which government exists, to provide that no person shall be born without its consent." In another work, in a vindication of the French Revolution of 1848, he says, "The practical result of the whole truth might possibly be that all persons living should guarantee to each other, through their organ, the State, the ability to earn by labor an adequate subsistence, but that they should abdicate the right of propagating the species at their own discretion and without limit; that all classes alike, and not the poor alone, should consent to exercise that power in such measure only, and under such regulations, as society might prescribe with a view to the common good. But before this solution of the problem can cease to be visionary, an almost entire renovation must take place in some of the most rooted opinions and feelings of the present race of mankind." And, again, he says in his *Political Economy*, "If the opinion were once generally established among the laboring classes that their welfare required a due regulation of the numbers of families, the respectable and well conducted of the body would conform to the prescription, and only those would exempt themselves from it who are in the habit of making light

of social obligations generally ; and there would be then an evident justification for converting the moral obligation against bringing children into the world who are a burden to the community into a legal one ; just as in many other cases of the progress of opinion, the law ends by enforcing against recalcitrant minorities, obligations which to be useful must be general, and which, from a sense of their utility, a large majority have voluntarily consented to take upon themselves. There would be no need, however, of legal sanctions, if women were admitted, as on all other grounds they have the clearest right to be, to the same right of citizenship with men. Let them cease to be confined by custom to one physical function as their means of living and their source of influence, and they would have for the first time an equal voice with men in what concerns that function ; and of all the improvements in reserve for mankind, which it is now possible to foresee, none would, in my opinion, be so fertile as this in almost every kind of moral and social benefit". I venture to think that even if women were admitted to the suffrage, and other just rights and privileges of citizenship, there would still exist the most weighty reasons in favor of legislation on this subject.

The great reasons for such an enactment seem to me to be that *a law to regulate population, if duly carried out, could of itself with certainty remove poverty and overwork ;* that no other law, or laws, could do this, and that the force of public opinion, and the conscience and self-interest of individuals are not strong enough, without the aid of law, to accomplish so vast an object. What is indispensably needed for the extinction of poverty is a restraint on population so powerful and general as to *remove the excessive pressure on the soil ;* in other words, by diminishing the demand for food, to enable the margin of cultivation to recede to a sufficient extent, the worst soils to be thrown out of tillage, and the land altogether to be less highly and expensively cultivated. In this way the productiveness of labor would be increased, and wages would rise, while at the same time there would be a reduction in the working hours, and in the cost, and, therefore, the price of food. The country would then be placed somewhat in the position of a new colony, for the essential difference between an old country and a new colony is that in the former population is pressing too heavily on the productive powers of the land. Now it appears to me that a reform of such vast extent and difficulty as this, requiring the co-operation of the whole of society, will never be adequately carried out without the assistance and deliberate sanction of the Government. When the increase of population is left solely to the discretion of individuals, the moderation and self-restraint of some are counteracted by the recklessness and improvidence of others, and thus the overcrowded state is constantly kept up. Even in France, where prudence is most general in this respect, there is still immense over-population ; as may be seen by the miserably low rate of wages in many

employments, and the high average price of provisions. It is a fact, thoroughly established by science, that large families are the real cause of low wages and dear food in old and civilised countries, and there can be no doubt that Government has the power, if it only has the will, to suppress the source of the evil, and thereby remove the effect. Anything else which Parliament can do to raise wages must be merely *indirect*, and can only attain its object by the circuitous means of acting on the general intelligence and independence of the people, and inducing them to limit their numbers. Why then should we always be content with indirect and inadequate measures? Why not go at once to the root of the matter, and grapple with the main cause of poverty and pauperism, with the earnest resolution to put an end to them? It seems to me that this question is sure to be asked before long by the working classes and social reformers, when the chief cause of poverty becomes widely known, and is no longer a matter of dispute. The great idea lying at the root of the socialist and democratic doctrines which have spread so widely of late years, especially on the Continent—an idea which I believe to be profoundly true—is that mankind form a community whose interests are bound up together, and who should mutually aid one another, and insure one another, as far as possible, against the ills of life; that society should have an equal care for the happiness of all its members, and should see that all are duly provided for; that therefore it is the duty of society, through its organ, the Government, to take energetic steps for the removal of poverty, and to *guarantee* to every individual who is willing to work, an ample subsistence in return for his labor. Now, a law to regulate population is in reality the *only law* by which it is possible for the State at once and directly to do away with poverty, to shorten the hours of labor, and to raise wages to a satisfactory amount; and if it be true, as was maintained by the Provisional Government of France in 1848, and was inscribed in the project of a constitution, that the State ought to guarantee subsistence and employment to all who are willing to work, such a law is the only means by which the object could be effected. Ought not then the State to adopt this one and only means for ensuring to all a comfortable subsistence? Should we not choose the most direct and certain path to deliver our society from the fearful evils of poverty and pauperism? For my own part, I cannot but entertain a deep conviction that such a law is quite legitimate in the extraordinary difficulties arising from the population principle. I think that it would, if enacted, be the most important to human happiness of all possible laws, and that it will sooner or later be laid down as the very foundation and corner-stone of society, in all the civilised countries of the old world.

It will be said that a measure of the kind described is far too sweeping an innovation, and too despotic an interference with personal liberty to be ever seriously contemplated. But those

who rely on such objections would do well to consider attentively the actual state of the facts. The truth is, that population is *already* so powerfully restrained by prudential motives in this and many other countries, that a little more or less of restraint is a matter of much smaller importance, and would be far less felt, than is often supposed. Immense numbers of people, perhaps the majority of society, are obliged at present by their circumstances to exercise so much caution in regard to marriage and offspring, that it would not make the slightest practical difference to them whether a Malthusian statute were in existence in the country or not. To those who are forced to lead a life of celibacy, the change would bring a positive increase of freedom, for if there were no excessive families, a much greater number could marry. The only persons whose liberty would really be interfered with are those who have large families, and in their case the operation of the law would for the most part be the greatest possible blessing to *themselves* as well as to the rest of society. It is no one's real interest in an old and over-peopled country to have a large family. Children, when too numerous, are a source of intolerable difficulties and anxieties among the rich quite as much as among the poorer classes; and it is a remarkable fact that in France and many other countries it is the rich, and not the poor, who most carefully limit the number of their offspring. We see, therefore, that the question does not really lie between liberty and restraint, but between two degrees of restraint, one of them unjust and partial in its action, inefficient, and attended by the most widespread sufferings, and the other, which would be just and efficient, and which would not be practically felt by most people as any increase of restriction, but only by those who would themselves be immensely benefited by the change. I believe that the abolition of poverty, the mightiest of all social revolutions, could be quietly and peacefully effected by this means, with only such an amount of interference with personal liberty as would be comparatively little felt as a positive evil. Moreover, poverty *cannot possibly* be got rid of without an increase in the preventive check to population. It is in vain to wish that there were no poor, and yet object to a further limitation of the size of families; if we will the end, we must will the means to attain it; and if, therefore, society must of an absolute necessity submit to an increased restraint in order to effect this grand purpose, what real difference does it make whether the restraint comes from law, or from public opinion, or from the conscientious feelings, or the interests, or the circumstances of individuals? Another very important matter to be taken into account is, that legal restrictions on population *actually exist at present* in many continental countries, and even in England. Mr. Senior, as quoted by Mr. Mill in his Political Economy, says that in the countries which recognise a legal right to relief, "marriage on the part of persons in the actual receipt of relief appears to be everywhere prohibited, and the marriage of

those who are not likely to possess the means of independent support is allowed by very few." In Norway, Wurtemberg, Bavaria, Frankfort, several Swiss Cantons, and some other parts of the Continent, no one is permitted to marry unless he can show that he has a fair prospect of being able to maintain a family; while in England, by a provision of the poor-law, husband and wife are separated in the workhouse. Now these laws, however excellent their intention, and however efficacious they may have been in diminishing poverty, do not seem to me strictly in accordance with justice, for two reasons: in the first place, because they prohibit *marriages*, instead of prohibiting (what alone, it appears to me, the Legislature can justly restrict) *large families*; and, secondly, because they apply only to the poor, and not to all classes of society alike. The existence of such enactments shows that a statute to regulate population would not introduce any new principle (since restrictions on marriage are really restrictions on population), but would merely be the extension to the community at large of a law which exists in this and other countries in regard to certain classes, and which, in my opinion, is unjust so long as it is confined to them, and is thus only a law for the poor and not for the rich. Is it just that all the restrictions should be laid on the poor or the paupers, when the whole of society has a share in the production of poverty and pauperism? Again, as to the objection that such a statute could never be enforced, we must remember that it could not possibly be enacted without an immense deal of discussion, and till the majority of the nation were strongly in its favor, and that the majority would not seek to impose any obligations on others which they were not ready to submit to themselves. It may, perhaps, be added that it would be possible to make the limit of families rather a high one—perhaps four children as the maximum—since very many would not reach it, and the penalty could be slight, as the great object of the law would be to guide and strengthen public opinion, and the dictates of individual prudence and conscience, and not by any means to supply their place. The mere discussion of the subject would be of incalculable value, and would spread a knowledge of the population truths over the whole country.

Had the population question been openly discussed, so that all might understand it, we should never have seen that perversion of justice by which two of the most gifted of English citizens have been sentenced to fine and imprisonment for seeking to benefit the poor—for earnestly considering the cause of low wages, as laid down by political economy, and pointing out the means by which, in their belief, poverty could be removed from society. It is the duty of all to meet, and not evade, this question. More especially is it incumbent on those who prosecute others to state plainly their own views on the subject. When a remedy for human miseries is

put forward, not as a good in itself, but as *the least of several alternative evils*, one or other of which is necessary and inevitable, those who condemn it are bound to say which of the other alternative evils *they* think preferable. As there must always exist a most powerful check to population, either positive or preventive, in old countries, the question to be determined is, which of the various forms of the check is most consistent with the happiness and well-being of mankind? This is the real point at issue, and opponents are bound to consider it most carefully, and to show, if they can, that some other mode of dealing with the terrible difficulty of population is better than the one proposed. Now there are several different ways in which the population difficulty may be dealt with by those who disapprove of preventive measures. People may either ignore it altogether, as the vast majority do, and go on blindly striving to remove from society *all* the checks to population, or permanently to diminish any one of them without a proportional increase of some of the others—objects which Mr. Malthus, eighty years ago, showed to be quite unattainable by human effort. Or they may deny the truth of the law of population, and contend that man's choice is not limited to one or other of the checks to increase, and that poverty is not the result of too rapid multiplication. Or they may hold that the existing checks, poverty, prostitution, and celibacy, are preferable to preventive means; or maintain, with Mr. Malthus, that all the other checks ought to be superseded by an enormous increase of celibacy or sexual abstinence. Or, finally, they may see nothing wrong in the preventive measures—nay, may themselves adopt them—but yet hold that the subject ought not to be spoken of or discussed in writing; an opinion which is, I believe, very common, but which cannot be sustained; for if it be morally right to use these means, they *must* be carefully considered by physicians and others, so as to learn their influence on human health and happiness, and to free them, as far as possible, from any injurious consequences. One or other of these views must be held by opponents, and they are bound to state clearly and openly which of them they *do* hold. This, however, has not been done by the prosecutors or their counsel, and hence those who honestly meet and try to solve the greatest of human difficulties are attacked and threatened with legal penalties by those who evade it altogether, and, therefore, do not give any real grounds to justify their condemnation. For the moment the attempt has been defeated by the heroism and eloquence of Mr. Bradlaugh and Mrs. Besant, and the heart of every true friend of the people is with them, and with Mr. True-love, in their steadfast defence of the population doctrines and the liberty of the Press—one of the greatest services ever done in any country to the poor and to humanity at large.

In addition to a law for regulating the increase of population, there is another State remedy for poverty, or, in other words, for low wages and overwork, which seems to me of immense value and importance. It differs from the preceding in having long been the favorite remedy of the working classes themselves, and also in the fact that of late years it has been largely adopted as a principle of legislation by the Governments of this and other civilised countries. I allude to the endeavor to raise wages and shorten the hours of labor directly, by fixing the minimum rate of wages which may be paid by employers, and also the maximum number of hours in the day or in the week during which work-people may be kept at work; both of which methods have been steadily pursued for generations by the trades unions among the working classes, while Governments, at least in recent times, have confined themselves to the latter method, and have limited the hours of work of women, children, and young persons in factories and workshops by a series of enactments commonly known as the Factory Acts; although in the reigns of Queen Elizabeth and her successor laws were passed which directed the magistrates to fix the rate of wages in the various trades and occupations at the Easter session in each year, and these laws continued in force for nearly two centuries, being only in 1814 at last repealed.

These two measures, the regulation of the hours of work and of the rate of wages, are closely connected with one another, and, when cautiously used, especially with the assistance of Government, they seem to me of the greatest value, and indeed the most powerful of all the auxiliary or subsidiary remedies for poverty. According to the Malthusian doctrine, an adequate restraint on population is the true remedy for poverty; that is to say, it is the remedy which is not only indispensable, but sufficient in itself to remove this gigantic evil in any educated or civilised society. Thus Mr. Mill observes, in speaking of Communism, that there are two conditions, namely, first, universal education, and secondly, a due limitation of the numbers of the community, "without which neither Communism, nor any other laws or institutions could make the condition of the mass of mankind other than degraded and miserable"; whereas "with these, there could be no poverty even under the present institutions." The auxiliary remedies, on the other hand, such as co-operation, peasant properties, or the regulation of work and wages, do not produce their good effects of themselves alone, but operate indirectly, by strengthening the preventive check to population; they increase the intelligence and forethought of the people, elevate their standard of comfort, and place them in circumstances which induce or oblige them to avoid more carefully an improvident increase of their numbers. The immense benefit to the whole of society which may result from a limitation of the time of labor is well shown by the familiar case of the Sunday, in which a strong public sentiment, aided by laws laid down and enforced by the State, has secured for all classes

one day of rest in the week, and this, too, without any sacrifice of wages on the part of the laborers; for it is admitted that they earn as much at present in six days as they would have earned if they had worked for the whole seven.

Mr. Mill highly approves of prohibiting Sunday labor in the larger operations of industry, and holds, as a general principle, that government may rightly intervene to secure combined action, in cases where there are good reasons for believing that a certain line of conduct would be very advantageous if all the persons concerned would adopt and adhere to it, but where its universal adoption cannot be obtained without the aid of law. In considering the limits of the doctrine of *laissez faire* or non-interference, and the exceptions to the general rule that individuals are the best judges of their own interests and should not, therefore, be interfered with by government in their private affairs, he says: "To a fourth case of exception I must request particular attention, being one to which, as it appears to me, the attention of political economists has not been sufficiently drawn. There are matters in which the interference of law is required, not to overrule the judgment of individuals respecting their own interest, but to give effect to that judgment; they being unable to give effect to it except by concert, which concert again cannot be effectual unless it receives validity and sanction from the law." As an illustration he takes the question of diminishing the hours of labor, say from ten to nine in the day, and shows that even if this reduction could be obtained without any loss of wages and would therefore be very beneficial to the laborers as a body, yet the immediate interest of individuals would often lie in violating the rule and working overtime, since by so doing they would receive the usual day's pay with something more besides; and so many might prefer the latter course that it might be difficult or impossible to maintain the shorter hours, unless they were made legally binding on all. "Assuming then," he says, "that it really would be the interest of each to work only nine hours if he could be assured that all others would do the same, there might be no means of their attaining this object but by converting their mutual agreement into an engagement under penalty, by consenting to have it enforced by law."

Short hours of work and high wages are the most important of social objects, for on them depend the happiness and well-being of the great mass of the people; and the question which of late years has most deeply interested the working classes, not only in England and the Continent of Europe but in America and Australia, is the so-called "Eight Hours Movement," or the proposal to limit the hours of labor by law or otherwise to eight hours in the day or forty-eight in the week, so that the laborers may have time for rest and amusements, and for the cultivation of their various faculties. It is not proposed that the change to eight hours should be introduced suddenly and simultaneously in

all the branches of industry, but that, wherever this would be too great a reduction to be safely effected at once, the hours should be gradually diminished, first to ten or nine and finally to eight in the day. Moreover, certain special occupations might and probably would be first dealt with, especially those in which the evils of overwork are greatest or have most attracted public attention, and also those in which the government itself, whether central or local, is the employer of the laborers and is therefore more directly responsible for the conditions of their employment. In some occupations leave to work overtime in cases of emergency or at certain seasons of the year should be granted, as is done by the present Factory Acts; and, above all, it is held that any general statute limiting the hours of labor should be based on the principle of trade option, that is to say, should not be applied to particular trades, unless at the express desire and with full approval of the majority of the workpeople in those trades. These are the views maintained in two very valuable works lately published, "The Eight Hours Day", by Messrs. Sidney Webb and Harold Cox, and "Eight Hours for Work", by Mr. John Rae, in both of which an eight hours law, gradually and cautiously introduced on the principle of trade option, is warmly advocated, and its probable effects on wages, on the amount of production, on the number of the unemployed, on foreign trade, etc., are carefully considered in the light of past experience and with the aid of general reasonings. "In the course of the investigation," says the distinguished economist, Mr. John Rae, "I have found it impossible, personally, not to grow a stronger and a stronger believer in the eight hours day. Shorter work hours have left every nation that has chosen them at once healthier, wealthier, and wiser; and the shortening to eight hours seems, if I may say so, to be blessed above its predecessors." It appears to me also that an eight hours day would be an inestimable boon to the laborers, and could best be obtained by means of law, especially in old countries, where the difficulties to be overcome, owing to the pressure of population, are far greater than in new colonies. The reduction of the hours of work is only one of the two great objects in view, while the increase of wages is the other; but we may here confine our attention chiefly to the former, since the State has not intervened, nor has its intervention been requested, in the matter of wages, which are usually left to be regulated by competition, modified by the action of trades unions; although there have lately been demands for a "fair or living wage," and for the payment of "union wages," or the rate of wages fixed by trades unions, to all workmen employed by the central or local authorities; and I venture to think that the weighty arguments urged in favor of the intervention of government in the hours of work are not less applicable, for the most part, to its intervention in the wages of the labourers.

We may first advert briefly to the actual results of experience.

At the beginning of the present century the hours of English workpeople had by degrees become much longer than at some former periods, in consequence, apparently, of the rapid growth of the factory system and the increasing use of costly machinery, which was driven by steam and yielded a profit in proportion to the number of hours it was kept in action. "The very long working day" says Mr. Rae, "seems to have been really a gradual fruit of the factory system. Those who laid down expensive machinery grudged seeing it stand a moment idle, and they lengthened the period of work first to twelve hours, and then to thirteen, fourteen, and sometimes sixteen hours a day." The earliest of the Factory Acts was passed in 1802, and among other reforms it limited the labor of children in textile factories (buildings for the spinning and weaving of cotton, wool, or silk) to twelve hours in the day, a fact which of itself shows the fearful abuses in the employment of children and the exhausting system of continuous toil at that time prevailing. The first great general reduction in the working hours of adults was effected in 1847 by the so-called Ten Hours Act, which limited the hours of women in textile factories to ten in the day or sixty in the week, and this period was further reduced to fifty-six hours and a-half by a subsequent enactment providing for a half-holiday on Saturday. "The reduction of the hours of labor in the textile mills," say Messrs. Webb and Cox, "which may be said to have begun in the United Kingdom from about 1817, has been continuous and considerable. Seventy-five years ago men commonly worked ninety and a hundred hours per week. By successive stages these hours have been brought down to fifty-six and a-half." Similar regulations were afterwards extended to non-textile factories and workshops in which the hours of the female operatives were restricted to sixty per week, a certain amount of overtime work being also permitted in some of the trades included in the measure. It should be observed that the above legislation, while nominally applying to women only, had practically the effect of limiting in an equal degree the labor of the men employed along with them, so that the common assertion that Parliament has never yet interfered with the hours of male adults is only true in the sense that it has not done so *directly* and explicitly, although in reality the hours of the men have been as strictly limited for the last forty years as those of the women. A further reduction of the working day to nine hours has been obtained by the great body of skilled artisans throughout the country, such as carpenters, masons, plumbers, engineers, etc., whose hours have been gradually shortened from about seventy-five to fifty-four per week, not by legislation but by the efforts of trades unions and agreements between workmen and their employers; the gain, however, has in this case to a large extent been neutralised by the very common practice of overtime work. As to the eight hours day itself, the goal of the workman's endeavors, several very successful experiments in different lines of business

have lately been made by employers who have adopted it, reducing the hours of their workpeople to eight in the day or forty-eight in the week while paying them the same wages as before. The English Government itself, in its capacity as an employer of labor, has recently introduced the eight hours day in one of its departments. In 1893 Sir H. Campbell-Bannerman, then at the head of the War Office, issued an order shortening the working day to eight hours in a cartridge factory at Woolwich, and found the result so encouraging that he afterwards extended the same system to all the public ordnance factories. But the country in which the eight hours movement has had the most rapid and striking success is the Australian colony of Victoria, in which a very large proportion of the working classes have already secured this great boon. "The eight hours day became general in Victoria," says Mr. Rae, "in the years 1884-6. Before that time it was enjoyed by no more than twenty trades, but it is now enjoyed by sixty. Three-fourths of the working population of the colony work only eight hours a day." This result has been attained, as in the case of the skilled artisans in England, not by law, but by the action of trades unions and agreements between employers and their workpeople, together with strikes among the latter where their urgent representations and demands were resisted. On the continent of Europe there are comparatively few trade unions among the laboring class, but Factory Acts and legal limitations of the hours of labor have been introduced in many countries, as, for example, in Switzerland where the hours of men as well as of women in factories and workshops have been limited to eleven per day and ten on Saturdays, and in Austria where a reduction has been effected from twelve to eleven hours; while in the United States of America the hours of artisans, and also of the textile workers in some of the States, have been gradually reduced to ten, and there has been a prolonged and resolute struggle for an eight hours day, which however has hitherto been secured by very few trades.

The effect of these reductions in the hours of labor, so far as they have yet been carried, is admitted to have been on the whole extremely beneficial. The great saving of human toil has not been counterbalanced, as was often feared and predicted, by a diminished production, nor, consequently, by a decrease of wages and profits, both of which depend essentially on the productiveness of labor, or in other words, on the average quantity of commodities produced or services rendered by each laborer. "On the whole," says Mr. Rae, "the general impression left on every occasion alike is that, taking one workshop with another, the average produce has not suffered to any degree worthy of mention from the shortening of hours. The world possesses now very abundant experience of shorter hours, and its experience has been entirely the same in England, in America, in France, in Holland, in Switzerland and in Austria." The shorter hours have increased

the personal efficiency of the laborers and led to improved arrangements on the part of employers, so that in this way the labor has gained in intensity what it lost in duration and the amount of the produce has been fully maintained. Even where costly machinery is used, and where it might be supposed that the quantity produced must be in direct proportion to the time the machine is in action, experience has shown that, owing to the greater efficiency of the workmen under a system of shorter hours, the produce has not been diminished; thus, for example, Messrs. Webb and Cox observe that in the textile factories "the hours of work have been successively reduced, without diminution of production, fall of wages, rise of prices, or slackening of trade." Long hours of work are so depressing to the energies of body and mind, and so injurious to the health not only of the workman himself but of his children and descendants in succeeding generations, that instead of a gain there is a loss of productive power when labor is continued beyond a certain limit; and it is held by high authorities that, on the whole, as much can be produced in an eight hours day as in any longer period. "The effect of shorter hours on the general wages of labor," says Mr. Rae, "depends entirely on their effect on production. If they lessen production generally, they will lower wages generally; but they have not, in fact, lowered production generally in the past, and they have consequently not lowered wages. The men have unconsciously or from design worked better in the shorter hours, and the masters have been led to make more effective arrangements." "The general conclusion," he says again, "which the whole history of the short hours movement and the special history of the eight hours experiments seem strongly to suggest, is that if masters and men both do their part aright, we can in the great run of occupations get as good a day's work done regularly in eight hours as in any longer working day." On this point the distinguished American economist, General Walker, observes also: "The new plea for an eight hours law bases itself upon the theory that, on the whole, and in the long run, labor continued through only eight hours will yield as great a product to be divided among the several classes of the community as labor continued through the present somewhat varying term from ten hours to, say, eleven or twelve." A workman's hours, it may here be remarked, do not include the time allowed for meals, and thus the eight hours day, according to the most common arrangement, lasts from 8 a.m. to 5 p.m., with an hour off for dinner; while the nine hours day lasts from 6 a.m. to 5 p.m. with two intervals for breakfast and dinner. In the former, therefore, the laborer is enabled to come to work after breakfast instead of before it, a most important consideration as regards not only his health and comfort but also the efficiency of his labor. With reference to the objection so often urged against a reduction of the working day, that it would injure foreign trade and prevent a country from competing

successfully with its industrial rivals in the markets of the world, previous reductions are not found to have had this effect, but, on the contrary, English exports and imports have enormously increased within the last half century; and indeed, if the production of a commodity were not diminished by the shorter hours, its price would not be raised and there would be the same facility for its exportation as before, since foreign trade depends in the first instance on the relative prices of commodities in different countries. As observed by Ricardo in his "Political Economy", "the motive which determines us to import a commodity, is the discovery of its relative cheapness abroad; it is the comparison of its price abroad with its price at home." A very large number of industries, moreover, are not exposed to foreign competition; and if any particular trades were of opinion that their foreign sales would be endangered by the adoption of shorter hours, they would have full liberty, under a system of trade option, to retain their present working arrangements or to diminish their hours in a very gradual and tentative manner.

Notwithstanding the reductions which have been effected, however, the working day is still, as a rule, far too long, and, in numberless instances, most destructive to the health and happiness of the workpeople. Any longer term than eight hours entails a considerable amount, usually two hours, of labor before breakfast, with all the discomforts attending it in a cold and damp climate; or else it carries the work so far into the evening as to leave the laborers little time for outdoor sports and exercises or the many other enjoyments and interests which are so essential to a happy life. The hours of large bodies of workers, as, for example, those engaged in the omnibus, tramway, or railway service, shop assistants, attendants in public houses, etc., are excessively long, varying from twelve to fourteen and sometimes sixteen hours a day; while even the skilled artisans, though they have nominally obtained a nine hours day, are employed on an average for considerably more than this from the very common and systematic practice of working overtime. "It is only in comparatively few occupations," say Messrs. Webb and Cox, "that the real working day is less than ten hours;" and after a careful inquiry into the hours of different trades, they describe the actual condition of industry as "the almost complete absorption by work of the present life of the masses."

We have already seen that the reason why the reductions hitherto made in the working day have not lowered wages is that they have not lowered the productiveness of labor, the circumstance on which the rate of wages ultimately depends. The shorter hours have improved the health and energies of the laborers and induced the employers to adopt better arrangements, so that the amount of production on the whole has not been diminished. But besides stimulating the energies of employers and employed, there is another, and, in the long run, a much more effectual mode in

which a shortening of hours tends to raise the productiveness of labor, namely, by leading to an increase in the preventive check to population, and thus lessening the pressure on the productive powers of the soil. The great fundamental cause which lowers the productiveness of industry, and which therefore lowers wages and profits and lengthens the working day, in all the civilised countries of the old world, is that the excessive numbers of the people and demand for food necessitate the cultivation of very poor soils and the costly and elaborate culture of the more fertile land, so that the produce obtained from the worst soils or in the most unfavorable circumstances is small in proportion to the labor and capital expended on it; and the true remedy for these evils is a stricter restraint on population. This doctrine, which shows poverty to be essentially a question of *production* and not of *distribution*, is so extremely important, that in order clearly to perceive its truth, we may here consider a little more fully the circumstances which determine the rate of wages or, in other words, the exchange value of labor in a country.

"Labor," says Ricardo, "like all other things which are purchased and sold, and which may be increased or diminished in quantity, has its natural and its market price." The temporary or market value or price of a commodity depends on demand and supply, while its permanent or natural value depends on cost of production, that is to say, on the quantity of labor and capital employed in producing it. In a similar manner, the temporary or market value of labor depends on demand and supply, and its permanent or natural value on the productiveness of labor (which is itself, in old and civilised countries, determined by the standard of comfort to which the laborers adhere, and on less than which they will not multiply). The market value of labor, like that of commodities, may at one time rise above and at another fall below the natural value, but has a constant tendency to return to it, so that *on an average* both labor and commodities sell at their natural or, as it is also called, their normal value. "The market price of labor", says Ricardo, "is the price which is really paid for it, from the natural operation of the proportion of the supply to the demand; labor is dear when it is scarce, and cheap when it is plentiful. However much the market price of labor may deviate from its natural price, it has, like that of commodities, a tendency to conform to it." It is often said that the market price of labor depends on the ratio of population to capital, or more precisely, on the proportion between the laborers and the wage fund. The latter doctrine, usually termed the "wage-fund theory", has of late years given rise to much controversy and has been rejected by some high authorities; but I venture to agree with the very eminent economist, the late Professor Cairnes, who in his "Leading Principles of Political Economy" holds it to be "substantially sound", though he adds that "it contains no solution of the wages problem; it is not a solution but a statement of that problem."

After quoting from Mr. Mill's work on Political Economy the passage in which the wages-fund doctrine is laid down, Mr. Cairnes says: "As I understand this passage it embraces the following statements: 1st, 'Wages-fund' is a general term, used in the absence of any other more familiar, to express the aggregate of all wages at any given time in possession of the laboring people; 2nd, on the proportion of this fund to the number of the laboring population depends at any given time the average rate of wages; 3rd, the amount of the fund is determined by the amount of the general wealth which is applied to the direct purchase of labor, whether with a view to productive or unproductive employment. If the reader will carefully consider these several propositions, I think he will perceive that they do not contain matter which can properly be regarded as open to dispute." In like manner Professor Marshall, in his important work on the "Principles of Economics," holds that there is a true and a false form of the wages-fund theory, the former of which corresponds in essentials to the doctrine laid down in his own treatise with regard to the supply and demand of labor. "The question," he says, "whether this so-called Wages-Fund Theory is true or false, is in a great measure a question of words. For it has many forms, some of which are vague and incomplete, rather than untrue, statements of those general relations of capital and labor in the problem of Distribution, which are described in the present book. But it has also a vulgar form. . . . In this vulgar form it asserts that the amount of wages which could or would be paid in a country in, say, a year is fixed absolutely by the amount of capital existing there at the time; so that if wages were forced up in any one trade, other wage-receivers must lose a sum exactly equal in the aggregate to the gain of that trade; . . . and in this form it is certainly false." It appears to me also that the wage-fund doctrine, when properly stated, is quite true and is merely another mode of expressing the law of demand and supply, whose truth and great importance in determining market values are not denied by anyone.

It should be carefully noted, however, that the great cause which really and ultimately determines the value of labor as well as of commodities is not demand and supply, but, in the one case, the productiveness of labor, and in the other, the cost of production. We often hear it said that the price of labor as of everything else depends on demand and supply, but this is a superficial and inadequate explanation of the subject. "It is the cost of production," says Ricardo, "which must ultimately regulate the prices of commodities, and not, as has been often said, the proportion between the supply and demand; the proportion between supply and demand may, indeed, for a time affect the market value of a commodity, until it is supplied in greater or less abundance, according as the demand may have increased or diminished; but this effect will be only of temporary duration. Diminish the cost of

production of hats, and their price will ultimately fall to their new natural price, although the demand should be doubled, trebled, or quadrupled." "Commodities which are monopolised either by an individual or by a company," he says again, "vary according to the law of supply and demand; they fall in proportion as the sellers augment their quantity, and rise in proportion to the eagerness of the buyers to purchase them; their price has no necessary connexion with their natural value; but the prices of commodities which are subject to competition, and whose quantity may be increased in any moderate degree, will ultimately depend, not on the state of demand and supply, but on the increased or diminished cost of their production." Thus, he says, "corn, like every other commodity, has in every country its natural price, viz., that price which is necessary to its production and without which it could not be cultivated; it is this price which governs its market price." At all times the immediate or market price of a commodity depends on demand and supply, and changes in the market price, owing to changes in the demand and supply, of particular commodities are constantly occurring; but these changes are only temporary, for, as already observed, the market price and the state of demand and supply which gives rise to it, have a tendency to conform to the normal price and to the normal state of demand and supply, so that on an average, things sell at their natural or normal price; and thus we see that the demand and supply of commodities really depend on their cost of production, which is the true and ultimate cause that regulates their value. The cost of production determines the normal value, and the normal value determines the demand and supply, since, as pointed out by Cairnes, "supply always tends to adapt itself to demand at the normal price of the commodity." Similar considerations show us that the true cause which ultimately determines the value of labor or rate of wages in a country is not demand and supply, but the productiveness of industry. "Nothing is easier," says Cairnes, "than to say that the value of labor, like the value of other things, depends upon supply and demand; but what light does this throw upon the causes which govern the values either of labor or of commodities? Simply, none at all, or next to none at all. What we want to know is, not whether an increase of supply will cheapen a commodity or will cheapen labor, and an increase of demand raise the price of each—every costermonger will tell you this much—but what it is which governs supply and demand in each case." "What we want to know is, what determines the relation of supply and demand—of the wages-fund to the laboring population," he says in another place. "Why is that relation such as to yield one rate of wages in the United States, another rate in Great Britain, and a third in the continent of Europe?" These facts are not sufficiently explained by ascribing them to differences in the supply and demand of labor, but by showing that it is the different productiveness of industry in each of the countries referred to that

causes the differences in supply and demand, and therefore in the rate of wages.

It is true, indeed, and important to observe that the *immediate* cause on which the wages of hired workmen depend is the demand and supply of labor, and that an increased produce of labor goes in the first place to the capitalist, and does not affect wages unless the latter is induced by the larger returns to save more, and thereby add to his capital and to the demand for labor. Thus Ricardo says, in considering the effect on wages of an increase in the amount of corn, cloth, or cotton, produced by a day's labor: "It appears to me that if, instead of four, ten measures could be produced by a day's labor, no rise would take place in wages, no greater portion of corn, cloth, or cotton, would be given to the laborers, unless a portion of the increased produce were employed as capital; and then the rise in wages would be in proportion to the new demand for labor, and not at all in proportion to the increase in the quantity of the commodities produced. This increase would be exclusively enjoyed by the owner of the stock, and, if he consumed in his family the whole increased produce, without augmenting his capital, wages would remain stationary, and not be in any way affected by the increased facility of production." In consequence, however, of the enormous savings and additions to capital made in advancing countries (which in England alone have been stated at about 75 millions sterling annually) and the difficulty of investing them profitably owing to the limited extent and fertility of the land, the rates of profit and interest have a tendency in old and civilised countries to fall to a minimum, that is, to the lowest rate which will induce people to save from their income and add to their capital; a fact which shows that the *ultimate* tendency of things is to transfer any augmentation in the produce of a day's labor from the capitalists to the laboring class, who may either keep permanently the advantage thus obtained, or neutralise it by a further increase of population, as has hitherto unfortunately been the general result. Cairnes observes with regard to the gain arising from an increased productiveness of labor: "We have seen that profits in advancing communities tend to a minimum, from which we are justified in concluding that, however the gain may be for a time divided between capitalist and laborer, the permanent tendency of things will be towards an absorption of the whole by labor." The very able economist, Mr. J. H. Levy, says also on this subject: "A rise in profits would set the forces of competition in motion among capitalists, and the tendency would be for wages to gravitate to that point which would leave interest where it was before the increase in production—which is another way of saying that the benefit of the increased production would go to the laborers." Although the laborers thus receive the benefit of the increased produce, they do not retain it, or at least they have not hitherto done so in any satisfactory degree, for their improved circumstances

usually lead to an increase of population, which reduces their earnings to the same level as before.

It is remarked by Ricardo that "the whole produce of the land and labor of every country is divided into three portions; of these one portion is devoted to wages, another to profits, and the other to rent." In manufactures and commerce the whole produce is divided between the laborers and the capitalists alone, and in agriculture also these two classes divide between them the whole produce except the portion of it which is yielded by the better lands in excess of the ordinary returns to labor and capital, and which goes as rent to the landlords; and thus we see that the remuneration of laborers and capitalists must depend, in the first place, on the total amount of the produce to be divided between them, and secondly, on the proportional share of it which is obtained by each. "The two elements," says Mill, "on which and on which alone, the gains of the capitalists depend, are, first, the magnitude of the produce, in other words, the productive power of labor; and secondly, the proportion of that produce obtained by the laborers themselves; the ratio, which the remuneration of the laborers bears to the amount they produce. These two things form the data for determining the gross amount divided as profit among all the capitalists of the country; but the *rate* of profit, the percentage on the capital, depends only on the second of the two elements, the laborer's proportional share, and not on the amount to be shared. If the produce of labor were doubled, and the laborers obtained the same proportional share as before, that is, if their remuneration were also doubled, the capitalists, it is true, would gain twice as much; but as they would have had to advance twice as much, the *rate* of their profit would be the same as before." In like manner, the remuneration of the laborers depends, first, on the amount which they produce, or in other words, on the productiveness of labor, and secondly, on the proportional share of the produce which is obtained by the capitalists. But the share of the capitalists, or profits and interest, is not only much lower at present in England than it was in former times, but, as just observed, it has a powerful tendency to fall to a minimum, any remuneration above the minimum rate being gradually transferred from the capitalists to the laboring class. That the capitalist's share in the produce of each laborer's exertions is only a small fraction of the share obtained by the laborer himself, will appear if we consider that the rate of interest on good securities is now under 3 per cent., and that the interest or discount charged by bankers is much smaller even than this, having for a few years past been under 1 per cent.; while the rate of profit is difficult to determine, and is very variously estimated at from 7 to 10 per cent. or even considerably more. As pointed out by Professor Marshall, the average rate of profit is habitually and largely exaggerated by those who attend only to the cases of success in business, and neglect the very numerous cases in

which people fail, and lose the money they had previously saved or inherited. "It is probable," he says, "that the true gross earnings of management, that is, the excess of profits over interest, is not on an average more than a half, and in some risky trades not more than a tenth part, of what it appears to be to persons who form their estimate of the profitableness of a trade by observation only of those who have secured its prizes." The average rate of wages also is often greatly exaggerated from not considering the large number of laborers who are out of employment, the multitudes of paupers supported on public charity, and the extremely low earnings of the workpeople in many of the poorest and worst paid kinds of occupation.

Since, therefore, the laborers and the capitalists divide between them the whole produce of the country except the portion obtained by the landlords as rent (which is no deduction from profits and wages, but is really paid by the consumers of agricultural produce); and since the share of the capitalist in the amount produced by each laborer is already small, and tends to fall to the lowest remuneration which is strictly necessary to afford a sufficient motive to the owner of wealth for employing it productively; it follows that the laborer obtains much the larger part of the produce of his own exertions, and that the element on which his remuneration essentially depends is the magnitude of the produce, or in other words, the productiveness of labor. When wages are high in a country, it is because the productiveness of labor is high, and when they are low, it is because the productive powers are deficient. Thus Mr. Rae observes: "Temporary or auxiliary causes may occasion fluctuations one way or other in the movements of wages, but the one great cause by which its general level is ruled is the productiveness of labor itself. The general rate of wages is determined by the productiveness of labor, the amount of its production." "The remuneration of industry," says Cairnes, "is derived from, and therefore must be limited by, the products which result from its exercise. In this exercise two distinct functions are embraced—that performed by labor and that performed by capital, each implying a sacrifice and demanding a reward. Wages and profits are derived from, and in fact represent, the products of industry." He says also in another place that high wages and profits "are indications—being in fact the result of—high industrial productiveness," and asks: "What are the true causes of the high remuneration of American industry? It will surely be admitted that, in the last resort, these resolve themselves into the one great fact of its high productive power. Capitalists and laborers receive large remuneration in America because their industry produces largely. That is the simple and patent fact that all must acknowledge." On this subject Mr. Levy says also: "It is evident that, as labor is paid ultimately out of produce, and can, in the long run, be no more than a large share of it, anything which tends to increase the produce tends also to

increase the wages ;” and he remarks on “ the utter impossibility of a large remuneration for labor generally being possible, when the produce-fund out of which it is paid—for there is nothing else out of which to pay it—is restricted and lessened.” It may here be observed that the *productiveness of labor* in a country is a very different thing from its *aggregate produce*, and that an increase of the former and not merely of the latter is the great object to be desired. “ Whether the aggregate produce increases absolutely or not,” says Mill, “ is a thing in which, after a certain amount has been obtained, neither the legislature nor the philanthropist need feel any strong interest ; but, that it should increase relatively to the number of those who share in it, is of the utmost possible importance ; and this (whether the wealth of mankind be stationary or increasing at the most rapid rate ever known in an old country) must depend on the opinions and habits of the most numerous class, the class of manual laborers.” It should also be observed, to prevent misapprehensions, that although the share of the capitalist in the amount produced by each laborer, which is represented by the rates of profit and interest, tends in old and civilised countries to fall to a minimum, yet the wages-fund as a whole, or the part of the national capital which is paid as wages, has a tendency to increase less rapidly than the other portions of which capital is composed, namely, fixed capital and raw materials, so that a greater proportion of the aggregate produce goes to the capitalist class as a body, and a less proportion to the laboring class, in the progress of society ; a fact which is due to the constant increase of machinery and other labor-saving appliances with the advance of the industrial arts. Thus Cairnes says that as society advances we find “ a constant growth of the national capital, accompanied with a nearly equally constant decline in the proportion of that capital which goes to support productive labor. This is the inevitable consequence of the progress of the industrial arts, the effect of which is to cause a steady substitution of the agencies of inanimate nature for the labor of man. It appears, therefore, that the fund available for those who live by labor tends, in the progress of society, while growing actually larger, to become a constantly smaller fraction of the entire national wealth.” As to the great revenue enjoyed by individual capitalists, it is evidently due to the large amount of capital which they possess, while the percentage of gain on that capital, or the rate of profit or of interest, is in reality small.

The dependence of wages on the productiveness of labor is expressed by Professor Marshall and other economists in the proposition that “ the earnings of a worker tend to be equal to the net produce of his own labor ;” and he explains that by net produce is here meant “ the value of the produce which the laborer takes part in producing, after deducting all the other expenses of producing it.” He says also that “ each factor of production is applied so far as it is more efficient in proportion to

its expensiveness than any other; and the point at which its application to any purpose ceases is decided by the fact that up to that point the work that it did was worth more than had to be paid for it; but that beyond that point the result got by it would be worth less than had to be paid for it." To a similar effect Mr. Levy says: "The quantity of capital offered for a day's labor will be strictly limited by what that labor will produce, and—at all events in a community such as ours—will keep pace with any movement in that produce. Hire wages do, therefore, depend on the produce of labor." Cairnes observes that if wages are high measured in any particular commodity, it is because the productiveness of labor with regard to that commodity is high, and that the staples, or principal exports, of a nation's foreign commerce consist of those commodities in regard to which its industry is specially productive. "Whatever be the articles with respect to which the industry of a nation is specially productive," he says, "these are the articles which will form the staple of its external trade, and, *measured in these*, the wages of labor will be high. If wages are high, measured in money, this will indicate either rich mines of gold or silver, or a high productiveness of industry in some commodities in large demand abroad, with which gold or silver may be purchased on favorable terms. If they be high, measured in food, clothing, and other necessaries and comforts, we may infer similarly a high productiveness of industry direct or indirect with regard to these commodities." These considerations show that the remuneration of labor really depends on its productiveness, and as wages are much lower in England, France, and other European countries than they are in America or Australia, there must evidently be some great permanent cause which depresses the productiveness of labor and neutralizes the effects of industrial improvements in the former countries. It will appear, on a further consideration of the subject, that this cause is the excessive pressure of population on the land, and, as a consequence, the comparatively small returns to agriculture on the inferior soils, and the high average price of food.

The doctrine that low wages arise from a low productiveness of labor may seem at variance with the common opinion which holds, and holds truly, that there has been a vast increase of productive power in England and other civilised countries in modern times, as is evidenced, indeed, by the remarkable cheapening of large classes of commodities; but Cairnes points out that this increase of productive power does not extend, or extends only in a very inadequate degree, to the *commodities consumed by the laborers*, the improvements in their production having been neutralised by the constant increase of population and the taking into cultivation of inferior soils; and it is on the productiveness of labor in producing the articles consumed by the laborer, and these articles alone, that wages and profits really depend. "Within the last century" says Cairnes "an enormous increase has taken place in the productive-

ness of industry in Great Britain. A given exertion of labor and capital will now produce in a great many directions, five, ten, or twenty times, in some instances perhaps a hundred times, the result which an equal exertion would have produced a hundred years ago; it is not probable that industry is in any direction less productive than it was then; yet the rate of wages, understanding this in the sense defined, as measured by the real well-being of the laborer—though some improvement no doubt has taken place in his condition during this time—has certainly not advanced in anything like a corresponding degree; while it may be doubted if the rate of profit has advanced at all. If we were to take the current rate of interest as a criterion, we should be inclined to say that it had even positively fallen. What then is the relation of the productiveness of labor to these phenomena?”, that is, to real wages and to profits. “The correct answer to this question may, I think, be thus stated: the productiveness of industry only affects the rates of wages and profits in so far as it results in a cheapening of the commodities which enter into the consumption of the laborer.” The reason of this, as he explains, is that if the cost of producing an article of luxury, not consumed by the laborers, is reduced, a given amount of labor and capital will produce a greater quantity of the cheapened article, but that greater quantity will have the same aggregate value as the smaller quantity had before, so that the rate of profit will not be affected, and neither will real wages be affected, as the laborer is not a consumer of the article; whereas if the cost of production of a commodity consumed by the laborer is reduced, his real wages will be increased, and if this leads to an increase of population and to a fall of money wages, profits will rise, for profits vary inversely as money wages or the cost of labor; if however, money wages remain as before, profits will not be altered. Cairnes, accordingly, thus explains the remarkable fact that so little impression has been made on the rates of wages and profits by the immense industrial progress of recent times. “The explanation” he says, “lies in the following circumstances: first, the improvements have to a very large extent affected commodities *not* consumed by the laborer; and secondly, where the improvement *has* affected commodities consumed by the laborer, the industrial advantage has rarely been maintained to its full extent, and frequently after a time has been entirely lost.” Population has increased and with it the demand for food, which has to be procured from inferior soils or in less favorable circumstances. Hence, continues Cairnes, “a very considerable portion of inventions do not affect the laborer at all; while with regard to those which, by cheapening the commodities of his consumption, do affect his well-being, the condition of permanent advantage to him from this source, is that his numbers shall be kept within such limits that the necessity of resorting to inferior instruments of production shall not neutralise the gain in industrial efficiency. This then—

the limitation of his numbers—is the circumstance on which, in the last resort, any improvement at all of a permanent kind in the laborer's condition turns." He says also, with regard to the conditions of an advance in real wages: "Profits being at the minimum, real wages will advance with the productiveness of industry in producing such real wages—in producing, that is to say, the commodities of the laborer's consumption."

The most important article of the laborer's consumption is food, and the price of food, as of all other commodities not subject to a monopoly, depends on its cost of production; and moreover, as there are many different costs of producing food owing to the different qualities of the land, the price of food depends on its cost of production on the worst soils under cultivation, or in the most unfavorable circumstances. "Corn," says Cairnes, "is raised at various costs, according to the character of the land and the degree of skill employed in its cultivation; but, as every economist knows, the cost which governs the price of corn is the cost of the most costly portion brought to market." This dependence of price on the cost of production in the most unfavorable circumstances is indeed true of all commodities, for differences in the cost of producing them exist in all, though in none are the differences so great or important as in agriculture, where they give rise to the payment of rent. "The exchangeable value of all commodities," says Ricardo, "whether they be manufactured, or the produce of the mines, or the produce of land, is always regulated, not by the less quantity of labor that will suffice for their production under circumstances highly favorable and exclusively enjoyed by those who have peculiar facilities of production, but by the greater quantity of labor necessarily bestowed on their production by those who have no such facilities, by those who continue to produce them under the most unfavorable circumstances; meaning by the most unfavorable circumstances, the most unfavorable under which the quantity of produce required renders it necessary to carry on the production." "That corn which is produced by the greatest quantity of labor", he says also, "is the regulator of the price of corn; and rent does not and cannot enter in the least degree as a component part of its price"; since, as he shows, no rent is paid by the farmer on that part of his capital which is employed in the most unfavorable circumstances, but rent consists in the excess of produce yielded by the better lands. The reason why the price of corn depends on its cost of production on the worst lands or in the most unfavorable circumstances, is that its cultivation on these lands requires a certain price to remunerate the producers, and the corn which is grown on the better lands, though produced at a much smaller cost, obtains the same price as that grown on the worst. The necessity of resorting to inferior soils, therefore, or of cultivating the better soils more highly and with a less proportional return in order to feed an increasing population, either raises the normal price of corn, or, as is usually

the case, prevents the price from falling by neutralizing the effects of agricultural improvements.

But society as a whole, and especially the laboring classes who are much the most numerous part of society, have it completely in their own power to determine the productiveness of labor on the inferior soils and the average price of food, by controlling the increase of population; and hence, in old and civilised countries, it is on the standard of comfort among the laborers—that is to say, the necessities and conveniences which they consider requisite for their maintenance and on less than which they will not multiply—that real wages, in the last resort, essentially depend. The standard of comfortable living among a people may vary, and may be raised or lowered at different times and by different circumstances; but so long as it remains the same, wages will not long continue either above or below it, but will be made to conform to it by an adjustment of population, the birth-rate falling when wages are below the usual standard of living, and rising when they are above it. Thus Mill says that “by the standard of comfort in a laboring class is meant that, rather than forego which they will abstain from multiplication;” and he observes: “The permanent remuneration of the laborers essentially depends on what we have called their habitual standard; the extent of the requirements which, as a class, they insist on satisfying before they choose to have children.” “The habitual earnings of the working classes at large”, he says also, “can be affected by nothing but the habitual requirements of the laboring people; these indeed may be altered, but while they remain the same wages never fall permanently below the standard of these requirements, and do not long remain above that standard.” In like manner Ricardo says: “It is not to be understood that the natural price of labor, estimated even in food or necessities, is absolutely fixed and constant. It varies at different times in the same country, and very materially differs in different countries. It essentially depends on the habits and customs of the people. . . . The friends of humanity cannot but wish that in all countries the laboring classes should have a taste for comforts and enjoyments, and that they should be stimulated by all legal means in their exertions to procure them. There cannot be a better security against a superabundant population.” As poverty and low wages are the effect of too great a demand for food, which lowers the productiveness of labor on the inferior soils, it is evident that all persons, not merely among the laborers but in any class, who have a large family, contribute to maintain the excessive demand for food and to lower wages, and hence that it is just as incumbent on the rich as on the poor to limit the number of their offspring.

The constant increase of population is the one great cause which neutralises the benefits of industrial improvements, and prevents the cost of production and the prices of commodities from falling in agriculture as they have so remarkably fallen in manufactures.

Mill shows that in every branch of industry except agriculture and mining the cost of producing commodities tends to diminish in consequence of the growing power of man over nature, and that the same tendency would exist in agriculture were it not for the over-rapid advance of population. "If population were stationary," he says, "and the produce of the earth never needed to be augmented in quantity, there would be no cause for greater cost of production. Mankind would on the contrary have the full benefit of all improvements in agriculture, or the arts subsidiary to it, and there would be no difference, in this respect, between the products of agriculture and those of manufactures. The only products of industry which, if population did not increase, would be liable to a real increase of cost of production are those which, depending on a material which is not renewed, are either wholly or partially exhaustible; such as coal, and most, if not all, metals." Although, however, the *cost of production* (understanding this term in the sense in which it is here used by Mill, and in which Cairnes holds that it should always be used, namely, as meaning the *labor and abstinence* expended in production) of all commodities except the produce of mines tends, if population be sufficiently restrained, to diminish in the progress of society, it should be noted that if the costs of production of all commodities were diminished, and in the same degree, their *values* as compared with one another would not be altered; since value is a relative term and there cannot be a *general* rise or fall of values, but when one thing rises in value some other thing must fall. "As value is relative," says Mill, "if inventions and improvements in production were made in all commodities, and all in the same degree, there would be no alteration in values. Things would continue to exchange for each other at the same rates as before; and mankind would obtain a greater quantity of all things in return for their labor and abstinence, without having that greater abundance measured and declared (as it is when it affects only one thing) by the diminished value of the commodity." It is not as compared with each other, but as compared with *labor*, that the values of commodities would be altered in such a case; the values of all commodities would fall as compared with the value of labor, which would rise in proportion to their fall; for it is evident that to diminish the cost of production of commodities (meaning by cost of production the labor and abstinence expended in producing them) is, in other words, to increase the productiveness of labor, and this, as we have already seen, is to increase its remuneration. If we omit "abstinence" from the cost of production, as is often done for shortness, we may say that the value of commodities depends on the quantity of labor needed to produce them, and that the value of labor depends on the quantity of commodities which it produces; whence it appears that the less the quantity of labor needed to produce a given amount of commodities, the less is the cost or sacrifice involved in their production, and the

greater is the productiveness of the labor. Thus Cairnes points out that high wages really indicate a low cost of production, while low wages, on the other hand, are the sign of a high cost. "A high rate of wages", he says, "indicates, not a high, but a low cost of production for all commodities, measured in which the rate of wages is high; as, on the other hand, a low rate of wages indicates a high cost for all, measured in which the rate of wages is low. Thus, in the United States, the rate of wages is high, whether measured in gold, or in the most important articles of the laborer's consumption—a fact which proves that the cost of producing gold, as well as of producing those other commodities, is low in the United States. On the other hand, the rate of wages in Europe measured by the same standards are—at least as compared with rates in the United States—low, which again merely proves that the cost of producing the commodities constituting those standards is high in Europe as compared with their cost in the United States." If population were duly restrained therefore, the cost of producing all commodities except the products of mines would be diminished more and more as society advances, or, to express the same thing in other words, the productiveness of labor would be progressively increased, so that every laborer would be able, in a moderate number of working hours, to earn a comfortable and abundant subsistence.

Having thus considered the circumstances which determine the value of labor or rate of wages in a country, we may now return to the effects produced by a shortening of the hours of work. We have seen that the indispensable remedy for low wages in old and civilized societies is to remove the excessive pressure on the land by a stricter restraint on population; and hence it appears that the most important question to be considered in regard to any proposed measure for benefiting the laborers is whether or not it will tend to promote this restraint, and to prevent an undue increase in the numbers of the people. Thus Mill says in speaking of peasant properties: "The benefits of peasant properties are conditional on their not being too much subdivided; that is, on their not being required to maintain too many persons, in proportion to the produce that can be raised from them by those persons. The question resolves itself, like most questions respecting the condition of the laboring classes, into one of population. Are small properties a stimulus to undue multiplication or a check to it?" The same question must be carefully considered in regard to a shortening of the hours of labor; and it seems to me that this measure, and the allied expedient of fixing a minimum rate of wages, are the most powerful of the auxiliary remedies for poverty, because they are, especially when employed by government, the most effectual of the indirect means for strengthening the preventive check to population. They do not merely induce the laborers voluntarily to refrain from imprudent multiplication by training them in habits of forethought and independence, as is

the effect of peasant properties, but they compulsorily prevent a workman from obtaining employment, and therefore from supporting a family, on less favorable conditions as to wages and hours of work than those prescribed by authority. In this way the evils arising from an excess of numbers can be more easily seen and understood, and a voluntary restraint tends to be gradually substituted for the compulsory limitation of increase which at first resulted from the restrictions. The ultimate effects of these measures, if successfully carried out, would therefore, as it appears to me, be in many respects similar to those of a law for limiting the size of families, namely, they would lessen for a time the increase of population and of the gross or aggregate produce in a country, but they would increase the productiveness and remuneration of labor and diminish the hours of work, the true objects to be aimed at in seeking to secure the happiness of a people.

The immediate effect of a shortening of hours would evidently be to diminish production, unless, as has usually been the result in past experience, the laborers work harder and are able by greater energy and assiduity to compensate for the loss of working time. In some occupations indeed, as, for example, in the omnibus or railway service, the work is necessarily spread over a certain time to suit the public convenience, and if the hours of labor are reduced, more men must be taken on to perform the duties required, so that there is a loss in the amount of services rendered by each worker. But in the great majority of trades more can be produced in a given time by greater exertions on the part of the laborer, and by this means the quantity of produce may be fully maintained, or sometimes even increased, in the shorter hours. If production were really diminished in the various branches of industry by a shortening of hours, the effect would be to throw some of the laborers out of employment and to lower wages, since the number of people who can be supported in a country depends on the amount of its gross produce. "The power of supporting a population and employing labor", says Ricardo, "depends always on the gross produce of a nation", and "whenever there is a diminution of the gross produce it will be injurious to the laboring class, as some of their numbers will be thrown out of employment, and population will become redundant, compared with the funds which are necessary to employ it". "If shorter hours caused shorter production in the great body of the workshops in the country", says Mr. Rae, "shorter hours would obviously reduce the rate of wages, because, in the first place, the employers could not afford to pay the same wages for less work; and because, in the second, the demand for labor would necessarily fall off greatly when everybody produced less wealth, and had less means of buying goods and employing labor". On this point there exists a very prevalent fallacy which is forcibly pointed out by Mr. Rae, Professor Marshall, and others, namely, that if

production were diminished by a shortening of hours, this would be a *good* instead of an evil to the working classes, as it would lead to a greater demand for labor and to the employment of the unemployed workmen, in order to restore production to its former level and satisfy the needs of society; and thus, by the removal of the competition of the unemployed, wages would rise. After remarking that those who entertain this view usually admit that a diminution of production from the shortening of hours is improbable, Mr. Rae says: "The improbable alternative is held out as being much the more advantageous alternative for the laborers, because if they keep up their production, their wages will only remain at the old rate; but if they diminish their production, their wages, it is said, will rise. The reason given for this prophecy is the common fallacy to which I have already more than once alluded, that diminishing the present standard of work all round would create an increased demand for labor, and necessitate the employment of the unemployed to bring the standard of production up again to the present requirements." He shows that, as a matter of fact, no more laborers have usually been taken into employment, nor has the number of the unemployed been diminished, in consequence of previous reductions of the working day, and observes, that it is an error "to look for a great absorption of the unemployed to flow from a general restriction of production, the very thing which would have the opposite effect of reducing the demand for labor and throwing multitudes more out of employ". One of the chief sources of the fallacy in question seems to be the ambiguity in the word *demand*, which in economical reasonings does not mean a mere desire to possess, but a desire combined with the *means of purchase*, and it is by omitting the latter element that people are often led to think that the demand for labor or for commodities can be increased by a diminution of the means with which they are to be purchased. Another closely allied fallacy, whose great prevalence and importance have been pointed out by Cairnes, is the belief that it is for the benefit of the laborers to restrict their productive powers and enhance the difficulties and obstacles to production, in order, as is often said, "to make work", or in other words, to increase the quantity of work requiring to be done. It is true that if this course were adopted in a single trade, it would tend to raise the price of the commodity produced, and to cause more capital to be invested in the trade, with the effect either of raising wages or increasing the number of laborers employed in it; but the gain thus obtained would be at the expense of a more than equivalent loss to the consumers of the commodity and to society at large; and if all trades were in a similar manner to restrict their production, there would be a general loss to all.

Although the laborers, by working harder and more assiduously, may be able to prevent the diminution of produce which would otherwise result from a shortening of hours, it must not be for-

gotten that this greater intensity or severity of labor is in itself an evil and often a most serious one. As observed by Cairnes, the cost or sacrifice involved in the labor of production consists of three elements, each of which requires a compensation or reward and contributes to determine the value of the article produced. "Considering labor as an element of production", he says, "the principal remark that seems called for is that, in estimating it in this character, three circumstances, and three circumstances only, must be taken account of: namely, the duration of the exertion, the degree of its severity or irksomeness, and the risk or liability to injury of any kind attending it. As commodities differ greatly more in the duration of the exertion, or the quantity of the labor, than in the severity of this labor or the risk attending it, the former is obviously the most important circumstance in the case". How serious in many instances are the evils of an increased intensity or severity of labor may be seen from a paper read by a delegate at the Trade Union Congress in London in 1871, and cited by Messrs. Webb and Cox, "showing that since the passing of the Ten Hours Law, factory work had so increased in intensity that the hours of labor had again become excessive and dangerous to life and health". A witness examined before the Labour Commission who issued their Report in 1876, states that more was produced in the textile factories since the reduction, in 1875, of the working hours from 60 to 56½ hours per week, "and he attributes this result", says Mr. Rae, "not to any improvement in machinery, but to the extra effort on the part of the operatives, and to the expedient of giving the overlooker a bonus on the amount of production, and thus inducing him to keep ever driving and pushing the operatives to their very utmost exertion". The greater severity of labor may be even more exhausting, especially to the weaker members of the laboring class, than its long duration; and this helps to explain the remarkable fact that women, for whose benefit the shorter hours were expressly designed, have generally been very indifferent or even actively opposed to them. "The principal branches of industry in which long hours still prevail in Melbourne", says Mr. Rae, "are those in which women are largely employed—the tailor trade in which two-thirds of the hands are women, and the textile factories, like the wool mills, for example, in which there are three women employed for every four men, or the rope and jute works, in which there are three women for every two men. . . . The English Ten Hours Act was always more popular, both before it passed and after, among the adult males, whose earnings it incidentally reduced, than among the female operatives for whose special protection it was devised. Its advocates had never done complaining of the apathy with which it was received by the married women, and the persistent opposition of the unmarried". Too great severity of labor, and the risks or dangers to health attending many occupations, are evils which we should strive as far as possible to remedy, no less than too pro-

longed hours of work. Both the severity of work and its duration are already as a rule far too great in this country, owing to the pressure of an excessive population; and the reason why still greater exertions are required after a shortening of hours, is in order to prevent a diminution of produce which would lower wages and throw some of the laborers out of employment. It should be remarked however that the greater exertions do not require to be permanently continued, but are only needed until time has been given for the causes to operate which seem to me the true source of the benefits resulting from shorter hours. These causes are industrial improvements and inventions, together with the check to population which, as before observed, arises from the reduction of the hours of labor, and which prevents the good effects of improvements from being neutralised by a continual increase of numbers. The progress of improvement is always tending to diminish the efforts needed to accomplish any given task, and would rapidly do so, if population were sufficiently restrained; and if no additional task were afterwards imposed, as, for example, by increasing the speed of machinery or other means, the gain to the laborers would be permanent. Thus Professor Marshall observes: "As the trade progresses, improvements in machinery are sure to lighten the strain of accomplishing any given task. . . . But meanwhile the pace of the machinery, and the quantity of it put under the charge of each worker, may be increased so much that the total strain involved in the day's work is greater than before. On this subject employers and employed frequently differ. It is, for instance, certain that time wages have risen in the textile trades; but the employés aver, in contradiction to the employers, than the strain imposed on them has increased more than in proportion." It is not from the greater exertions of the laborers that the benefits of shorter hours are permanently derived; to purchase shorter hours at the expense of severer labor would be only to substitute one evil for another, and to diminish one part or element of the cost of production while increasing another part; the true and permanent source of gain is the check to population, which lightens the pressure on the soil, and permits industrial improvements to be followed by their natural effect in diminishing the entire cost of producing commodities and thus increasing the productiveness and the remuneration of industry.

The effects of raising wages above the rate to which they would otherwise be brought by competition are in the main similar to those produced by a shortening of the hours of labor; indeed, the two measures are to a large extent identical in their nature, each of them consisting in an increase of wages for an hour's work; for it is evident that, whether more wages are obtained for the same hours of work or the same wages for fewer hours, in either case there is a rise of wages per hour. The immediate effect of raising wages, as of shortening the hours of labor, would be to keep some laborers out of employment, unless the workpeople, by greater

exertions, increased the produce so as to compensate employers for their additional outlay; and if a minimum of wages were fixed in each trade by authority, it would act permanently, like the shorter hours, as a powerful check to population, by preventing any laborer from obtaining employment, and supporting a family, on less favorable conditions than those which had thus been determined. After showing that competition, when not interfered with, tends to establish such a rate of wages as distributes the whole wages-fund among the whole of the laborers, Mill says: "Since, therefore, the rate of wages, which results from competition, distributes the whole of the wages-fund among the whole laboring population; if law or opinion succeeds in fixing wages above this rate, some laborers are kept out of employment". He says, also, in another place, that "if the laborers aimed at obtaining actually higher wages than the rate fixed by demand and supply—the rate which distributes the whole circulating capital of the country among the entire laboring population—this could only be accomplished by keeping part of their number permanently out of employment. . . . In this way, however, the class would have its attention forcibly drawn to the fact of a superfluity of numbers, and to the necessity, if they would have high wages, of proportioning the supply of labor to the demand". When the free action of competition is interfered with, either by government or by trades unions, the effect is to create a *monopoly*, and the gains resulting from a monopoly can only be obtained by *limiting the supply* of the commodities or services which are subject to its influence. Thus Mill remarks that "wherever competition is not, monopoly is", and he points out that "the monopolist can fix the value as high as he pleases, short of what the consumer either could not or would not pay; but he can only do so by limiting the supply". In a similar manner, Professor Sidgwick, in his important work on the "Principles of Political Economy", says on this subject: "Combination among the sellers of any commodity places the persons combining in a position essentially similar to that of a monopolist", and "the only effect of a trade union or any other combination is to bring the supply of the commodity under the conditions of a more or less perfect monopoly". He observes, moreover: "We may assume, generally, that in order that a monopoly may be a source of gain, the amount sold must be somewhat less than it would be if there were no monopoly"; and after remarking that the supply of goods or of services may be limited either directly by restricting the amount of them offered for sale, or indirectly by raising their price, he says that "according to our general assumption of the relation of value to demand, the maintenance of a high price of any commodity must, *cæteris paribus*, render the amount sold less than it would have been if the price had been allowed to fall". It will be seen from these considerations that the effect of fixing either a minimum of wages, or a maximum of working hours, in the

different trades, is to check the too rapid growth of population ; in fact, the two measures, if prescribed by government, that is, by an authority sufficiently powerful to ensure their being duly carried out, would be essentially laws to regulate population, no less than a law directly limiting the size of families ; the difference being that the former measures would limit population *indirectly*, while the latter would limit it directly. The two former measures seem to me of immense value, since they would enable government, with the warm approval of the working classes themselves, to raise the rate of wages and shorten the working day so far as was practicable and desirable, care being taken to proceed gradually and by successive steps, and not to introduce a greater change by any single enactment than could be compensated for, at least to a large extent, by increased temporary exertions on the part of the laborers. Messrs. Webb and Cox observe that the evil effects which might result from "a sudden and universal shortening of hours, whether by law or by trade union pressure, are not at all likely to ensue in any perceptible manner upon the gradual and partial shortening which is all that is likely to happen. In industrial organisation any sudden change, however good, produces a serious dislocation ; but almost any gradual change, however important, can be endured without injury. Time is of the essence of the matter".

One of the greatest benefits of fixing a minimum of wages and a maximum of working hours in the different trades is, that these measures act as a powerful bulwark or protection to the working classes against the evil effects of *too many competitors*, for they prevent a workman from lowering wages by selling his labor at a cheaper rate than that established by authority. The existence of too many competitors in the labor market, or in other words, the permanent over-supply of labor, is the most important fact in regard to the remuneration of the laborers, and is the real cause which, at all times, and in all old and civilised countries, has kept wages low and the hours of work excessive. Owing to the vast powers of human increase, far too many children are brought into the world in each succeeding generation, and when they grow up, they become competitors for employment, so that every trade or profession is overcrowded, and strenuous efforts are needed to obtain employment and to earn a sufficient subsistence. Too many competitors have the effect, in the first place, of reducing wages, for the rate of wages fixed by competition, as we have already seen, is that which distributes the whole wages fund among the whole of the laborers, and therefore, the more numerous the laborers are in proportion to the wages fund, the lower will be the rate of wages ; and secondly, where there are too many competitors, some of them will probably be left without employment, or will be employed partially and irregularly, for the competition of excessive numbers often acts by diminishing the chance of obtaining work rather than by diminishing the price at which

that work is remunerated. When there are any laborers out of employment, their competition tends powerfully either to lower the rate of wages, or to keep wages low and prevent them from rising. "Every man out of work", say Messrs. Webb and Cox, "is a fierce competitor for any chance of employment. Day after day he continues his heart-breaking search for work, and as his hopes grow fainter, he grows gradually desperate and offers to take work on almost any terms. Employers—themselves beset with the difficulty of conducting a business profitably in the face of modern competition—will be tempted to utilise such offers as an excuse for lowering wages, and will certainly use them as a conclusive argument against any rise in wages or shortening of hours that may be asked for. In brief, the competition of the unemployed is the most effectual instrument for keeping down the wages of the employed". It should be remarked, on the other hand, that the competition of employers prevents wages from falling below the rate which distributes the whole wages-fund among the whole laboring population. "When there are any laborers unemployed", says Mill, "these, unless maintained by charity, become competitors for hire, and wages fall; but when all who are out of work have found employment, wages will not, under the freest competition, fall lower. Goods can only be lowered in price by competition to the point which calls forth buyers sufficient to take them off; and wages can only be lowered by competition until room is made to admit all the laborers to a share in the distribution of the wages-fund. If they fall below this point, a portion of capital would remain unemployed for want of laborers; a counter-competition would commence on the side of capitalists, and wages would rise". These remarks show the error of those who attribute low wages and long hours of work to "competition", or to "the competitive system", and hold that they might be got rid of by a change in the organisation of industry; whereas the true source of the evils is not competition but *too many competitors*, and the true remedy consists in preventing the excess of numbers by a more careful control of population. Competition in itself is not an evil but a good; it exists among employers as well as among the employed, and is thus frequently a cause of high wages and not of low wages; and the reason why labor is badly remunerated under the present industrial system is not because competition exists, but because the number of competitors is far too great. "If the laborers compete for employment", says Mill, "the capitalists on their part compete for labor, to the full extent of the circulating capital of the country. Competition is often spoken of as if it were necessarily a cause of misery and degradation to the laboring class; as if high wages were not precisely as much a product of competition as low wages". He says, also, that competition "never could be a cause of low wages, save by the over-stocking of the labor market, through the too great number of the laborers' families". Com-

petition is merely the rule according to which the produce is divided, and no other rule could increase the average amount of each share, if the number of sharers bore as great a proportion as at present to the produce divided among them.

There is, however, one point of the utmost importance, on which I fully agree with those who attribute the industrial evils, in a very great degree, to an undue extension of the principle of competition. I believe, in common with the working classes themselves, that wages and the hours of work ought not, as at present, to be determined solely or mainly by competition, and that to leave them so to be determined is destructive to the interests of the laborers. A broad distinction, as it seems to me, should here be made between labor on the one hand and commodities on the other; the production and supply of commodities, as well as their exchange and their price, should be left to the action of a perfectly free and unfettered competition whether in the same country or between different countries; but in regard to labor, I venture to think that not only should a minimum of wages and a maximum of working hours be fixed by authority in the different trades, but there should also be a general statute to prevent the continual over-supply of labor by directly limiting the increase of population. The reason why labor and commodities should in this matter be dealt with on such widely different principles, is that the conditions affecting the two are essentially different. Thus Cairnes observes, in considering the causes which determine the demand and supply of labor, and of commodities respectively: "Now we cannot take a step towards dealing with this question without being brought face to face with the fact that the motives which influence human beings in the production and supply of commodities are not those which influence them in the production and supply of labor; in other words, that the conditions operative in the two cases are essentially distinct. First then, the production of commodities is an onerous act, which will only be undertaken in the prospect of reward; whence it follows that the supply of commodities will only be secured on the condition of this prospect presenting itself. On the other hand, the production of labor, which in other words is the production of human beings, is not an onerous act, but a consequence of complying with one of the strongest instincts of humanity—an instinct which, so far from needing the stimulus of reward, can only be kept under due control by powerful restraints." A consequence of these facts is that in all ages there has been in this and other old countries an immense over-supply of labor, which is the real and permanent cause of low wages and long working hours; whereas a general over-supply, or over-production, of commodities is a thing which, though often dreaded, cannot in reality exist, and even the over-supply of a single commodity, which is a matter of frequent occurrence, cannot be long continued. "It is always a matter of choice in what way a capital shall be employed," says Ricardo,

“and therefore there can never, for any length of time, be a surplus of any commodity; for if there were, it would fall below its natural price, and capital would be removed to some more profitable employment”. Mill shows also that a general over-production of commodities cannot take place, or in other words, that the aggregate supply of commodities cannot outrun the demand; for, in the first place, it cannot outrun that element of demand which consists in the means of purchase, since commodities themselves are the market for commodities, or the means with which they are really purchased; and secondly, it cannot outrun the other element of demand, namely, the desire to possess and consume, for the very fact that a producer continues his production, shows that his wants are not satisfied and that he has a further desire to consume. As the conditions of labor and of commodities differ so widely in these respects, it is natural to expect that the rule of free and open competition which can be advantageously applied in the one case, should not be equally applicable in the other.

The great aim of the various trades and professions has always been to protect themselves against the pressure of excessive numbers by causing their wages to be regulated, not by competition, but by one or other of the three principal agencies which conflict with competition, namely, law, combination, and custom. “All professional remuneration”, says Mill, “is regulated by custom. The fees of physicians, surgeons, and barristers, the charges of attorneys, are nearly invariable. Not certainly for want of abundant competition in these professions, but because the competition operates by diminishing each competitor’s chance of fees, not by lowering the fees themselves.” Again, in speaking of the fearful poverty and misery resulting in Ireland from the cottier system of land tenure, which prevailed before the Land Act of 1881, and under which the land was cultivated by small peasant farmers whose rents were settled by competition, Mill observes: “Rent paid by a capitalist who farms for profit, and not for bread, may safely be abandoned to competition; rent paid by laborers cannot, unless the laborers were in a state of civilisation and improvement, which laborers have nowhere yet reached, and cannot easily reach under such a tenure. Peasant rents ought never to be arbitrary, never at the discretion of the landlord; either by custom or law it is imperatively necessary that they should be fixed.” By the Act of 1881 the settlement of rents by competition was done away with in Ireland, and rents were fixed by Commissioners appointed by Government, fixity of tenure and other privileges being also granted to the tenants; a system which had many evils of its own, and is now being gradually superseded by State-aided purchase of their farms by the tenants, or in other words, by the conversion of the Irish tenantry, as Mill had strongly urged, into peasant proprietors. Even as regards peasant properties, the distinguished agriculturist, Arthur Young, recom-

mends that a limit to their subdivision should be fixed by law, "and this", says Mill, "is by no means an indefensible proposition in countries, if such there are, where division, having already gone further than the state of capital and the nature of the staple articles of cultivation render advisable, still continues progressive"; and he adds that "the Governments of Bavaria and Nassau have thought it necessary to impose a legal limit to subdivision". In all these cases, as well as in the Factory Acts and in the efforts of the working classes to raise wages and shorten the working hours by combination, we see the struggle against the destructive competition of excessive numbers; and it seems to me that a defence against this competition is just as necessary in the case of hired laborers as in that of the Irish cottiers. The system of hired labor, as at present existing, leaves the laborers in a peculiarly defenceless and insecure position, and is therefore extremely prejudicial to their interests; and I cannot but think that the true remedy for these great evils of the system is that Government should fix a minimum of wages as well as a maximum of working hours in the different trades, on the principle of trade option, so as to counteract the constant tendency of an excessive number of competitors to lower the remuneration of industry. It may perhaps here be remarked that in consequence of the check to population arising from the limited fertility of the land, a *minimum of wages*, that is, a rate below which wages either cannot permanently fall, or are not permitted to fall, always exists of necessity in all old countries. Thus Mill observes, in referring to certain reasonings of Ricardo, that "he assumes that there is everywhere a minimum rate of wages; either the lowest with which it is physically possible to keep up the population, or the lowest with which the people will choose to do so. To this minimum he assumes that the general rate of wages always tends; that they can never be lower, beyond the length of time required for a diminished rate of increase to make itself felt, and can never long continue higher. This assumption contains sufficient truth to render it admissible for the purposes of abstract science. . . . But in the application to practice, it is necessary to consider that the minimum of which he speaks, especially when it is not a physical, but what may be termed a moral minimum, is itself liable to vary." It thus appears that if mankind do not themselves fix a minimum of wages, nature will do so, and therefore that the only practical question is not whether such a minimum rate ought to be voluntarily fixed, but whether it should be fixed by government, by trades unions, or by the free and unrestricted action of competition.

Capitalists and employers of labor have usually been opposed to any interference of this kind with the free action of competition; but there have been many exceptions, and it seems to me that the true interests of employers themselves would be promoted, instead of being injured, by the gradual raising of wages and shortening

of the hours of work, especially if these measures were carried out by Government. It is certainly an advantage to the employer, as well as to the laborers, to have a shorter business day if he does not thereby incur pecuniary loss, and it is not a disadvantage to pay higher wages if he is compensated for his additional outlay; and we have seen that little or no diminution of produce has in most cases resulted from a shortening of hours, while the laborers might in a similar manner, by increased temporary exertions, often prevent any loss to the employer in consequence of a rise of wages. It is evidently the interest of the laborers to do so, since they may themselves suffer severely from losses affecting their employers. Another great advantage to the employers is to be protected against the competition of rivals, who undersell them by hiring workpeople at a lower rate of wages or for longer hours of work. The capitalists would benefit also by the greater cheerfulness and content, and by the increased personal efficiency, of their workpeople; indeed, there can be little real satisfaction for any person if the laboring class, whom Ricardo calls "by far the most important class in society", are badly off, overworked, and discontented. Another very important advantage would arise from the check to population, which lightens the pressure on the soil and lowers the price of food, and which, therefore, tends to raise the rate of profit as well as that of wages. It should be remarked that the true causes which lower profits and interest are, in the first place, the increasing cost of labor due to the difficulty of procuring further supplies of food from the inferior soils, and secondly, the immense annual savings and additions to capital, which, for this reason, are unable to find an investment unless at a lower rate of profit. It is these causes, depending essentially on the rapid increase of population and of capital, that really lower profits, whereas a raising of wages and shortening of hours would check the increase of population and would, therefore, be likely to raise the rate of profit, were it not for the great yearly additions to capital which, as before observed, tend gradually to reduce the rate of profit to a minimum. Hence employers in some occupations are as strongly desirous as their workpeople of having their hours limited by law, and when a limitation has been effected, it is remarkable that employers who were previously opposed to it, have often, after seeing its results, become its warm advocates and supporters. "Both shop-keepers and shop-assistants", say Messrs. Webb and Cox, "are in favor of early closing. No one shop-keeper dares to put up his shutters while his neighbour's shop is still open." Mr. Rae remarks that a few years after the passing of the Ten Hours Act in 1847, "masters, as well as men, had discovered that the reduction of hours involved no diminution of profits or of income". He says also that at a yearly banquet given by the working-men in Melbourne on Eight Hours Demonstration Day, at which the Governor-General, with leading statesmen and employers of labor, are present, "speeches are made in

which capitalists, politicians, and labourers all rejoice together over an experiment that once caused many anxieties, but which they now acknowledge has, without doing any injury to trade, given the workpeople time to live the life of rational beings". It seems to me that many of the objections of employers to an interference with competition in regulating work and wages are due to the fact that such interference mostly proceeds from trade unions, and not from the authority of Government. There are numerous evils attending the action of trades unions, in addition to the want of sufficient power to enforce their will, as the working-classes themselves are painfully aware. "The methods of trades unions", say Messrs. Webb and Cox, "are essentially the methods of war. A strike, with all its miserable accompaniments, is the only effective weapon which trades unions possess for enforcing their will". They say also, in alluding to a recent unsuccessful strike of railway workers, that "either way the public may look forward to a series of strikes, possibly extending over at least a generation, to settle a point that could be settled in a few days by Parliament". As regards the movement for an eight hours day, they observe, moreover, that "a majority of the trade unionists in the kingdom have formally declared that they prefer an Act of Parliament to the so-called free action of their own societies". In a strike, the employers as well as the laborers often suffer most severely; and it may be added that employers, even if themselves in favor of raising wages or shortening the hours of work, can seldom venture to take such a step alone, and unless others do so likewise, from the fear of being undersold by their competitors. It is also extremely important on many grounds that the public should have a voice in the matter. An enactment by Government, therefore, which is the only authority that can rightfully make compulsory regulations applying to all, would seem, especially in old countries, to be the best and safest means for attaining the end in view, in the interests both of employers and of the employed.

But besides the regulation of wages and of the hours of labor, there is another remedy for the industrial evils, which appears to me of incomparable importance, namely, the direct regulation of population itself, by means of a statute fixing a maximum limit to the size of families. This, as I have already endeavored to show, is the great fundamental law which is needed for the extinction of poverty, in all the civilised countries of the old world. To fix a minimum of wages or a maximum of working hours in the different trades, does indeed check the too rapid increase of population, but in this case the check, however inestimable its results on the whole, is attended with many serious evils and difficulties. When first introduced, these measures throw some of the laborers out of work unless by greater exertions a diminution of produce can be avoided, and they afterwards prevent any workman from obtaining employment on less favorable terms than those fixed by authority—in other words, while allowing the births to

proceed unchecked, they prevent individuals, when grown up, from earning a living by their labor unless under certain conditions, so that the laborers who are thus kept out of employment must be maintained at the expense either of their fellow workmen or of society at large; and if in time the restrictions lead to an increase in the voluntary check, this ultimate effect is similar in the main to that which would be produced directly and with far less suffering by a legal restraint on population itself, except that the latter would be impartially applied to all classes, while the former, together with the compulsory check from being kept out of employment, has to be borne specially by the working class. There is also a great difficulty, particularly in old countries, in maintaining the restrictions as to wages and the hours of work, owing to the competition of excessive numbers and of the unemployed laborers, and it is for this, among other reasons, that the more powerful defence of law seems in many cases preferable to trade union agency. This difficulty is much less felt in new colonies, such as Australia, where capital and population can be increased with far greater facility, and the state of the labor market is widely different. "In countries like North America or the Australian colonies", says Mill, "where the knowledge and arts of civilised life, and a high effective desire of accumulation, co-exist with a boundless extent of unoccupied land, the growth of capital easily keeps pace with the utmost possible increase of population, and is chiefly retarded by the impossibility of obtaining laborers enough. All, therefore, who can possibly be born, can find employment without overstocking the market." The high wages and short hours which in Australia are rendered possible by the rapid growth of capital and of the wages-fund, can in old countries only be obtained by a careful restraint on population. While, however, the regulation of work and wages is thus seen to be attended with many difficulties, it has on the other hand the immense advantage that the working classes themselves are strongly in its favor, and also that it determines precisely the rate of wages and hours of work—or, in other words, the standard of comfortable living—which the laborers regard as desirable and practicable, and to which they are striving to attain. The standard of comfort among the laborers is the circumstance which really determines their remuneration, and the standard can thus be gradually raised and a higher standard made to prevail either by law or by the efforts of trade unions. Another advantage of the utmost importance is that a law to regulate work and wages would, I believe, by the discussions and the clearer comprehension of the subject promoted by it, lead before long to a law for regulating population itself. In fact, the two measures are the complements of each other, the one determining the object to be aimed at, and the other the best means of attaining it, and when combined they would form, I venture to think, the most powerful and indispensable of the means by which poverty and overwork could be banished from human society.



THE EXTINCTION OF INFECTIOUS
DISEASES.

“Man has it in his power to make parasitic diseases disappear from the surface of the earth, if, as we firmly believe, the doctrine of spontaneous generation is a chimera.”—*Louis Pasteur*.

THE EXTINCTION OF INFECTIOUS DISEASES.

OF all the doctrines recently brought forward in medicine, none seems to me so extremely important as that which has been gaining ground with regard to *infectious fevers*, and has been earnestly urged by the highest medical authorities, in particular by Sir James Simpson and Sir Thomas Watson. I allude to the momentous and startling doctrine that by taking proper measures to prevent them, all the purely infectious or contagious febrile diseases might be, and ought to be, *completely and finally extirpated*. The diseases in question have more and more occupied the attention of Parliament and sanitary reformers of late years, and were a leading subject of discussion at the International Medical Congress held a few years ago in London. They form a peculiar class of affections, having the following very remarkable characters in common. They are fevers of a specific kind, most of them attended with an eruption on the skin; they are propagated by infection from one person to another, usually by breathing the exhalations from the sick, and they occur, as a rule, only once in a lifetime. In all of them the minute poison which communicates the disease is immensely multiplied in the body of the patient, and as in this and some other points the fevers have a resemblance to the action of a ferment, they are often called *zymotic*, or fermentation-like diseases.

The late Sir Thomas Watson, in an article on "The Abolition of Zymotic Disease", which was published in the *Nineteenth Century Review*, for May, 1877, and has since been re-issued with others in a separate form, expresses his firm belief that these diseases "might be finally banished from this island", and observes, that with regard to them, "it is of vast importance that the public, no less than the medical profession, should have the fullest attainable knowledge". He thus enumerates the diseases to which he refers:—"They are not numerous", he says, "these zymotic diseases. There are not more than nine or ten of them. Small-pox, chicken-pox, typhus fever, typhoid or enteric fever, scarlet fever, the plague, measles, hooping-cough, mumps—these belong to, and, I think, constitute, the group of diseases now to be considered." Two of the number, chicken-pox and mumps, are slight affections, but the others are among the most terrible and fatal maladies that afflict the human race. If we think of the prodigious amount of suffering and death these diseases have caused and are causing yearly—the millions they

have slain, and the panic they spread around them, the danger which a person affected with one of them becomes to his fellow-creatures, and the broken constitutions and disfigurements they so often leave behind even when they spare life, we can form an idea of the immense and incalculable blessing which their extinction would be to mankind.

The great fact which warrants us in believing that these diseases might be entirely extirpated, or "stamped out", is, that whatever their primary origin in past ages may have been, *they never now-a-days arise spontaneously, but are invariably propagated by infection.* They are not merely infectious diseases, but have no other source than infection. "They are communicated from person to person by contagion", says Sir Thomas Watson, "and, as I venture to maintain, arise in no other way; and this quality, with their non-recurrence, forms the key to their supreme interest". Small-pox, for example, never arises except by contagion from a pre-existing case of small-pox, measles from a pre-existing case of measles, scarlet fever from scarlet fever, and so on with the rest. Moreover, they always, to use a common expression, "breed true", propagating their own kind, and no other, and maintaining their characteristic type and features unchanged from generation to generation. Thus measles always breeds measles, and never scarlet fever or hooping-cough; typhus breeds typhus, and never typhoid fever; and each disease runs the same course in the present day, has the same average duration, and presents the same symptoms as it did when first clearly described by the earlier physicians. In the above respects the infectious fevers bear a close and most striking resemblance to the different *species* of plants and animals. We do not know how these species at first came into existence (though we believe them to have been gradually developed from lower forms), but we know that at the present day the individuals belonging to each species always descend from parents like themselves, and never spring up spontaneously. We know, too, that they propagate their own kind and no other; and that, although admitting of some modifications, they adhere tenaciously through the ages to their distinctive form and characters. From their remarkable resemblance to species in these respects, the infectious fevers are often called *specific* diseases; that is, diseases which are like species in their constant characters, and in the fact that they never originate spontaneously.

Now it follows as a necessary consequence from this single and definite mode of origin, that both the infectious fevers and the different species of plants and animals are *liable to extinction* if certain conditions be fulfilled. As they never arise in any other way than by continuous succession, the fevers from diseases like themselves, and the plants and animals from parents like themselves, if the line of descent be entirely broken through at any time, the race perishes and can never re-appear. Many animal and vegetable species have thus perished in the world's history, as the

geological records show us, and some races hurtful to man have been intentionally exterminated over large tracts of country, as, for instance, wolves have been exterminated in England. In order to extirpate a living species all that is needed is to destroy at any given time every individual belonging to it; and, in like manner, to extirpate a form of infectious fever, it would be sufficient that every existing case of it should be *prevented from spreading to others*; if this can once, and once only, be accomplished, the species, or the fever, will become permanently extinct. We see, therefore, that as regards their *preventibility*, no less than their mode of origin, the contagious fevers are a peculiar class of disorders, separated by a broad line of demarcation from others. They are often called "the most preventible of diseases", but the truth is, that their preventibility is of a very different kind from that of other affections. They are not merely preventible, in the ordinary sense of the word, but *extinguishable*, or *abolishable* diseases. Other diseases cannot be extinguished, and for this reason, that we cannot destroy the causes that produce them. We can only *avoid* their causes by the exercise of constant care and vigilance, and if our efforts were relaxed at any time, the diseases would appear again; but in regard to the contagious fevers, as they never arise but from other fevers of a similar kind, it is possible to *destroy* the only causes known to be capable of producing them. Thus, if every existing case of small-pox, typhus, scarlet fever, and the rest, could be prevented from propagating itself to others, these fevers would be definitively extirpated, and no imprudence on the part of mankind, nor any other circumstance, so far as we have reason to believe, could ever revive them. They would then be extinct forms of disease, like the extinct species of plants and animals, and only the memory of them would remain to posterity.

The two assertions here made—that the infectious fevers have no other source than infection, and that therefore, unlike other diseases, they might be finally extirpated—are among the most momentous conclusions ever brought forward by science, and should be thoroughly known to every one. The first of them is the foundation of the other, and has a bearing on human health and happiness whose importance cannot be exaggerated. If it be true that these diseases have no other source than infection, then we may hope by vigorous sanitary measures to stamp them out completely, so that no further anxiety on their account would ever afterwards be needed; but if, on the other hand, besides being infectious, they can also arise spontaneously, or *de novo*, as it is often expressed (that is, from any other cause than infection), not only would their prevention be far more difficult, since we should have to guard against two or more modes of origin instead of one, but we could never hope permanently to extinguish them. The great question, therefore, is—Have these diseases no other cause than infection? This is a point on which the present medical

opinion has been slowly and gradually arrived at. In former times the infectious fevers were very commonly confounded together, and their mode of origin was not clearly understood, but they were often supposed to be due to some unknown atmospheric influence; as may be seen from the fact that even in the seventeenth century the celebrated Sydenham, who was the first to draw the distinction between small-pox and measles, did not know that small-pox is infectious. Afterwards their infectiousness became recognised, but it was thought that they might also proceed from other causes; and lastly, increasing experience and careful observation and reasoning, especially since the publication of Dr. Bancroft's essay in 1811, have led to the modern view that they never in any single instance arise but from infection. This is now the prevalent medical doctrine on the subject, and with regard to many of the diseases above enumerated it is rarely, if ever, disputed.

Thus Sir Thomas Watson says: "As life springs only from preceding life—as, according to the verdict of exact scientific experiment, there is no such thing as spontaneous generation, so, under similar testimony, there is, now-a-days at least, no spontaneous origin of any of these specific disorders". In like manner, in a "Proposal to Stamp out Small-pox and other Contagious Diseases", published in the *Medical Times and Gazette* for January 4th and 11th, 1868, the late Sir James Simpson says, speaking of small-pox: "We would no more expect this known species of disease or poison to originate *de novo* at the present day, under any combination of circumstances, than we would expect a known species of animal or plant—as a dog or a hawthorn—to spring up *de novo* and without antecedent parentage". Dr. Aitken, also, in his "Science and Practice of Medicine", 7th edition, 1880, says, in discussing the origin of scarlet fever: "On this point Dr. Ballard writes most distinctly (and with him I fully agree) that 'thus much is certain, it does not arise spontaneously—no disease of its class ever does'".

The most convincing argument against the spontaneous origin of any of these diseases is the great length of time during which they may be *entirely absent* from a district, a country, or even a whole continent, until they are introduced from some external source. Indeed, the contagious fevers, like the animal and vegetable species, seem at first to have arisen in certain parts of the world only, and thence to have gradually spread to others, with the progress of human intercourse and the increased facilities of communication, so that in most countries they are not indigenous but imported diseases. Sir Thomas Watson observes that small-pox, though existing from remote antiquity in China and Hindustan, "does not appear to have been known in Europe till the beginning of the eighth century", and that "there was no small-pox in the New World before its discovery by Columbus in 1492. In 1517 the disease was imported into St. Domingo. Three years

later, in one of the Spanish expeditions from Cuba to Mexico, a negro covered with the pustules of small-pox was landed on the Mexican coast. From him the disease spread with such desolation that within a very short time, according to Robertson, three millions and a half of people were destroyed in that kingdom alone." As to scarlet fever, Dr. Aitken says that "the earliest source of the poison is distinctly traceable to Arabia", and adds that "measles was first noticed at the same time and in the same country as scarlet fever, and the two diseases have subsequently followed nearly the same course. They now prevail all over the world." Of hooping-cough (which is not, like the others, a fever) he says that "its origin is not beyond 1510, when it was endemic in Paris; but its epidemic character was not determined till 1580". That most fatal of all epidemic maladies, the plague, had till within the last forty years its chief home in Egypt and other countries bordering on the Levant, from which it repeatedly spread to different parts of Europe, committing fearful ravages. In the middle of the fourteenth century it is computed to have carried off, under the name of the "Black Death", from a fourth to a third of all the inhabitants of Europe; and in 1665, the date of its last appearance in our country, the "Great Plague of London" was fatal to 68,596 persons out of a population amounting at the time to about half a million. The prolonged absence of a contagious fever is best seen in *islands*, and *isolated places* on the mainland, to which infection is less readily carried; and among many remarkable instances of the kind on record, there is one which has often been cited in the recent history of measles. There was no measles in the Faroe group of islands on the north of Scotland, for sixty-five years previous to 1846, at which date it was imported into them by a man affected with the disease. It spread from him with vast rapidity (as usually happens when measles or small-pox is introduced among a population, few or none of whom are *protected* by having had it before), so that within six months, out of the 7,782 inhabitants of the islands, more than 6,000, old and young alike, suffered from the complaint.

Now, if any of these contagious fevers were capable of arising spontaneously, why did they not show themselves during the long periods just referred to? Why was there no small-pox in Europe till the eighth or in America till the sixteenth century? Why has the plague been unknown in England since 1665, or, since 1844, even in Egypt, which was formerly looked upon as its peculiar home? Why was measles entirely absent from the Faroe islands between 1781 and 1846? It cannot be said that surrounding circumstances were unfavorable—on the contrary, as events proved in regard to measles and small-pox, they were extremely favorable to the existence and propagation of the diseases. Why, then, did the latter not make their appearance? The answer evidently is, that they did not appear because there

was no antecedent case present to produce them by infection, and these diseases are as little capable of arising from any other cause than *infection* as a plant can spring up except from a seed, or an animal except from an egg.

The argument against the spontaneous origin of the infectious fevers, drawn from the great length of time during which they may be absent from particular countries or localities, until introduced from an external source, is so convincing that, when taken along with the results of daily experience, it has led to a very general agreement among medical men with regard to many of these diseases. Thus, of the six principal kinds of infectious fever now existing among us—namely, *small-pox*, *measles*, *scarlet fever*, *hooping-cough*, *typhus fever*, and *typhoid or enteric fever*—the first four are almost universally admitted never to arise spontaneously at the present day, but to be propagated solely by infection. On this point I may quote in addition to the high authorities already given, the opinion of Dr. Karl Liebermeister, who says, in his introductory essay on Infectious Diseases, in Ziemssen's "Cyclopædia of the Practice of Medicine" (1875): "The spontaneous origin of small-pox, measles, and scarlet fever could scarcely find a defender now". Mr. Jonathan Hutchinson observes also, in his article on Constitutional Syphilis, in Reynolds' "System of Medicine": "Like small-pox, scarlet fever, measles, and the others in this group, syphilis is communicable from the diseased to the healthy, and can be produced by no other means". One of the few who still advocate the doctrine of a spontaneous origin is Dr. Charlton Bastian; but he admits nevertheless, in speaking of "hooping-cough, measles, scarlet fever, and small-pox", that "the knowledge we possess concerning the mode of origin of these, otherwise than by infection, is almost *nil*".

With regard, however, to the origin of the two remaining fevers, *typhus* and *typhoid*, and especially the latter, there is, unfortunately, not yet the same general agreement; and as these fevers are exceedingly important from their frequency and fatality, they deserve particular attention. In their outward appearance the two diseases are very much alike, being long-continued fevers, with obscure, though different eruptions, and attended with great prostration and delirium—typhus lasting from two to three weeks, and typhoid fever about a week longer. Owing to their external resemblance, they were always confounded together till within the last thirty or forty years, and were thought to be merely modifications of the same disease, as other fevers had been previously; but the labors of several eminent observers, among whom Sir William Jenner holds a conspicuous place, have shown them to be quite distinct. In the Registrar-General's Reports of the causes of death in England they were first separated in 1869. The chief difference in their symptoms is, that in typhoid fever there is always present an inflammation and ulceration of some of the intestinal glands, accompanied by a peculiar

and copious diarrhœa lasting for several days, which intestinal affection is not found in typhus. For this reason, and also to avoid the confusion arising from the similarity of the names, typhus and typhoid, the latter disease is now more suitably called *enteric*, that is, intestinal fever.

But the difference between the two diseases which is most important with a view to their prevention is in the mode of their infectiousness. Typhus fever, like small-pox, scarlet fever, measles, and hooping-cough, is propagated *directly* from person to person by breathing the air which surrounds the sick; but enteric or typhoid fever is very little, if at all, communicable in this way. It is spread, as it were, in an *indirect* manner by means of the discharges of the bowels, not in their fresh state, but some time after they have left the body of the patient, and when they are in the form of *sewage*, undergoing decomposition or putrefaction. These discharges, by oozing from drains or cesspools, find their way through the soil into the drinking water, and are swallowed, or else the effluvia rising from them are inhaled, and thus the disease is communicated. Another terrible epidemic disease, Asiatic cholera, is also held, on carefully considered grounds, to be propagated mainly in this indirect manner by means of the decomposing bowel discharges of the sick. From the obscurity attending its mode of propagation, the infectiousness of typhoid fever, as of cholera, was long doubted or denied, and is difficult to trace in large towns, where the houses are connected together by a network of drains; but in country places it is much more evident. Cases have again and again been observed in which typhoid fever has been imported by persons affected with it into country villages where it had not previously been known for years, perhaps not within human memory, and the disease has spread from them as from a centre—facts which conclusively demonstrate its infectious nature.

Few, if any, now deny that typhoid fever is infectious; but the question has of late years been repeatedly debated, whether infection is its *only* cause, or whether it can also arise spontaneously or *de novo*, that is to say, from any other cause than infection? Dr. William Budd has urged with particular force and ability the former doctrine, and his conclusions have been very widely accepted among the medical profession. He holds the view just explained, that typhoid fever is usually due to poisoning by *sewage*, but that, whenever sewage acts in this virulent and deadly manner, the reason is that it contains the stools of typhoid patients. Ordinary sewage not containing typhoid stools has, he contends, no power whatever to produce the disease. On the other hand, the doctrine that typhoid fever is sometimes generated spontaneously has been advocated by the late Dr. Charles Murchison, in an elaborate and most valuable work on "The Continued Fevers of Great Britain" (2nd ed., 1873). Dr. Murchison gives numerous cases showing that typhoid fever is communicable from the sick to the healthy—a conclusion which, he says, "with such facts before

us, it is impossible to deny"; but he also holds that the disease is sometimes produced afresh by a poison derived from ordinary sewage not containing any admixture of typhoid stools. He says; "It may be generated independently of a previous case by the fermentation of faecal and, perhaps, other organic matter"; and this is an opinion which is shared by many other medical men. According to Dr. Murchison, moreover, the poison of typhus fever, a highly and unmistakeably infectious disease, is sometimes "generated *de novo* in the exhalations of living human beings, by overcrowding and bad ventilation", especially in circumstances of great poverty, dirt, and insufficiency of food; but this view has, I think, met with comparatively few supporters in this country.

In his article in the *Nineteenth Century*, Sir Thomas Watson vigorously combats Dr. Murchison's views on these two points, and endeavors to show that neither typhus nor typhoid fever has ever any other source than infection. The extreme importance of this question can be readily understood. Our power to prevent a disease depends on our knowledge of its *cause*, and it seems to me that the question whether infectious disorders can also arise spontaneously is in reality the most important of all questions relating to the causation of disease, from the vast practical consequences involved in it. In all efforts to prevent and eradicate infectious diseases, the question of their spontaneous origin presents itself, and few subjects in medicine have been so long and so vehemently debated. It was discussed several hundred years ago with reference to the plague, and within the present century the controversy has been renewed again and again, not only in regard to every one of the contagious fevers already enumerated, but also to many other contagious maladies, among which I may mention *Asiatic cholera*, *yellow fever*, *relapsing fever*, *diphtheria*, *syphilis*, *hydrophobia*, *glanders*, and *malignant pustule*. The very same question has been often discussed as regards the principal contagious diseases of the domestic animals, namely, *rabies*, *glanders*, *anthrax or splenic fever* (which produce respectively, when inoculated on man, the very fatal affections of hydrophobia, glanders, and malignant pustule), the *cattle-plague*, *pleuro-pneumonia or infectious lung disease*, *sheep-pox*, *swine plague*, and *foot and mouth disease*. If we take these eight diseases in man, along with the six infectious fevers prevalent among us, and also the plague, which still exists in some countries, they form together *fifteen* affections of the utmost gravity, besides *eight* most destructive disorders of the domestic animals, the cause of most of which is held very widely, and of many of them nearly universally, by the best medical and veterinary authorities, to reside in contagion alone, while our hopes of preventing and extinguishing them are inseparably bound up with the question whether or not they can also arise spontaneously. If they are propagated by contagion alone, their prevention is much easier, and their extinction is possible; but if, unfortunately, they can also arise in other ways

their prevention is far more difficult, and we cannot hope to extinguish them. A few years ago, Professor Tyndall, as chairman at a lecture delivered by Dr. Corfield, pointed out the extraordinary importance of the doctrine that infectious fevers "breed true", and never arise spontaneously. He said that "he entirely agreed with all that the lecturer had stated as to these diseases 'breeding true', for they never found the virus of small-pox producing typhoid, or *vice versâ*. The subject was one of the most important which could engage the attention of the scientific physician, for in the whole range of medical art and science there was not a subject of equal importance. But in applying to daily practice this question of infectious diseases, the physician must not stand alone—he ought to be aided by the sympathy of an enlightened public". On another occasion Professor Tyndall quoted on this subject the words of the famous French chemist and experimenter, M. Pasteur, who says, "Man has it in his power to cause parasitic diseases to disappear off the surface of the globe, if, as we firmly believe, the doctrine of spontaneous generation is a chimera". The question as to the spontaneous origin of infectious diseases has been so long under discussion, without being yet decided, that there must evidently be something very difficult in its settlement; and as it is a question of such vital interest to human happiness, I may perhaps be permitted here to refer very briefly to the arguments which Dr. Murchison brings forward in favor of the spontaneous origin of typhus and of typhoid fever.

I may remark, in the first place, that in order to prove an infectious disease to be capable also of arising spontaneously, it is necessary to show one of two things—either that in a certain case or cases infection cannot be the cause of the disease, or else that some other influence, such as overcrowding or bad drainage, has produced it. In other words, it is necessary to prove either the *negative* proposition that the disease in some cases does not arise from infection, or the *positive* or affirmative proposition that it does arise from some other given cause.

Now in seeking to establish the first or negative proposition, the main argument which Dr. Murchison uses is that several cases of typhus and of typhoid fever, whose circumstances he relates, could not, on careful enquiry, be traced to any exposure to infection as their source. There was, he says, "no evidence of infection" to be found in the history of these cases. But this argument, which has always been the one most strenuously urged in such discussions, is admitted by Dr. Murchison himself to be quite fallacious in regard to small-pox. He recognises the well-known fact that in certain cases of small-pox, as indeed of all infectious disorders, no evidence of infection can be found, and yet he holds that small-pox never arises spontaneously at the present day. Speaking of infectious diseases, he says: "Some of them, such as Variola (small-pox), are not only extremely contagious, but at the present

day can never be traced to any other cause than contagion. Whole continents, such as America and Australia, have remained exempt from them until they were introduced by an infected person. It is true that now and then we cannot trace even these diseases to contagion." If then the argument is admittedly of no avail to prove that small-pox can arise spontaneously, why should it be relied on in other infectious complaints? How can that be a good argument for typhus or typhoid fever which is allowed to be a bad one for small-pox?

In answer to this obvious question, Dr. Murchison says that there are many more cases of typhoid fever than of small-pox which cannot be traced to contagion. This, however, is probably to be accounted for by the very obscure and indirect mode of propagation in the former disease, and there is reason to believe that the number of unexplained cases will diminish as we gain a fuller knowledge of the different channels or vehicles by which the infection may be conveyed.

We can easily see how unreliable is any argument founded merely on negative grounds like the above when we consider the extremely subtle and insidious nature of the poisons that give rise to the infectious fevers. These poisons are invisible, they can be carried long distances and kept, under favorable circumstances, for an indefinite time, and moreover they can be communicated, not only by the patient himself, both during his illness and his convalescence, but by everything that has been in his neighbourhood. A person suffering from an infectious fever exhales constantly into the air a multitude of extremely minute *infectious particles*, which cling tenaciously to all the surrounding objects and persons, and can be transmitted by them. There are thus three ways in which these fevers can be communicated: either by the *patients*, by tainted or contaminated *objects*, or by tainted *persons*; the tainted objects, or "fomites", as they are often called, acting simply as carriers of the poison, while the "tainted" or "suspected" persons act not only in this way, but also as themselves perhaps infected with the disease and already suffering from it in its latent or incubative stage. When we add to this that the little infectious particles can be transported to a great distance in clothing, bedding, furniture or other goods, drinking water, milk, etc., as well as by persons, and that if kept from the air or dried, they may long retain their virulent properties—a cloak, for instance, having been known to give scarlet fever after being laid by for eighteen months, and the poison of anthrax or the splenic fever of cattle having been found active after keeping for four years—we can understand how little warrant there is for inferring positively from the mere fact that we *cannot trace* infection in a particular case that therefore infection does not exist. The argument would be well-founded if the case were a solitary one, and occurred in an island or other locality having no communication whatever with adjacent parts; but in a populous country where there are always many

other cases of the same disease to be found, and where more or less intercourse takes place, even with the remotest districts, it is rarely possible to exclude entirely the chance of infection, and unless this can be done the reasoning is evidently inconclusive.

In seeking to prove that typhus and typhoid fever, besides being infectious, can arise spontaneously or *de novo*, Dr. Murchison relies not only on the negative evidence afforded by our inability to trace infection in particular cases of these diseases. He holds that there is also positive evidence to show that typhus fever may be produced by overcrowding and deficient ventilation, especially among squalid, dirty, and ill-fed persons; and that typhoid fever is sometimes generated independently of infection, by the fermentation of sewage and perhaps other organic matters. The third kind of infectious disease described in his very able work on "The Continued Fevers of Great Britain" is *relapsing fever* (a less dangerous affection, always attended by a *relapse*, and occurring from time to time in epidemics, especially in Ireland); and this disease also he holds to be sometimes generated afresh by famine or prolonged scarcity of wholesome and nutritious food. The reason which he gives is that in cases where infection could not be traced, the above influences were present, and appear to him to have produced the diseases.

Now the causes here assigned by Dr. Murchison are the very ones which have at all times been popularly believed to have a power of breeding infectious fevers. Overcrowding and bad ventilation, dirt and squalor, the concentrated exhalations of numerous uncleanly human beings pent up together in close and ill-smelling rooms, prisons, or ships; the foul effluvia rising from sewers and cesspools, from graveyards, and other collections of putrefying animal or vegetable substances; war, with its sieges and battlefields, and its multitudes of unburied bodies polluting the air and the water; and famine with its wasted victims—to these causes, either singly or combined, it has been usual to attribute outbreaks, not only of typhus and typhoid, but of nearly every other kind of infectious fever, including the plague, scarlet fever, and small-pox. Even the best medical authorities commonly held such views before the publication, in 1811, of Dr. Bancroft's invaluable work treating on febrile contagion. "Most writers on the subject of contagious fever", says Dr. Bancroft, "have either inculcated or believed that it might be generated—first, by an accumulation of those disgusting matters commonly denominated filth; secondly, by the offensive vapours emitted by corrupting dead bodies, or by other matters in a putrid state; and, thirdly, by crowding persons, even when healthy, in ill-ventilated and unclean places." Dr. Bancroft maintained that, although these causes greatly favor the *diffusion* of a contagious fever when once it has been introduced by a person suffering from it, yet of themselves they are utterly unable to *generate* a single case; and his reasonings, with those of others, had so powerful an effect, that this immensely

important conclusion has been more and more widely received as the true medical doctrine on the subject. "Never", says Dr. Murchison, "has any work effected a greater revolution in professional opinion in this country. The doctrine of Bancroft was generally adopted". The chief argument used by Dr. Bancroft was the one to which I have already referred—namely the *complete and prolonged absence* of the contagious fevers till introduced by an infected person, though the other causes alleged to be capable of producing them are in full operation.

Thus Dr. Bancroft showed that, among the Esquimaux and Greenlanders, in slave-ships, and in Continental prisons, there was no typhus, in spite of over-crowding and bad ventilation together with filth, hunger, and squalor, often in the most aggravated degree. Typhus fever, it may be remarked, is the disease which has been popularly known by various names, such as "camp fever", "ship fever", or "gaol fever", from the frequency with which it has decimated armies in the field, and used formerly to infest emigrant ships and the English prisons. Epidemics of typhus have repeatedly occurred in most parts of Europe, especially when imported into them by war; but at ordinary times the disease is not so widely spread as enteric or typhoid fever, which is a prevalent affection in almost all countries. Typhus, on the other hand, has its peculiar abode in some of the large towns of Great Britain, and, above all, in Ireland, where it has always been fearfully common and destructive; while in the rural districts of England, throughout the whole of France, and in many other parts of the Continent, it is very little known. "In the country districts of England", says Dr. Murchison, "typhus is a rare disease; almost all the examples of 'typhus' reported as occurring in small country towns and villages are really cases of enteric fever". He says also: "The disease is at all times so rare throughout France that few French physicians have ever seen it"; and adds: "It is especially to be noted that in many parts of the Continent of Europe where typhus never occurs in time of peace, it becomes epidemic in time of war". But over-crowding and defective ventilation, dirt and privations of all kinds, are exceedingly common in the rural parts and small towns of England, as well as in France, and indeed everywhere among the very poor; and this seems plainly to show that such causes are not of themselves able to give rise to typhus fever.

Again, as regards typhoid or enteric fever, that it cannot be generated merely by the fermentation of ordinary sewage may be seen from the fact that multitudes of people habitually breathe the air, or drink water polluted by sewage without ever contracting the disease. In such towns as London, and still more Paris, as Sir Thomas Watson observes, more or less of sewer air almost always finds its way into the houses even of the wealthiest classes; and in country places, where there are no sewers, the drinking water is very frequently tainted, from the dangerous practice which prevails

of having the pumps or shallow wells in too close proximity to the privy and cesspit, and allowing the excremental matters to soak into the soil. The Rivers Pollution Commissioners say in their report that estimating the town population of Great Britain at about fifteen millions of people, "the remaining twelve millions of country population derive their water almost exclusively from shallow wells, and these are, so far as our experience extends, almost always horribly polluted by sewage and by animal matters of the most disgusting origin". Yet in many country villages where such water is used, typhoid fever is entirely absent for years, till a case is imported which gives rise to a local epidemic of the disease. An outbreak of the kind in the village of Nunney, in which seventy-six persons were attacked out of a population of 832, and which was traced to the fact that the bowel-discharges of a typhoid-fever patient had been allowed to mingle with the drinking water, is thus commented upon by the eminent authority on Hygiene, the late Dr. Parkes. "The case", he says in his "Manual of Practical Hygiene", "seems quite clear—first that the water caused the disease; and secondly, that though polluted with excrement for years, no enteric fever appeared until an imported case introduced the virus. Positive evidence of this kind seems conclusive and I think that we may now safely believe that the presence of typhoid evacuations in the water is necessary. Common fæcal matter may produce diarrhoea, which may perhaps be febrile, but for the production of enteric fever the specific agent must be present". Facts such as these seem to show clearly that neither typhus nor typhoid fever can be generated by the causes assigned by Dr. Murchison. How can a disease be said to proceed from a cause which, in numberless instances, over wide areas and during long periods of time, though constantly and powerfully operating never gives rise to a single case of it?

Whenever a cause is given and known, we can try it in the above manner, by observing its action at different times and places and under a variety of circumstances; and not one of the numerous influences supposed to generate the infectious fevers has been able to withstand this test. Indeed, our belief that these diseases have no other source than infection is mainly founded on the fact that every other cause which we see operating around us fails in countless instances to produce them. But when the cause is not given or known, and it is merely alleged that *some* cause, other than infection, is capable of generating an infectious fever, we cannot entirely disprove this assertion, since we do not know all the causes that may possibly exist in nature. As Mr. Simon observes: "To say that a disease is contagious is not to say that it cannot arise without contagion". It seems to me to be this difficulty in proving a negative which has so long prevented the settlement of the controversy. We cannot show that the spontaneous origin of the contagious fevers is *impossible*, but only that it is *not proved*, and that all the evidence adduced in its favor is inconclusive. We

hold, moreover, that such a mode of origin is not only unproved, but *very improbable*; in the first place, because every known agent whose effects have been carefully watched seems incapable of producing them, so that if they really have any other source than contagion it is an *unknown* one; and secondly, because their prolonged absence from extensive areas where a multitude of causes under a great variety of conditions are at work, renders it unlikely that *any cause whatever*, except contagion, is able to generate them. With respect to small-pox, which has been absent for centuries from whole continents, till introduced by a person suffering from it, the improbability of its ever originating *de novo* is so great as to amount to a practical certainty; and although the question as regards typhoid fever is a much more difficult one, yet if we consider the very significant facts that typhoid fever has no other known and proved cause than infection, that many of the cases formerly thought spontaneous have been shown to depend on infection conveyed in drinking-water, milk, etc., and also that the disease is often entirely absent for long periods from country districts till imported into them, we have strong grounds for believing that typhoid fever has never in reality any other than an infectious source.

Besides the foregoing arguments, which are the chief ones, Dr. Murchison brings forward two others, on which I would like to say a few words, on account of the extreme importance of the questions connected with them. The first is an argument from analogy. He points out that "there are certain contagious diseases, such as erysipelas, pyæmia, and puerperal fever", which are well-known to be capable also of arising spontaneously or *de novo*, and infers from analogy that typhus and typhoid fever can probably do so likewise. In order to understand what is the force of this argument, it will be necessary to advert very briefly to the other great leading division of infectious diseases, the *inflammatory* and *septic* group, with which, as well as with those previously mentioned, it is most important that the public should be acquainted.

There is a numerous class of diseases—some of them of very common occurrence, and others terribly fatal—which have the power of arising, not only from infection, but also independently of this source, and which, therefore, we can never hope completely to abolish or extinguish. Among them are *purulent ophthalmia*, *common catarrhal ophthalmia*, *gonorrhœa*, *erysipelas*, *dissection-wound poisoning*, *pyæmia* and *septicæmia*, *puerperal fever*, *hospital gangrene* or *phagedæna*, and *dysentery*. These may be called the *non-specific*, or not purely infectious diseases, in contradistinction to the *specific*, or purely infectious disorders, already considered. I may remark here that the word "specific", as applied to a disease, is often used in a different sense from this to signify merely peculiar or special, as opposed to common or ordinary; but of late years it has been frequently employed in the very important sense here intended, namely, to signify "like a species". A specific

disease, in the latter sense of the term, is a disease which resembles a species of plants or animals, in having singularly regular and unvarying characters, and also more especially in the fact that it has only one kind of cause—in other words, that it always arises by infection from another disease like itself, just as the members of a living species always descend from parents like themselves. A non-specific infectious disease, on the other hand, can arise from other sources as well as from infection.

Now, there is this wide difference between the infectious disorders belonging to the non-specific class and typhus and typhoid fever, that in the former the power of originating without infection has been *proved*, while in the latter, as we have seen, it is *not proved*. It has been conclusively shown, partly by the observation of the sick, and partly by experiments on animals, that all the ten infectious disorders just enumerated (except the last of them, dysentery) can be generated by introducing into the blood, or applying to a mucous surface, the products of ordinary inflammation or putrefaction. Recent researches have ascertained the fact that inflammatory products, such as pus, are all more or less of a *contagious* nature, and tend to excite a similar inflammation in other parts or persons. Thus one of the highest authorities on infectious diseases, Dr. Burdon Sanderson, who investigated the subject of contagion under the direction of the Privy Council and their eminent medical officer, Mr. John Simon, says: "In a certain sense it has been long familiar that an inflamed part is a focus from which irritating material is distributed to healthy parts by radiating lines of absorption; but it is only of late years that it has been distinctly seen and recognised clinically that every exudation-liquid of an inflamed part carries more or less with it the properties of an inflammation-producing virus". In like manner, Mr. Simon, in one of his Reports to the Privy Council, speaks of the "essential contagiousness" of the inflammatory process. He says: "Inflammatory excitement tends to diffuse itself. Within limits, hitherto not defined, inflammations, both common and specific, are communicable from part to part and from person to person". I may add the opinion of Mr. Jonathan Hutchinson, who says: "Let us accept clearly the doctrine, so essential to the explanation of numerous pathological phenomena, that all living pus is contagious, and is capable of producing an inflammation similar to that in which it originated". Putrid or septic matters also, such as ichorous fluids or putrescent pus, are highly poisonous, and when introduced into the blood, or absorbed into it from the surface of a wound, they give rise to the frightfully fatal diseases, pyæmia and septicæmia. These affections, together with hospital gangrene, are commonly termed the *septic* diseases, and are one of the chief dangers to which patients suffering from *wounds* are exposed, whether the wounds have resulted from injuries or from surgical operations, about a third of the deaths after operations in the London hospitals being due to pyæmia. Another disease often

arising from the noxious influence of putrefying substances upon wounds is erysipelas, which is included by some surgeons among the septic diseases. Puerperal fever also—that fearful malady whose real nature was first pointed out by Dr. Robert Ferguson, and which he describes as “the most fatal of those peculiar to women, as seven-eighths of the total mortality in child-birth are owing to it”—is essentially a septic disease, consisting of various forms of pyæmia, septicæmia, and internal erysipelas, caused by absorption into the blood of decomposing matters from the inner surface of the uterus, which, after delivery, partakes of the characters of a wound.

All the septic diseases are particularly apt to be generated by the *overcrowding* of patients suffering from suppurating wounds, which loads the air with putrescent animal products, and hence they are sure to be of frequent occurrence in close and ill-ventilated surgical hospitals. “*Overcrowding* of patients after operations”, says Mr. Erichsen, in his “*Science and Art of Surgery*”, “is one of the most fertile causes of disease and death; for the overcrowding of wounded people, whether the wounds be accidental or surgical, will inevitably produce one of the four septic diseases—phagedæna, septicæmia, pyæmia, or erysipelas.” When once produced by such means, they are afterwards propagated by infection from one person to another; the infection having this peculiarity, that it can act only on *wounded* people, since the poison apparently cannot affect the system except through a wound. Hence these diseases belong rather to surgery than to medicine, and are often called the traumatic or surgical infections. Before their generation by the overcrowding of the wounded, and their propagation by infection, were clearly understood, the mortality from septic disease in civil and military hospitals and in lying-in institutions was sometimes perfectly appalling. An important fact, pointed out by Dr. Burdon Sanderson and M. Davaine, and which helps to explain the generation of these disorders, is that their virulence is greatly *increased* by transmission from one animal to another; so that from a product at first but slightly contagious there may be developed, after a few transmissions, a most deadly poison. Even without any transmission, however, a contagious poison of the utmost intensity can be rapidly generated, *de novo*, by inflammatory and septic processes in the body; as may be seen from the fact that an unhealthy inflammation of the peritoneum, excited by a purely non-infectious cause, such as a surgical operation, may give rise to an effusion of serum and pus so virulent, that the mere prick of a needle dipped in it is enough to occasion death by septicæmia. Many medical men have lost their lives by blood-poisoning from dissection wounds of this nature.

With regard to dysentery—one of the most destructive diseases of hot climates—its mode of origin is very different from that of the septic affections. The contagiousness of dysentery has only been recognised of late years, and seems to be confined to the

epidemic form of the disease prevalent in the tropics, while the scattered cases which occur in this and other temperate countries are not held to be contagious. As in the case of cholera and typhoid fever, the infection is, in all probability, conveyed chiefly by means of the discharges. The peculiar exciting cause of dysentery appears to be a miasma or malaria, generated in hot, swampy districts, and closely allied to the malaria which gives rise to ague; the word *miasma* or *malaria* being commonly used to denote a poisonous matter bred outside the body, while a *contagium* is one which breeds and multiplies within the body itself. Since dysentery may arise from a miasm as well as from contagion, and since the inflammatory and septic infections can be generated by the products of ordinary inflammation and putrefaction, it is evident that we can never hope to abolish these diseases, however greatly they may be reduced in amount by human skill and energy.

The diseases which can be abolished, and on which above all others, therefore, the attention of society should be fixed, are the *zymotic* diseases, strictly so called. The word *zymotic* signifies "like a fermentation", and is often employed in a looser sense so as to include all infectious diseases, and even some which are not infectious; but Sir Thomas Watson, in his article on "The Abolition of Zymotic Disease", restricts the term to a certain group of infectious disorders, consisting of small-pox, scarlet fever, measles, and others, which in their course and symptoms *most nearly* resemble a fermentation. The resemblance between these maladies and a fermentation, as pointed out by Liebig, is in many respects very striking. Thus, for example, when a ferment, such as yeast, is added to a fermentable liquid, there is first a period of quiescence; then follows a period of disturbance, with rise of temperature, during which two periods a great multiplication of the ferment takes place; next comes a stage of subsidence or decline; and afterwards there remains an immunity or insusceptibility to the further action of that ferment. In like manner, when the virus of a zymotic disease, such as small-pox or measles, enters the body, there is first a period of quiescence or incubation; then a stage of disturbance, attended with rise of temperature or fever, an eruption on the skin, and a great multiplication of the virus or infecting matter; then a stage of decline or defervescence; and, lastly, an immunity from the further action of that contagion. The stages not only follow one another in regular order, but each of them lasts a certain time, which varies but little in different cases of the same disease. There is a large group of infectious disorders, both in man and the domestic animals, presenting the remarkable characters here described, and it is these disorders which are *specific*, or, in other words, which resemble species in having only one kind of cause, and in being therefore liable to extinction. Many of them are admitted almost universally to arise at the present day from contagion alone, and not one has been *proved* to have any other mode of origin. On the other hand, the

septic and inflammatory group of disorders have not such regular and unvarying symptoms, and none of them give immunity from future attacks; and these are the *non-specific* infectious diseases, that is to say, the class which can arise from other sources as well as from infection. But typhus and typhoid fever, and the former more especially, have well-marked zymotic characters of incubation, fever and eruption, regular stages and lesions, and subsequent immunity, and Sir Thomas Watson includes them among the true zymotic diseases. Their real analogy is to small-pox and scarlet fever and not to pyæmia and erysipelas, with which Dr. Murchison compares them, and this seems a strong argument against their ever originating *de novo*. Dr. Buchanan, the present medical officer of the Privy Council and Local Government Board, says, in his article on Typhus Fever in "Reynolds's System of Medicine", in discussing Dr. Murchison's theory: "The most serious obstacle to the reception of this theory arises from the analogy of other specific diseases, as to the present production of which by contagion, and contagion alone, there can be no question". The argument from analogy, therefore, instead of supporting Dr. Murchison's view, seems rather to tell very strongly against it.

The last of Dr. Murchison's arguments to which I shall refer is of an *à priori* character, and is one which has been repeatedly brought forward in discussing the spontaneous origin of the infectious fevers. It is urged that such a mode of origin is not only possible, but must actually have taken place when the diseases first came into existence, since the first cases must have arisen without infection; and as this has happened once, why, it is asked, might the same thing not happen again? "In the first sufferer from a contagious disease", says Dr. Murchison, "its origin must have been *de novo*, and there is no reason why the unknown causes of the first case may not operate at the present day". But Dr. Murchison himself disregards this argument when he concludes, from a careful survey of the facts, that small-pox and some other disorders never now arise *de novo*; and it is evidently by facts, and not by speculative considerations, that the question has mainly to be decided. Still there is one thing, a knowledge of which would be of immense value, and might aid us in forming an opinion on this and every other point relating to infection. If we knew what the poisons that give rise to infectious diseases *really are*—if we knew their intimate nature, and how they produce the extraordinary phenomena of infection—we might be able to say whether or not it is likely that they should ever be generated spontaneously. This brings us to the great question which of late years has occupied, more than almost any other, the attention of medical inquirers, namely, *what is contagium?* and how do the different kinds of contagia produce their effects?—the word *contagium*, in the plural *contagia*, being used to denote the material substance or poison which gives rise to a contagious disease. When we have carefully considered what the con-

tagia really are, we shall be in a better position to decide as to their modes of origin, and also as to the possibility of their utter extinction.

Till within the last twenty or thirty years the nature of contagion remained an inscrutable mystery and standing enigma in medicine, and more has been done in the present generation than in all past ages to clear up the difficulty. The explanation of the facts of infection now given by the best authorities is contained in the great theory known as "the Germ Theory of infectious diseases", and also called the doctrine of *contagium vivum* and *miasma vivum* (living contagium and living miasm), which Dr. Liebermeister regards as "perhaps the most important questions which have ever busied the medical world". According to this doctrine, the different contagia are in reality different kinds of *extremely minute living beings*, which produce disease by growing and multiplying in the body of the patient, and communicate infection by passing from the body of one person or animal into that of another. These little organisms are generally considered to be plants belonging to the *bacteria*, a tribe of the lower fungi, and they have received various names, such as microbes, microphytes, microzymes (little living things, little plants, little ferments), on account of their vital properties, or else, from their peculiar forms, they have been called *bacteria*, bacilli, spirilla, micrococci, etc. (that is rod-like bodies, very minute rods, little spiral filaments, or little rounded organisms). Each kind of contagium attacks by preference certain parts and tissues of the body, and hence the peculiar symptoms and lesions that characterise the different infectious diseases. If this view be correct, it is evident that the contagia are not, properly speaking, poisons but *parasites*; and the reason why certain disorders are called *specific* and never arise but from infection, is that they are caused by distinct species of living organisms which, like other species, are kept up only by continuous propagation. Like other species, too, they might be completely extirpated by human intelligence and energy. In fact, the battle with contagious fevers and specific disorders is nothing else than a war of extermination against a class of excessively minute disease and death-producing parasites, which, though the smallest of living beings, are infinitely more dangerous and deadly to mankind than any venomous reptile or beast of prey.

The truth of the germ theory in its main features seems now to be firmly established, and is admitted by large numbers of the most eminent medical and scientific authorities in this and other countries. On this point I may quote the opinion of Dr. Burdon Sanderson, who, in 1870, in discussing the doctrine that the little particles found in contagious liquids "are organised beings, and that their powers of producing disease are due to their organic development", says: "We have accepted the doctrine as the only one which affords a satisfactory explanation of the facts of infection". Mr. John Simon, in his Address as President of the Public Health Section at the International Medical Congress held in London in 1881,

says: "We have learnt, as regards those diseases of the animal body which are due to various kinds of external cause, that probably all the most largely fatal of them (it is impossible yet to say how many) represent but one single kind of cause, and respectively depend on invasion of the animal body by some rapidly multiplying form of alien life". At the same Congress, Professor Klebs of Prague, read a paper on the subject, in which he says: "The conclusion which appears to me to follow inevitably from this short survey of the results of modern investigation is this—that specific communicable diseases are produced by specific organisms". In the discussion following the paper, Dr. Virchow, the eminent German pathologist, observed that "the study of pathological anatomy had been greatly changed by the discovery of parasitic organisms". I may quote also the opinion of M. Bernheim, who says in his article on "Contagion" in the "Dictionnaire Encyclopédique des Sciences Médicales" (1874): "Now we shall see that the results of existing science tend precisely to make the contagia be regarded as animal or vegetable parasites, and that consequently between contagious maladies and parasitic maladies there is perhaps no essential difference". In like manner Dr. Frankland, president of the Institute of Chemistry, says: "The researches of Chauveau, Burdon Sanderson, Klein, and others, scarcely leave room for doubt that the specific poisons of the so-called zymotic diseases consist of organised and living organic matter". In an address delivered in St. James' Hall during the London Congress of 1881, the celebrated chemist, M. Pasteur, who has done so much to promote the knowledge of this subject, alluded to his own "labors during the past twenty-five years upon the nature of ferments—their life and their nutrition, their preparation in a pure state by the introduction of organisms under natural and artificial conditions—labors which have established the principles and methods of microbism".

It was M. Pasteur's brilliant researches on *fermentation* and *putrefaction* that led the way to the discovery of the true causes of infectious disorders. Fermentation is a process which occurs when a fermentable compound, such as sugar, is placed in contact with gluten, casein, albumen, or other nitrogenous substance, provided air be admitted; and it was held by Liebig that the *ferments* in such a case are the dead nitrogenous substances, which begin to decompose when acted on by the oxygen of the air, and thus induce changes in the sugar. But M. Pasteur showed that in every fermentation, properly so-called, the alcoholic, the viscous, the lactic, etc., *little living beings* are present, which are the real ferments or agents in the process. Fermentation consists, in fact, in the changes arising from the growth and multiplication of a microscopic plant, whose germ is at first brought by the air, but which afterwards lives without air, feeding on the sugar and the nitrogenised substances, and using their elements to build up its own tissues. "When sugar is placed in the presence of gluten, or

casein, or an animal membrane", says M. Pasteur, in a notice of his researches published in 1861, "it is not the nitrogenised matter which is the ferment. The true ferment consists in a microscopic vegetable, the germ of which is brought by the air at the commencement, and which multiplies itself, taking its carbon from the sugar, its nitrogen and its phosphates from the gluten or the casein". In his "Studies on Fermentation", a translation of which was published in 1879, he says: "The essential point of the theory of fermentation, which we have been concerned in proving in preceding paragraphs, may be briefly put in the statement that ferments, properly so-called, constitute a class of beings possessing the faculty of living out of contact with free oxygen; or, more concisely still, we may say fermentation is a result of life without air". Putrefaction also, which is a kind of fermentation accompanied by foul smells, was shown by M. Pasteur to be due to the action of little living organisms, the septic bacteria, whose germs are derived from the air. By a beautiful series of experiments, which were confirmed by the researches of Professor Tyndall, he showed that all ordinary air contains large numbers of these germs, and that if they be totally excluded by boiling, hermetically closing vessels, or other means, animal and vegetable substances can be kept for years without putrefying. As it appeared from these enquiries that little living beings are the real causes of fermentation and putrefaction, the question naturally presented itself whether the infectious fevers, which are so like a fermentation, may not have a similar source. Accordingly this great question was vigorously attacked by M. Pasteur and a number of most able observers in different countries. The methods by which they sought to solve it were chiefly the search for organisms by an examination under the microscope of the contagious products and the blood in the various infectious disorders of men and animals; the endeavor to separate from one another the different parts of which contagious liquids are composed, in order to determine which of them possesses the virulent properties; the chemical analysis of these liquids to see whether they contain any chemical poison; the artificial cultivation of the little organisms or microbes, that is to say, rearing them in some nutrient fluid, such as serum or meat-juice, in which they can grow vigorously, so as to rid them of impurities, and to study their nature and development; and also testing the powers of infectious liquids, and of the little organisms in the pure state, by experiments on animals, which formed an indispensable part of the enquiry. By these means a large amount of evidence was obtained, which seems to show in the clearest manner the truth of the germ theory.

The reasons now usually given in proof of the germ theory, are drawn partly from facts of infection that have long been known, and partly from the results obtained more recently by the examination of contagious liquids. Among the former, the two facts on which Dr. Burdon Sanderson lays particular stress as showing the

contagia to be living beings, are their enormous *multiplication* within the body of the patient, and also their long *preservation* and resistance to adverse surrounding influences outside the body. He holds the germ theory to be "the only one which affords a satisfactory explanation of the facts of infection, and in particular of those which tend to show that within the body of the infected individual the particles of contagium rapidly reproduce themselves, while out of the body they are capable of resisting for long periods the influence of conditions which, if not restrained by organic action, would produce chemical decomposition." The multiplication of the virus or infecting matter which takes place in a contagious disease is extraordinary, and should be carefully noticed, as it is one of the most important points relating to infection. "A quantity of small-pox matter not so big as a pin's head", says Dr. Aitken, "will produce many thousand pustules, each containing fifty times as much of the specific pestilent matter as was originally inserted; and moreover the blood and all the secretions of the body are equally infected with the specific poison of the pustules. The miasmata from one child laboring under whooping-cough are sufficient to infect a whole city." This fact alone would seem almost enough to show that a contagious virus must be organised and living, for living beings are the only things we know of possessing the faculty of reproduction or self-multiplication. No chemical poison, whether of the inorganic or organic class, as arsenic, or snake venom, has any power of reproducing itself, or is ever multiplied in the body. Hence it takes a certain amount of these poisons to produce death, and their effects are proportional to the dose; but the contagia can act in what is termed a *minimal dose*, that is, a quantity quite imperceptible and infinitesimal. Thus Mr. Marson says of small-pox that "a single breathing of the air where it is, is enough to give the disease." The reason of this remarkable difference is that a chemical poison is not multiplied in the body, whereas an infectious virus is rapidly multiplied, so that, if once it gains a footing, the amount originally taken into the system matters but little. Professor Naegeli, of Munich, in his work on the "Lower Fungi in their relation to Infectious Diseases" (1877), holds this fact to be conclusive evidence on the question. "The infectious matters", he says, "cannot be chemical compounds or collections of them, but can only be *organised bodies*, because in this case alone is their increase conceivable from the minimal quantity taken in, to the amount in which they become dangerous to the human frame".

Another important fact is the power of the contagia to retain their virulence for long periods, sometimes for many years, outside the body, and to resist changes of heat and cold, dryness and moisture, or other influences which would speedily decompose and destroy any dead organic matters. This accords well with what we know of the bacteria and other minute organisms, which are wonderfully tenacious of life, and moreover are able to exist in two

states or forms—the one an active parent form when they are comparatively perishable, and the other an inactive form, as little buds or spores, when they are very indestructible, and can continue in a sort of dormant vitality for an indefinite time. It is on this ground chiefly that Dr. Burdon Sanderson objects to a theory of germs, differing from the one usually adopted, which has been put forward by the distinguished physiologist and microscopist Dr. Lionel Beale, in his work on “Disease Germs” (2nd ed., 1872). Dr. Beale holds as strongly as anyone that the contagia are *living* and not dead substances. “The only condition in which matter is known to exhibit these powers of self-multiplication”, he says, “is the living state”; and he adds: “Everyone will admit that the particular forms of disease now under consideration—the contagious fevers—result from the introduction of living particles of some form or other.” Assuming the infectious particles to be living, however, there are evidently two suppositions possible as to their nature; either they are independent organisms or parasites coming from without, or else they are little living cells or portions of protoplasm derived from the patient's own tissues. Dr. Beale adopts the latter alternative, and holds the disease germs to be particles of degraded protoplasm, which are capable of living independently, and can be engrafted on other individuals, in whose bodies they can grow and multiply. This view, however, is objected to by the great majority of observers here and abroad, as purely hypothetical and wanting a real instance to support it, and especially as being inconsistent with the fact that many kinds of disease germs can live for such long periods out of the body. “Considering”, says Dr. Burdon Sanderson, “that of all perishable things protoplasm is among the most perishable—so much so that no living particle of our bodies can be abstracted from its place in the organism, even for five minutes, without dying and being disintegrated—it appeared to me quite out of the question to suppose, as Dr. Beale had suggested, that the particles could be of this nature consistently with the astonishing power which they evidently possess of retaining their activity for such long periods, in spite of their being subjected to enormous varieties of moisture, temperature, and all other conditions.” “If, then, the doctrine of a *contagium vivum* be true”, says Dr. William Roberts, in his Address on Medicine to the British Medical Association in 1877, “we are almost forced to the conclusion that contagium consists (at least in the immense majority of cases) of an independent organism or parasite”.

The results which have been obtained of late years by the examination of contagious liquids with high powers of the microscope, relate in the first place to the physical characters of the contagia. Some infectious diseases, such as small-pox and measles, are propagated through the air by inhalation; while others, as cow-pox and glanders, are communicated by inoculation with liquid products, and hence it is often supposed that the infecting

matters must have the form of a vapor or a fluid. But if this were so, it would follow that they cannot be living, for living beings are always solid, and never fluid or gaseous bodies. A closer scrutiny has shown, however, that the real infecting substance, or contagium, is neither a fluid nor a vapor, but consists in all cases of extremely minute *solid particles*. "As regards the physical characters of contagious liquids", says Dr. Burdon Sanderson, "the fundamental fact is that contagium is *particulate*". This important fact was pointed out in 1865 by Dr. Chauveau, Professor in the Veterinary School at Lyons, after a prolonged inquiry into the virus of cow-pox and other contagious diseases. When vaccine, or cow-pox lymph, is examined under the microscope, it is found to consist of three parts—namely, first, of corpuscles which are similar to ordinary pus globules, and are sometimes few in number, or even entirely absent in good vaccine; secondly of numerous particles, far more minute and not exceeding $\frac{1}{200000}$ of an inch in diameter; and thirdly, of a clear liquid in which these bodies float. The larger corpuscles were separated by subsidence, and were found on inoculating them to be inert. The separation of the smaller particles could not be effected either by subsidence or filtration, but was at last accomplished by what is termed the method of *diffusion*; that is, by bringing carefully a little water into direct contact with the contagious liquid, when the soluble and diffusible parts of the liquid mix with the water, and the insoluble ones are left behind. In this way the minute particles were separated from the rest, and were found on inoculation to communicate cow-pox, whereas the fluid after being deprived of them was found absolutely inactive. M. Chauveau investigated in a similar manner the virus of small-pox, sheep-pox, and farcy (a form of glanders), and with the same results. It thus appears that when an infectious disease is communicated by means of a fluid, or through the air, it is because the air or the fluid contains little solid particles, invisible to the naked eye, which are the real infecting substances; and this fact is a strong additional argument in favor of the view that the contagia are living beings.

Besides showing the physical characters of infectious liquids, recent investigations with the microscope have ascertained that in some of them little vegetable organisms of peculiar shapes are present; and it is these organisms, and the inquiries to which they have given rise, that most fully demonstrate the germ-theory. "The doctrine that microphytes have to do with the process of contagion", says Dr. Burdon Sanderson, "is based on two sorts of observations, viz., those relating to the physical characters of contagious liquids, and those relating to the existence of organisms of characteristic form in them". "There are four contagious diseases", he says also, in 1874, "in respect of which the presence in the contagious liquids of forms of vegetation, differing from those met with after death in the normal tissues or liquids of the body, or during life in the products of primary or secondary inflammation,

has been established. These are small-pox, sheep-pox, splenic fever, and relapsing fever". The first disease in which characteristic organisms were detected was splenic fever or anthrax—a very deadly disorder of cattle, sheep, and horses, common in all parts of the world, and inoculable on all kinds of animals, including men, in whom it produces the rapidly fatal affection called malignant pustule. Dr. Davaine and Dr. Pollender, in 1855, or even earlier, discovered in the blood of animals suffering from splenic fever, a microscopic plant, to which the name of *Bacillus anthracis* has been given, and which consists of little rods or staff-shaped bodies, endowed with the faculty of developing spores. In relapsing fever also, an infectious disease peculiar to man, Dr. Obermeier, in 1872, detected in the blood a little organism or microbe, having the form of minute spiral threads or filaments, and since called the *Spirillum Obermeieri*. The organisms which have been discovered in the matter taken from small-pox pustules, are of the kind called *Micrococci*, that is, little rounded bodies, and exactly resemble the minute particles already described as occurring in vaccine lymph.

Although these little bodies have been found by numerous observers to be continually present in the above diseases, this fact cannot in itself be regarded as sufficient evidence that the diseases are due to them. The organisms might be the consequence rather than the cause of the morbid state of the blood, and might be simply carriers and not producers of the infecting virus. In order to decide this point, therefore, it is evidently necessary to separate the organisms and obtain them in a pure state, and then to try whether by inoculation they are able to produce the disease; and for this purpose a more perfect process of separation is needed than that employed by M. Chauveau, which merely divided the insoluble from the soluble and fluid portions of a contagious liquid. We want to know the vital as well as the physical characters of the organisms, and whether they are the real causes of the disorders in which they occur. This object has been attained by the very important purifying process called the method of *successive cultures*, which is now generally used in these inquiries, and may be briefly described as follows: A little drop of the infectious liquid containing the microbes is introduced on the point of a glass rod into a clear nutrient fluid, such as meat-juice, which is kept nearly at blood-heat; the latter fluid having been previously boiled, and the glass rod heated to redness to deprive them of all other organisms, and the neck of the vessel being plugged with cotton wool so as to exclude any germs from the atmosphere. In a few hours the nutrient fluid becomes turbid from the growth of the microbes, which rapidly multiply and fill the vessel. A little of the fluid from this vessel is then introduced in the same manner into another portion of nutrient fluid in a second vessel, and when this becomes turbid, a drop from it is transferred to a third vessel, and so on for ten, twenty, or any

required number of times. In this way the little organisms are freed from all extraneous matter, and obtained as far as possible in a pure state; and if at the end of this process they exhibit under the microscope the same appearance and power of development, and are found on inoculation to communicate the disease with the same intensity as the infectious liquid from which they were originally derived, it seems evidently to follow that they are the true cause of the disease. M. Pasteur regards this method of inquiry as indispensable, and as affording conclusive evidence on the subject. "In the present state of science", he says, "the proof that a microscopic organism is by its development a cause of disease and death, can only become peremptory on condition that successive cultures of this organism have been obtained, indefinitely repeated in liquids inert of themselves, and that these liquids always show the same development, the same appearance of life, associated with the same virulence, the same power of inoculation, of disease, and of death." The disease in which the organisms have been most carefully studied and most fully proved to be the real cause of the symptoms is splenic fever. On this point Dr. William Roberts observes, in the address already referred to, "That this organism (the bacillus) is the true virus of splenic fever has long been probable; and the labors of Bollinger, Davaine, Tiegel, Klebs, and most of all, of Koch, have removed the last doubts on the subject. Koch found without exception", he continues, "that if the tested material produced threads and spores in the incubator, it also produced splenic fever when inoculated into the mouse; and on the contrary, if no such growth and development took place in the incubator, the tested material produced no effect when inoculated into the mouse. Proof could go no farther; the infection absolutely followed the specific organism; it came with it, it went with it." There are several other infectious diseases in which little organisms have been discovered of late years, as, for example, erysipelas, diphtheria, gonorrhœa, and glanders; while in some others none have yet been found, and we can only infer their presence from the similarity of the phenomena, though they are probably too minute to be visible even with the highest powers of the microscope.

These minute parasitic organisms, which "lie at the root of all infectious diseases", to use Dr. Liebermeister's words, may be divided into two classes, between which there is a most important difference. Some of them are what are called *genuine* or *habitual* parasites, that is to say, they can live only in the animal body, and in many cases only in the particular species of animal which they infest; while others are *occasional* parasites, that is, they live and breed habitually in the outer world, and only enter from time to time, and under peculiar circumstances, into the bodies of animals. This division of the parasites corresponds to the two main groups of infectious diseases already adverted to, namely, the *specific* and the *non-specific* infectious diseases; the former being characterised

by the presence of genuine, and the latter by that of occasional, parasites. The reason why certain infectious disorders are called specific is because, like species, they always descend from other diseases like themselves; a fact which clearly shows that the little organisms found in them are always transmitted from one animal to another, and cannot multiply and develop themselves, though they may live for a season, outside the animal body. The non-specific disorders, on the other hand, can arise not only from infection, but from other sources, and this proves that the organisms associated with them are sometimes derived by transmission from other animals, and sometimes come in from the external world. It is evidently only the genuine parasites and the specific infectious diseases that we can hope to exterminate; whereas the occasional parasites, being able to live outside, cannot be exterminated, and we can only guard ourselves against them, and against the diseases in which they are found, by attentively studying the circumstances which permit them to enter the body.

We have already seen how, according to the germ theory, infection is produced, namely, by the microscopic organisms passing from one animal into another, and we may now briefly advert to the mode in which the non-specific infectious diseases are generated in those cases where they arise spontaneously or *de novo*, that is, from any other cause than infection. The most important and fatal disorders of this class are the *septic* affections, such as septicæmia, pyæmia, and puerperal fever, and the part which the little organisms take in producing or complicating them has been investigated by numerous observers. In the blood and inflammatory products of infectious septicæmia microphytes are constantly found, which M. Pasteur has carefully studied by the method of successive cultures, and has shown to be the true cause of the disease. Dr. Chauvel, after giving an account of these researches in his article on Septicæmia (1880), in the "Dictionnaire Encyclopédique des Sciences Médicales", says: "It would follow, therefore, from the experiments of Pasteur, that virulent septicæmia is due to the introduction and multiplication in the economy of a microbe living without air and a ferment, the septic vibrio". This little organism, according to M. Pasteur, M. Davaine, Dr. Burdon Sanderson, and other authorities, is nothing else than one of the common bacteria, or living ferments, which produce putrefaction, and which live habitually in the air and water around us. Mr. John Simon speaks of it as "the common ferment of putrid infusions", and says that "apparently those 'pyæmic' and 'septicæmic' diseases have their common essential cause in one morbid poison or contagium, which, so far as can yet be discerned, is a particulate ferment of ordinary putrefaction".

I may here mention that the bacteria, the tribe of infinitesimally minute plants to which all the contagia yet discovered belong, have been made the subject of a special study by the distinguished botanist Professor Cohn, of Breslau, and are described in his work

“On Bacteria, the Smallest Living Beings” (1872). The principal forms of the bacteria are those already adverted to, micrococcus bacterium and bacillus, spirillum and vibrio, and they are so excessively minute that the common rod-like bodies are only $\frac{1}{80000}$ of an inch long, or one-third the width of an ordinary red blood-globule, while the micrococci do not exceed $\frac{1}{20000}$ of an inch in diameter. The bacteria live in the outer world, and are universally diffused throughout the air, and especially in water as they require moisture to bring out their active properties. Their part in the economy of nature is a most important and indispensable one, namely, to cause putrefaction and to break down and remove all dead animal and vegetable substances; and this power of destroying the dead seems nearly related to the disastrous tendency which they so often manifest to become parasitic and prey upon the living animal body.

Since, then, the little organisms found in septicæmia have come in from without, the question to be considered is, What are the circumstances that enable them at first to enter the body, and render them so virulent? or, to express this in other words, how is septicæmia produced when it arises *de novo*, and not by infection from one animal to another? At ordinary times the bacteria are perfectly harmless, as may be seen from the fact that they are continually entering our bodies by the lungs and alimentary canal, and may be detected in some of the abdominal organs, such as the liver and spleen. Into every little cut and wound of the skin also they must constantly find their way, and yet the great majority of wounds heal rapidly and without any ill-effects. There are some parts of the body, however, in which bacteria are never found, namely, in healthy blood and muscle, as they are apparently at once destroyed whenever they enter the circulating fluid. What is it, then, that in septicæmia permits them to live and multiply in the blood, and converts a microphyte, harmless and insignificant at other times, into the most deadly of all known poisons? The reason of this, as ascertained by the long-continued labours of inquirers, is that, in the process of putrefaction, the bacteria produce a chemical substance called *the septic poison* (just as, in fermentation, the little yeast plant produces alcohol), and this poison, when absorbed into the system from the surface of a wound, gives rise to fever and inflammation, so as gradually to overcome the vital resistance of the blood and enable the bacteria to enter and breed in it. The septic poison was first discovered in 1856 by Dr. Panum, of Copenhagen, and was shown by him to be the immediate cause of septicæmia. Like other chemical poisons, it is not multiplied in the body, and its effects, unlike those of the contagia, are proportional to the dose. Hence an important distinction is now drawn between two forms of septicæmia; in the one, which is not infectious and is probably of common occurrence in its slighter degrees, the symptoms are due to the absorption of the septic poison from a wound, and the patient recovers, if the dose has not been too

large; while the other is an infectious and most deadly disorder, produced by the entrance and multiplication of the bacteria themselves in the system. The properties of the bacteria are altered, so that they become parasites on the living body, and their virulence, as pointed out by M. Davaine, is enormously increased by transmission through the animal economy. Pyæmia also, a disease closely allied, if not, as some think, identical with virulent septicæmia in its nature and origin, is, like it, almost invariably fatal. Dr. Burdon Sanderson has shown that the intensely contagious products of pus and serum found in these diseases always contain swarms of bacteria, and may thus be distinguished from ordinary healthy pus, which is but slightly contagious.

One of the immense practical benefits already derived from the germ theory is the *antiseptic treatment* of wounds, which was introduced a few years ago by the eminent surgeon Sir Joseph Lister, as a means of guarding against the septic diseases, and was expressly stated by him to be founded on M. Pasteur's doctrine concerning putrefaction. As Pasteur had shown that putrefaction is caused by bacteria, the antiseptic treatment aims at preventing the harmful influence of these little organisms on a wound. For this purpose, the wound is covered with several folds of gauze steeped in a solution of carbolic acid, whose fumes either kill the bacteria or at least prevent them from decomposing the discharges, and thus giving rise to the septic poison. This method, along with other precautions, has now been introduced in the large hospitals here and abroad, with such admirable results in preventing pyæmia, hospital gangrene, and other septic affections, that Dr. Sanderson lately observed in alluding to the experience of German surgeons: "We can no longer wonder that it is common to hear the discovery of Lister spoken of in Germany as the greatest improvement in the art of medicine which has taken place in modern times".

There is still another disease of the utmost gravity, which has within the last few years apparently been proved to be contagious, I mean the dreadful malady *tuberculosis*, called pulmonary consumption or phthisis when it occurs, as it usually does, in the lungs. This is by far the most important and widely destructive of all diseases, for statistics, it is asserted, show that one-seventh of the whole population, and as much as one-third of the adult population who die in the prime of life are carried off by it. Until recently, tuberculosis was regarded as a disease which arises chiefly from debility or hereditary predisposition, and as not at all contagious; but in 1864, Dr. Villemin, of Paris, published the extremely important and startling discovery that it can be communicated to the lower animals by inoculating them with tubercular products. The truth of his conclusions was in some respects questioned at the time, but they have since been fully confirmed. Dr. Koch, of Berlin, the high authority already referred to, observes that recent researches "have established the communicability of tuberculosis beyond all doubt, and in future a place must be assigned

to it among the infectious diseases". Mr. John Simon says: "The broad results of modern discovery in regard to ordinary tubercular disease tend to represent it as a chronic locally-originated zymotic process, which, starting under certain conditions in one first spot of the (predisposed) animal body, advances by successive steps in definite anatomical lines to infect the entire system; a process, which by means of its characteristic products is inoculable from part to part, and from subject to subject". It was presumed that a microscopic parasite must exist in tuberculosis as in other communicable diseases, and after a long, fruitless search by various inquirers, it was at last discovered by Dr. Koch, whose observations on the subject are contained in a most important paper read before the Physiological Society at Berlin in 1882. The little parasite as described by him is of a rod-like shape, and has hence been called the *bacillus tuberculosis*. Dr. Koch says that he has found this parasite to be constantly present in the tubercular products of men and animals, and that moreover, by obtaining it in a pure state with the aid of successive cultures, and then testing it by inoculation, he has proved it to be the true cause of the disease. Debility and hereditary tendency have doubtless, he remarks, a most powerful effect in the production of tuberculosis, but they act only as predisposing influences, while the real essential cause is the bacillus. At a meeting of the Pathological Society of London in December last, Dr. Dawson Williams, who had repeated some experiments on the subject at the request of Dr. Wilson Fox and of Dr. Burdon Sanderson, observed that "the evidence in favour of the specific nature of tubercle was now, he thought, very strong, and it was strong also in favour of the view that the bacillus tuberculosis was a necessary part of the tubercular process; further, the recently published experiments of Baumgarten and Arndt seemed to prove that the lesions of tuberculosis depended directly on the growth of the bacillus, and were in fact produced by it".

With regard to the question whether the tubercle bacilli belong to the class of genuine or of occasional parasites, Dr. Koch holds that they are "not occasional, but genuine parasites, and can proceed only from the animal organism", a fact which, he says, would greatly facilitate their destruction. He grounds his opinion upon the circumstance that in his cultures the bacilli would only grow at a temperature between 30° and 40° centigrade (that is, between 86° and 104° Fahrenheit), and such a temperature cannot be obtained continuously in our climates except in the animal body. He holds, moreover, that they may be introduced into the system by inhalation as well as by inoculation, and thinks it probable that they often enter in the former way, judging from the fact that phthisis usually commences in the lungs. The principal source from which the bacilli are derived is, in his opinion, the expectorations of phthisical patients, which are known to be capable of transmitting the disease to the lower animals by inoculation, and whose particles, when dried, may be wafted about by the air.

Another source, according to him, is the milk and flesh of cows and other animals affected with tuberculosis. Dr. Koch believes that a knowledge of these facts will be of the greatest benefit in the prevention of consumptive disease. "In future", he says, "in the war against this frightful scourge of the human race, we shall have to do no longer with an undefined something, but with an intelligible parasite, whose life's conditions are for the most part known, and can be yet more fully investigated". Efforts to destroy the parasite should, in his view, be combined with the no less important measures needed for enabling the human constitution to resist its attacks. Strong people, who live a healthy life and are much in the open air, never, or very rarely, get consumption, but only the weakly and delicate, who live and work indoors, or those hereditarily predisposed; and if a strenuous endeavour were made to raise greatly the physical powers and bodily development of the community, and at the same time, as Dr. Koch recommends, if the expectorations of the phthisical were disinfected, and the milk and flesh of tubercular animals forbidden to be sold, this fearful disease could, he believes, to an immense extent, be prevented and rooted out from among us. Many high authorities, however, differ widely from Dr. Koch in regard to several of these views, and especially on the question whether or not phthisis is often due to contagion. Thus Dr. Andrew, in one of his Lumleian lectures on "The *Ætiology of Phthisis*" (published in the *Lancet* of May 10th, 1884), holds that the disease is undoubtedly transmissible by inoculation to the lower animals, and also that its true cause is the bacillus, while the other reputed causes act only as predisposing influences; but he infers, from a study of clinical facts and from common medical experience as to the origin of consumption, that the bacillus is an occasional, not a genuine parasite, and in the great majority of cases comes in from the outer world instead of being derived by transmission from another person or animal. Hence he believes that contagion, though possible, very rarely occurs in practice, and has very little really to do with the production of phthisis. He contends that "although phthisis may be undoubtedly produced in many ways experimentally in animals, and also probably in man, there is not sufficient evidence to prove that its prevalence is materially affected by direct contagion". After summing up his views on the subject he says "From these I may be allowed to make one short practical deduction—namely, that the prevention of phthisis, like that of ague, is to be attained by sanitary works, especially by improved ventilation and drainage, and not by isolation." How different would human life be if so afflicting and widely spread a malady could be effectually controlled and prevented by a clear knowledge of its cause!*

* The treatment which holds out most hope of a cure in this very fatal disease is considered by many to be a residence in certain high or alpine districts, where there is an *immunity from consumption*, or, in other words, where tuberculosis never or

The germ theory not only explains, as I have endeavored above to describe, the existing facts of infection, but also enables us to understand how the infectious disorders may probably at first have arisen in past ages. If infectious diseases are always accompanied

very rarely occurs either among the people who live there or in the lower animals. That there are such districts is, they maintain, a fact established by a large amount of evidence. Sir Thomas Watson, in his "Lectures on the Principles and Practice of Medicine" (5th ed., 1871), quotes a passage from the *Westminster Review*, in which it is stated that Dr. Schleissner, who was sent some years ago by the Danish Government to investigate the sanitary condition of Iceland, ascertained that in Iceland "scrofula and consumption are unknown". "This statement" says Sir Thomas Watson, "the accuracy of which had been called in question, has very recently been confirmed by unimpeachable testimony, zealously collected and made public by Dr. Learfd. In a letter written by him upon the subject, Dr. Hjaltelin, a distinguished physician residing at Reykjavik, declares that, during a period of fifteen years, he has had more than thirty thousand patients, and has made numerous autopsies, yet not a single case of tubercle of the lungs or of indigenous consumption has he met with. He adds the corroborative testimony of Dr. Scaptason, the oldest and most experienced physician in Iceland, who says, 'During my thirty-two years' practice in this country, I have not seen a single case of phthisis tuberculosa. I have seen a great many cases of other diseases of the lungs, but phthisis tuberculosa never. In all the autopsies I have made, I have never observed the least trace of tubercle in the lungs.'" A similar immunity from consumption, according to several observers, is found in certain elevated regions among high mountain ranges, such as the Swiss Alps; and it is asserted that in districts enjoying this immunity, not only are the inhabitants free from tuberculosis, but the disease is often arrested, and even radically cured in patients who resort thither for treatment. Professor G. Sée, in his lately published work on "Bacillary Phthisis" ("La Phthisie Bacillaire," Paris, 1884), ascribes the beneficial effects of the air of lofty mountains to the fact that it kills or checks the increase of the bacillus, which he regards as the true cause of consumption. Like many other plants, the bacillus cannot live in an Alpine climate. M. Sée holds "that phthisis is uniform in its nature, that it is parasitic, and that the treatment by climate should have for its object either to destroy the bacillus or to prevent the parasite from developing itself," and multiplying in the tissues. He says that, as shown by the researches of M. Pasteur and others, "at a height above 800 mètres (about 2,600 feet) microphytic life is compromised. But the most formal proofs of the incompatibility of these altitudes with the life of the microbe have been furnished by Miquel and Freudenstein; at 1,800 mètres (about 5,900 feet), no more parasites. How or why the microbes disappear matters little; it is a fact, and it is to this incorruptible quality of the atmosphere that high climates owe their anti-bacillary or prophylactic power." Whether it be from the cold or the large quantity of ozone contained in the air, "the tubercular microbe is unable to live in these conditions," and hence M. Sée concludes that "mountain climates must now enter into the warfare of man against the microphytes which endanger our race." The most surprising statements on this subject, however, are those lately made by Dr. Gauster, chief physician to the State Railways Administration in Vienna, in a series of articles commencing April 8th, 1884, in the *Wiener Medizinische Zeitung*, on "the Influence of a High Climate on Tuberculosis." Dr. Gauster affirms that among the Alps there are districts, having a peculiar soil and a height not below 730 mètres (about 2,400 feet), which confer a complete immunity from consumption, the disease never occurring there either in men or animals; while in other districts, though at a much greater height, there is no such immunity. "Immunity from tuberculosis," he says, "is only to be found in regions where, at a height of more than 730 mètres, the soil is composed of the oldest rocks, as granite, gneiss, and crystalline schist formations, and the quantity of ozone in the air is constantly high." He says that the existence of immunity districts, and their wonderfully beneficial effects on imported cases of consumption, especially in the early stages of the disease, have for many years been known. An experience of fifteen years has convinced Dr. Gauster himself that, in patients who reside for some months in these districts, changes occur in the diseased lungs by which the morbid products are gradually eliminated from the body. "The results of these processes," he says, "are, in all the slighter cases, and in most cases of medium degree, a cure; but in the majority of advanced cases, a hastening of the fatal issue." He maintains, therefore, that "tuberculosis in certain stages is curable in the high climate." Dr. Gauster's assertions are so startling, and so opposed to ordinary medical experience

by parasitic organisms, which are either their producers or their carriers, it is evident that the question how the diseases arose depends mainly on the question as to the origin of the little parasites. Whence are these little organisms derived, and how did they become parasitic on the animal body? Their origin must obviously have taken place in one of two ways. Either they arose by what is called "spontaneous generation" from lifeless matter, or else they descended in the usual way from other living organisms. Now the former mode of origin is entirely denied by M. Pasteur, Professor Tyndall, Dr. Burdon Sanderson, and others, who contend, not that spontaneous generation never occurs in nature, but that it never occurs in this class of living beings. Thus M. Pasteur says, in a lecture delivered before the Chemical Society of Paris in 1861: "You will observe I do not pretend to show that spontaneous generation never exists. In subjects of this kind one cannot prove a negative. But I do pretend to demonstrate rigorously that in all the experiments where the existence of spontaneous generation has been believed to be recognised among those beings of the lowest class, to which the controversy is now-a-days confined, the observer has been the victim of illusions or causes of error which he has not perceived or has not known how to avoid". In a report made in 1871 on the origin and distribution of microzymes (bacteria), Dr. Burdon Sanderson observes: "I shall be able to prove in the most decisive manner that, as regards the animal tissues and liquids, and the liquids which will be used as tests for the presence of microzyme germs, no spontaneous evolution of any organic form ever takes place; but it will be quite unnecessary either to deny or assert its possibility under other and different circumstances". Dr. William Roberts regards the doctrine of spontaneous generation or "abiogenesis" as in itself a perfectly legitimate supposition, but holds that the bacteria, humble though they be, are far too highly organised for such a mode of origin, which, moreover, could not be expected to

as to the curability of consumption, that they would need ample corroborative evidence for their support; and it is urged, in opposition to the above statements, that the immunity from consumption of certain Alpine districts is mainly due to their seclusion and remoteness, to the thinness of the population, and the absence of a previous case to produce the disease by infection. It is further alleged that of late years, since consumptive patients have begun to resort in large numbers to these mountainous regions for treatment, cases of the disease have also occurred among the natives. Even, however, if the immunity were partial only and not complete, and if it were true that the high climate, though not incompatible with the existence of the bacillus, has yet a marked effect in checking its growth and its propagation from one individual to another, this would be a fact of immense importance; for a residence in those districts would not only give the consumptive patient a better chance of recovery or of prolonging life, but would most effectually prevent the spread of the malady to other persons. Indeed, if Dr. Koch's opinion be correct, that the tubercle bacilli are "not occasional but genuine parasites and can proceed only from the animal organism", and that, therefore, consumption never arises but from infection, we might hope that by this and other measures the disease might possibly in time be extirpated, just as another terrible infectious disorder, leprosy, which was once common, has been entirely extinguished in England and most other countries of Europe.

occur among plants subsisting on the products of putrefaction. "Assuming", he says, "that the occurrence of abiogenesis at some time in the past history of the globe is a necessary postulate in science, I see nothing unscientific—looking to the law of continuity in the operations of nature—in the supposition that it *may* be occurring at the present day somewhere or other on the earth's surface, but certainly not in decomposing liquids".

So far as we have reason to believe, therefore, the bacteria are never generated spontaneously or *de novo*, but always descend, like the higher plants and animals, from other living beings. We have seen, however, that what is called "spontaneous generation", or "a *de novo* origin", not unfrequently takes place in some infectious diseases, and this shows that these expressions are ambiguous, and are used in a different sense when applied to a minute living organism and when applied to an infectious disease. In the former case they mean that the organism is evolved out of lifeless matter; but when an infectious disease is said to be generated spontaneously, or *de novo*, the meaning is that it does not arise by infection from another disease like itself—that it is due to some other cause than infection. As regards the little organisms found in the disease, the phrase means, not that they arose from lifeless matter, but that they came in from the outer world, and were not derived by transmission from one animal to another. A spontaneous origin of this kind is not uncommon at present among some infectious disorders, and must at one time have occurred in all, for, as Dr. Murchison observes, "in the first sufferer from a contagious disease its origin must have been *de novo*". In inquiring into the origin of the contagia and of contagious diseases, it is their spontaneous or *de novo* origin in this sense of the terms, that has to be considered. The view now generally entertained on this subject by high authorities is that all the different contagia have probably descended, at periods more or less remote, from the bacteria, and have been gradually brought to their present type, in the lapse of ages, by means of variation, inheritance, natural selection, and the other laws of evolution so admirably explained by Mr. Darwin in his account of the origin of species. The bacteria are well known to be eminently *modifiable*, and may undergo surprising changes in form and properties from their physical environment, or by passing from one species of animal into another. "If contagia are organisms", says Dr. William Roberts, "they must necessarily have the fundamental tendencies and attributes of all organised beings. Among the most important of these attributes is the capacity for 'variation' or 'sporting'". In like manner Dr. Wilks observes, in his Address as President of the Pathological Section at the International Medical Congress in 1881, that, if specific diseases be due to a living contagium, "it must be subject to the same laws as other organic matter; and if the doctrine of evolution be true, it must have numerous relations with families of its own kind, and

perhaps with others which are now obsolete". Some of the contagia, such as those of small-pox and scarlet fever, are probably derived from variations in the bacteria which took place only in remote ages, so that now-a-days the diseases are never found to arise spontaneously or *de novo*. Others, as those of erysipelas and pyæmia, are apparently due to variations occurring more or less frequently at the present day, and hence a *de novo* origin is common in these diseases; while in some other affections, such as relapsing fever, diphtheria, and (if Dr. Murchison's view be correct) even typhoid fever, the variations may perhaps occur at rare intervals, and under unknown or obscure conditions, so that, as many believe, these diseases may now and then arise *de novo*. It would follow from this that the first class of little parasites might be totally extirpated, and the last confined within narrow limits; and we have seen how greatly Lister's method has contributed to prevent the entrance into the body and fatal effects of the minute organisms that give rise to septic diseases.

Having examined the question whether infectious diseases can arise spontaneously, and whether the germ theory is the true explanation of the facts of infection, we now come to the practical inquiry as to the means best adapted for preventing and eradicating these diseases. The immense importance of this subject will be seen if we consider the fearful amount of death and suffering which infectious disorders are causing year after year in our midst. Mr. Simon, whose invaluable Reports as Medical Officer of the Privy Council and Local Government Board, and therefore at the head of the sanitary service, have done so much for the prevention of disease in England, says: "Looking at the ravages which are every day suffered from familiar diseases of the zymotic class, such as typhoid fever, and typhus, and small-pox, and scarlatina, and measles, and hooping-cough; and adding to these the less constant, but occasionally terrible, destructiveness of diphtheria and of cholera; adding further the consequences of venereal diseases; adding again those serious traumatic infections which make the chief common danger of surgical operations and injuries; everyone can see that the field of zymotic pathology is of enormous extent and incalculable importance". The number of *deaths* produced by infectious diseases appears from the Reports of the Registrar-General, which, since 1838, give a tabular statement of the causes of all the deaths occurring throughout the country. Thus if we take the five years from 1876 to 1880 (the last year for which the annual report has as yet been published) we find that during the whole period there were in England and Wales 9,726 deaths from small-pox; 48,294 deaths from measles; 85,208 from scarlet fever; 66,112 from hooping-cough; 4,458 from typhus; 34,651 from typhoid or enteric fever; and 15,243 from diphtheria. This would give as a yearly average of the deaths from each of these seven diseases, about 2,000 deaths annually from small-pox; from measles, 9,500; from scarlet fever 17,000;

from hooping-cough, 13,000; from typhus, 1,000; from typhoid fever, 7,000; and from diphtheria, 3,000 annual deaths. In addition to the foregoing there were from the other contagious disorders included in the Registrar-General's reports, 10,268 deaths from erysipelas; from puerperal fever, 7,728; from syphilis, 10,615; from hydrophobia, 246; and from glanders, 24 deaths. That is to say, about 2,000 persons died on an average each year from erysipelas; 1,500 from puerperal fever; 2,000 from syphilis; 50 from hydrophobia; and 5 from glanders. Taking the eleven years from 1870 to 1880, it will be seen that the aggregate number of deaths from the seven infectious fevers mentioned above, amounted to 639,289, or about 58,000 annually, which is rather more than one-ninth of the total number of deaths from all causes during the same period. Hooping-cough, measles, and scarlet-fever, though liable to occur at all ages, are mainly diseases of infancy and childhood—hooping-cough, according to the eminent authority on vital statistics, the late Dr. William Farr, being most fatal in the first, measles in the second, and scarlet-fever in the third and fourth years. Diphtheria also is most common in children, for one-half of those who die of it are under five years, while in scarlet-fever two-thirds of the deaths are below that age. Typhus and typhoid fever, on the other hand, are chiefly destructive to adults. In Ireland, where typhus is far more prevalent than in this country, no fewer than 222,029 persons, in the period from 1841 to 1851, died of typhus and typhoid fever.

The number of *cases* or *attacks* is not accurately known, for as yet, unfortunately, no provision has been made for registering all cases of infectious disease; but we can form some idea of their amount by considering the average mortality of each disease, that is, the proportion of deaths that usually occur in a given number of cases. Small-pox, that hideous and disfiguring malady, is the most fatal of the contagious fevers, the deaths being estimated by Mr. Marson at about one-third, and by Dr. Seaton at rarely less than 20 per cent., and often 30 and 40 per cent. of the attacks. When the disease occurs in a person who has been vaccinated, it is usually, though not always, of a modified or milder form, and Dr. Seaton observes that the mortality of small-pox after vaccination "is rarely known to exceed 7 per cent., and is more frequently 3, 4, and 5 per cent." In typhus and typhoid fever, according to Dr. Buchanan and Dr. Murchison, about one patient in ten dies, if all ages are taken together, but in adults as many as one in five. Diphtheria (a contagious sore-throat deriving its name from a whitish sloughing membrane or skin that forms in the throat and often spreads to the windpipe) is fatal to one in seven, or even, according to Dr. Aitken, to one third of those attacked by it; while the mortality of scarlet fever is the most variable of all, ranging from one in twenty or thirty in mild epidemics to one in five or six in severe ones, and on an average it is reckoned at about one in twelve. If we take these figures, we may perhaps

infer that there occur in England and Wales on an average of years about 12,000 or 15,000 cases annually of small-pox; 10,000 of typhus; 70,000 of typhoid or enteric fever; 15,000 of diphtheria; and 200,000 cases of scarlet fever. Dr. Murchison, judging by the deaths from scarlet fever, estimates that considerably less than half the children born contract that disease (in 1880 the total number of births registered was 881,643). Hooping-cough and measles, though the rate of mortality in them is comparatively low, are so extremely contagious that few children escape them, and hence more than half-a-million cases of hooping-cough, and as many of measles, must annually occur on an average in this country.

In spite of the dreadful ravages committed by infectious diseases, there are no maladies for whose prevention so little has yet been done. Indeed, till very recently, they were regarded almost as necessary and unavoidable evils, and except in the case of vaccination for small-pox and in some other instances, few energetic steps were taken to combat any of the infections current among us, or to prevent their diffusion. "As to contagions already current in the country", says Mr. Simon in his report to the Privy Council for 1865, "practically any diseased person scatters his infection broadcast almost where he will—typhus or scarlatina, typhoid or small-pox, or diphtheria". In another impressive passage in his Report to the Local Government Board for 1874, Mr. Simon says: "Among the causes which injuriously affect the Public Health of England, considered as a total, certain operate only on particular districts; while others, though no doubt in widely different degrees, appear to be of general, perhaps nearly universal operation. Foremost in the latter class, and constituting therefore in my opinion objects which claim earliest attention in the sanitary government of England, two gigantic evils stand conspicuous;—first, the omission (whether through neglect or through want of skill) to make due removal of refuse-matters, solid and liquid, from inhabited places; and secondly, the license which is permitted to cases of dangerous infectious disease to scatter abroad the seeds of their infection". Much has been done of late years, especially in large towns, for the better removal of refuse matters by improvements in the sewerage and in the water supply, and the next great sanitary effort will probably be for the prevention and extinction of infectious diseases. There are many sanitary reforms which can be carried out by the authorities with little aid, except of a pecuniary kind, from the public; but the abolition of infectious disease can only be accomplished by the cordial and intelligent co-operation of the whole community; and hence the urgent need for an open discussion of the subject, so that all may understand it and agree as to the means that should be adopted for the purpose.

As the contagious fevers have no other source than contagion, the requirements or indications for their prevention can be readily understood, and the only difficulty is to know by what practical

and feasible measures these requirements can best be fulfilled. We have already seen that a contagious fever can be communicated in three ways; either by the *patient* himself, both during his illness and convalescence, or by the *persons* or *objects* which have become contaminated by being in his neighbourhood. The patient communicates infection by means of little particles, invisible to the naked eye, which are exhaled in vast quantities from his body, and which according to the modern view are excessively minute living organisms, or microbes; the tainted objects act simply as carriers of these particles; while the tainted or suspected persons may either act as carriers, or may, for aught we know, be really themselves patients, and already suffering from the disease in its latent or incubative stage. For the purpose of prevention, therefore, all that is needed is that no one who has not previously had the disease should *come near* any patient or suspected person till the period of danger is past, and that all tainted objects should be thoroughly disinfected; in other words, *isolation* and *disinfection* are the essential requisites for the prevention of the infectious fevers. "The isolation of healthy persons from those affected with the disease, and from those who have intercourse with such patients", says Dr. Aitken, in speaking of scarlet fever, "is essential, and is the only rule that promises any good results". Mr. Simon, also, speaking of scarlet fever, observes that "at present we have not any other known power of dealing preventively with the disease than such as consists in intercepting all contagious communication between the infected and the non-infected part of the population. Thoroughly to isolate the sick from intercourse with susceptible persons, and thoroughly to trap and exterminate all contagium which the bodies of the sick evolve, are the preventive feats which have to be accomplished". A complete system of prevention for the infectious fevers would thus include, in the first place, the isolation of the patients during their illness and convalescence; secondly, the isolation (often called *quarantine*) of suspected persons till the period of incubation is over, and it can be seen whether or not they are infected with the disease; and, thirdly, the disinfection of clothing, bedding, furniture, and other contaminated articles. A fourth indispensable requisite is the immediate *notification* to the sanitary authorities of every case that occurs, so that means may be taken as speedily as possible to aid the sufferers in their difficulties, and to prevent the extension of the disease.

These requirements for limiting the spread of infection are included by Sir James Simpson—who was the first, in his "Proposal to Stamp out Small-pox and other Contagious Diseases" (1868), to urge the adoption of measures, not merely for the partial prevention, but for the complete and speedy extinction of the contagious fevers by a great social effort—in the following rules, which he calls the "Regulations for Stamping Out". His remarks have special reference to small-pox, but similar measures, as he afterwards

states, are applicable, and will, he believes, sooner or later be adopted for the prevention and extinction of all the infectious fevers.

The regulations which he proposes are:—"1. The earliest possible notification of the disease after it has once broken out upon any individual or individuals. 2. The seclusion at home or in hospital of those affected during the whole progress of the disease, as well as during the convalescence from it, or until all power of infecting others is past. 3. The surrounding of the sick with nurses and attendants who are themselves non-conductors, or incapable of being affected, inasmuch as they are known to be protected against the disease by having already passed through cow-pox or small-pox. 4. The due purification, during and after the disease, by water, chlorine, carbolic acid, sulphurous acid, etc., of the rooms, beds, clothes, etc., used by the sick and their attendants, and the disinfection of their own persons."

The late president of the College of Physicians, Sir Thomas Watson, in his article in the *Nineteenth Century* on "The Abolition of Zymotic Disease" (1877) earnestly urges the same views, and thus enumerates the measures which he regards as necessary for prevention: "To this end", he says, "the requisites are, first, the unfailing and immediate notification to the proper authorities of the occurrence of every case. Second, the instant isolation of the sick person. Third, the thorough disinfection of his body, clothes, furniture, and place of isolation. Fourth, vigilant and effectual measures to prevent the importation of his disease from abroad, and to strangle it should it by mischance return."

It will be observed that the above proposals omit one of the four measures which have been already adverted to as needed to constitute a complete system of prevention against the infectious fevers, namely, isolation of the patients, isolation of suspected persons, disinfection, and notification. The measure omitted is the isolation of suspected persons, or *quarantine*, as it is often called, a word used to signify the seclusion of persons apparently healthy, but who have had intercourse with patients, till the period of incubation of the disease is past, and it can be known whether or not they are infected. This has always been felt to be the most vexatious and harassing of the preventive regulations, and, therefore, it may be dispensed with wherever there is reason to believe, either that the other means would without it be found sufficient, or that society would not willingly consent to its adoption. Still, such a measure is often of the utmost value, and is, indeed, indispensable to success when the disease to be combated is of a particularly infectious or very fatal nature, so that the strongest means are required to suppress it. All the fresh cases, we must bear in mind, arise among the persons who have been exposed to contagion, and in this way, by isolating the latter for a few days, we obtain an immense power of preventing the disease. If, on the other hand, the suspected persons are left at large, those of them who are incubating the disease will sicken in the midst of other healthy people, to whom they

may probably communicate infection before there is time to isolate them. For these reasons the isolation of suspected individuals, or quarantine, has been very frequently resorted to, though hitherto almost solely as a means of defence against *foreign* infectious diseases, such as the plague, yellow fever, and cholera. It is by strict quarantine regulations, as well as improvements in hygiene, that the plague has been expelled from Europe, and that New York and some other American seaports have been long preserved from the inroads of yellow fever; and our exemption of late years and until recently from that fearful scourge, Asiatic cholera, is largely owing to the system of quarantine which has been established against it in the Red Sea and on the frontiers of Russia, the routes by which cholera entered in its former visits. The isolation of persons who have been exposed to contagion is commonly effected in one of two ways; either by their seclusion in separate buildings, for a number of days not exceeding the usual period of incubation of the disease; or else by surrounding the infected places with what is called a *sanitary cordon*, or a line which no one is allowed to pass without permission of the authorities, and by which the sick and those having intercourse with them are kept apart from the rest of the community. In several towns in the north of England the local authorities have very recently applied for and received from Parliament powers to erect shelter-houses, in which the healthy members of infected families can be received while their homes are being disinfected, and also to impose certain restrictions on the residents in houses in which infectious disease has broken out; compensation being given for any loss that may be sustained by compliance with the sanitary regulations.

But by far the most important and essential of the preventive measures is the isolation of the *patients themselves*, and the main difficulty in the whole subject is to know in what manner this can best be effected. Sir James Simpson, as we have seen, proposes that the patient should be secluded "at home or in hospital"; but he, and all others who have carefully considered the facts, point out the utter impossibility of effectually isolating a contagious fever in the homes of the poor, on account of the overcrowding and the want of a separate room or of any adequate means for preventing frequent intercourse between the patient and his friends both during his illness and his convalescence. Mr. Simon says, with reference to the overcrowding of laborers' cottages: "Again and again, in phrases so uniform that they seem stereotyped, reporters on the spread of epidemic disease in rural districts have insisted on the extreme importance of that overcrowding as an influence which renders it a quite hopeless task to attempt the limiting of any infection which is introduced". Dr. Aitken observes also, in treating of scarlet fever: "When, however, we look abroad at the actual condition of the people among whom the disease works its ravages, we see at once that, with regard to very many of them, and especially with regard to the very poor in towns, isolation and dis-

infection are no more than idle words". To avoid the risk of transmitting the disease, those who have any intercourse with the patient should as rarely as possible, and only after disinfection, come in contact with healthy susceptible persons; but how totally this is disregarded in numberless instances may be gathered from the following account, quoted in Dr. Aitken's work from a communication by Professor Bell to the *Lancet*, of a case of severe scarlet fever which was seen in a small crowded room. Upon inquiry Dr. Bell found the following facts: "The father had charge of an extensive society's bread-shop; the mother was a washerwoman, taking clothes to her home to wash; the eldest girl attended throughout the day the children of a lady's family, and came home to sleep at night; the other children attended, some an infant-school, some a large mixed school, where hundreds of other children met. The youngest played with young children in a house on the other side of the passage." How can we hope, in such circumstances, to prevent the spread of a dangerous infectious disease?

Even in the houses of the rich, where all the advantages of a separate room and trained nurse, with disinfectants and other necessary appliances, can be had, the isolation of an infectious fever is by no means easy, and very frequently fails in spite of the most conscientious efforts. There is a wide difference in the infectiousness of different diseases, and some of them are much harder to isolate than others. Thus Dr. Jones Gee observes, in his article on Scarlet Fever in "Reynolds' System of Medicine": "In degree of contagiousness scarlet fever takes its place between measles and hooping-cough above, and typhus fever below, diphtheria being very far below". Measles and hooping-cough are so extremely contagious, and so difficult to isolate, that it seems needless for the present to think of their extinction, and we should rather at first confine our efforts to the other infectious diseases. Of these, small-pox and typhus are much less common in the rich than the poor; indeed, typhus, though very dangerous, and often fatal, to the medical men and nurses who attend it, is usually found only among the poorest classes of society; while enteric or typhoid fever, as previously remarked, is propagated mainly by the bowel discharges of the sick, and needs, as its essential preventive, the thorough disinfection or destruction of these discharges immediately on their issue from the body. The diseases which most frequently require to be isolated in the houses of the rich, therefore, if we omit measles and hooping-cough, are scarlet fever and the much rarer affection, diphtheria; and to show how little reliance can be placed on the usual preventive measures in so highly infectious a disease as scarlet fever, I may again quote from Dr. Aitken's work the following remarks by Dr. Davies, the medical officer of health for Bristol. In writing of an epidemic of scarlet fever at Bristol in 1875, Dr. Davies asks the question: "Are we doing any good with our present preventive means?" and observes: "I feel certain that we increase the anxiety of the domestic and social troubles of the

public by our preventive measures; and I feel doubtful of the answer to the former question". "I have never", he continues, "used disinfectants so extensively as during the present epidemic; and yet our failure is complete. The doubts I have expressed do not in any way extend to typhus and enteric fever, small-pox, and Asiatic cholera." From the remarkable tenacity of the virus of scarlet fever, disinfection is more difficult in this disease than in measles or typhus, and the power to infect continues longer, lasting altogether during illness and convalescence for two months or more; and it is evident that the long presence of a fever in an ordinary dwelling-house, full of susceptible persons, not only gives great facilities for contagious intercourse, but must so thoroughly load the bedding, walls, and furniture with virulent particles as to render much more difficult the process of disinfection.

The above facts show clearly that the real cause of the enormous prevalence and fatality of the infectious fevers is that they are treated *at home*, where they cannot, in the great majority of cases, be properly isolated; and hence the best authorities have of late years come more and more decidedly to the conviction that these diseases ought not to be treated at home, but in *hospitals* set apart for the purpose, and so arranged that each different kind of disease may be isolated in a separate building or a separate ward. The hospital treatment of the infectious fevers seems to me one of the most immense improvements ever introduced in medicine, and the means which, in combination with others, will lead in time to the complete and final extinction of all these disorders. In an infectious disease the objects of medical treatment are not only to cure the malady, but also to prevent its extension to other persons; and the latter aim can only be secured, in the case of the contagious fevers, by treating them in hospitals where their extension can be effectually prevented. A large number of infectious hospitals have lately been provided by the local authorities in the towns and villages throughout the country, partly by erecting new buildings, and partly by adapting private houses and cottages for the purpose, at the earnest instigation of the Local Government Board and their medical staff. "For a long time past", says the late Dr. Seaton, in his report for 1876, "the Board have been strenuously urging on local authorities the provision of such hospitals". Another indispensable means of prevention consists in hospitals or homes in the country air where *convalescents* from the contagious fevers can be isolated till their power of infecting is past; and a few institutions of the kind have recently been provided, in great part through the admirable efforts of Miss Mary Wardell and Mrs. Gladstone, though hitherto chiefly by voluntary contributions, and not by public funds.

The immense utility of fever hospitals and convalescent homes as a means for stamping out zymotic disease, will be seen if we consider for a moment their advantages, not only to the public, but also to the infected families and to the patients themselves.

To the public the treatment in hospital affords a complete protection by at once removing the patient, the centre and source of contagion, from the midst of susceptible people, and placing him in circumstances, where his disease cannot extend. In a well-regulated hospital, where the nurses and other attendants are carefully chosen as having had the disease, and do not come in contact with the public outside except on rare occasions, and after disinfection, there is little likelihood that any fresh case should arise; and even if it did, it would be promptly isolated, so that the mischief would spread no further. Thus Dr. Broadbent, the senior physician of the London Fever Hospital, observed lately, at a drawing-room meeting at Mrs. Gladstone's, that "from the moment when a scarlet-fever patient was in an ambulance or in a convalescent home, all danger to the public ceased". In like manner Dr. Buchanan, the present medical officer of the Local Government Board, says: "In regard to some infections, notably those of scarlatina and diphtheria, there are no means at all to be compared with isolation in hospital for preventing the spread of a limited number of cases into a formidable epidemic". "There are", he says again, "four infectious diseases—small-pox, scarlatina, diphtheria, and continued fever—which more particularly require to be treated in hospital, when they attack persons who cannot be properly isolated in their own houses"; and he adds that "small-pox, as well as other infections, is capable of being wonderfully limited by isolation in hospital". Particular care should be taken in any outbreak of disease to isolate as quickly and effectually as possible the *first cases*; for a fever is in some respects like a fire, which at first can be readily extinguished; but afterwards when it has had time to spread and gather strength, becomes difficult if not impossible to control. In a Memorandum issued a few years ago by the Local Government Board, it is pointed out that the separation of the sick from the healthy "is comparatively easy, if means to attain it are taken early, while cases of the disease are very few; but any interval of delay allows the cases to multiply, and perhaps at last to become so numerous that endeavours to isolate them cannot succeed". If all the existing cases of an infectious fever, and especially the first cases, were promptly removed to hospital, and the convalescents afterwards transferred to suitable homes, epidemics could be arrested at their origin, and the number of patients needing isolation would soon be surprisingly reduced. The only other sources of contagion which would then remain to be dealt with are the persons and objects contaminated by the patients *before* their removal to hospital; and if the suspected persons were secluded for a few days during the term of incubation, and the tainted objects thoroughly disinfected, it is not too much to assert that the disease might in a short space of time be radically and completely extinguished.

To show how rapidly a contagious fever can be extirpated when adequate means are employed for the purpose, Sir James Simpson

points to the instructive example afforded by the *cattle plague*, a terrible disease of horned cattle, which has its home in Siberia, and was imported into England from the Continent in 1865. This is the most fatal and most highly infectious of all the spreading disorders of the domestic animals, the mortality being estimated by Professor Fleming at about 90 or 95 per cent. of the attacks, and during the two years which elapsed before it was subdued in this country it destroyed nearly half-a-million of cattle. At first the disease was allowed to gain ground through division of opinions; but when a stringent law for its prevention was passed by Parliament and put in force, it immediately began to decline, and was soon entirely stamped out. The measures adopted were of such a nature as to deal effectually with all the sources of contagion, and consisted in the compulsory slaughter, with compensation, of the sick and also of the suspected animals, the burial of the diseased bodies, and the disinfection of tainted objects; due notification of every case to the authorities being likewise made compulsory. These are the means which have repeatedly been employed on the Continent against inroads of the cattle plague, and invariably with success. "Whatever be the place into which it penetrates", says M. Léon Colin, "the cattle plague can be arrested, for we have always the same resource, a resource absolute and radical, for suppressing the contagion, by causing to disappear the sick, the animals which they have contaminated, and the objects which they have soiled". Now, Sir James Simpson holds that small-pox and other infectious fevers in man might be just as successfully eradicated as cattle plague, since we possess in *isolation* strictly carried out, a means no less powerful for preventing them. "We could, in my opinion", he says, "as surely and as swiftly stamp out small-pox as rinderpest (cattle plague) has been stamped out." After proposing his preventive regulations, he says: "The measures which I have suggested would probably, in my opinion, stamp out small-pox in Great Britain within six months or a year, provided they were carried out as faithfully and universally as the Legislature can command". It seems to me that these views are in principle undeniably true, and that if society would only consent to the effectual isolation, or, in other words, to the isolation in hospital of all cases of infectious fever, whether in rich or poor, these dreadful disorders, which have lasted from time immemorial and destroyed millions of human lives, could in a very few years be completely rooted out and banished from among us.

The objection which has been so often urged against fever hospitals, that they separate a patient from his friends and relatives, seems to be really an objection not to hospitals merely, but to *isolation* itself in any form. Even when the patient is treated at home he must, if we would prevent infection, be kept entirely apart from his friends and relatives. In both cases isolation is equally essential, and is the real difficulty that has to be met and surmounted before we can hope for success. Doubtless it is a

most painful necessity to have to separate from a beloved relative—from a child, or parent, or husband, or wife when they are stricken down by an infectious fever; but if the separation is indispensably needed for the extinction of these dangerous maladies, and for the good of the whole human race, ought we not willingly to consent to it? It appears to me, moreover, that fever hospitals are in reality an inestimable boon to the family and to the patient, no less than to society at large. They prevent, in numberless instances, the spread of disease to other members of a household, and they save the family from all the troubles and difficulties attendant on isolation at home, which are particularly harassing at such a time of anxiety and distress. There is another danger connected with the home treatment of contagious fevers which should be mentioned, and of which the public is not sufficiently aware; namely, that if a woman who is pregnant or recently delivered contracts one of these diseases, and especially scarlet fever, it is almost sure to prove fatal. "Fever during the pregnancy", says Dr. Aitken, "most certainly ends in abortion and death. If the woman be recently delivered, the disease will be of the most malignant type and almost always fatal". "If scarlet fever can be prevented", he says also, "the number of puerperal fever cases would be diminished one-half; and every possible step ought to be taken to remove the pregnant female alike from the influence of scarlet fever and from erysipelas". Besides these great advantages of hospitals, they enable the patient in very many cases to have better food, nursing, and other accommodations than he could find at home, while the richer classes may, if they please, be treated in private hospitals or in separate wards or rooms to which admission is obtained by payment. Conveyance to hospitals, it may also be remarked, can be readily effected by means of ambulance carriages, provided with a movable bed, which is taken into the sick-room and into the ward, so as to avoid, as far as possible, any risk or inconvenience to the patient. The benefit which a patient derives from a *convalescent home* are obvious, for unless he has access to an institution of the kind, he cannot for some time after his recovery go anywhere to seek a change of air, and to recruit his strength without endangering the lives of others. Indeed, the Public Health Act of 1875 expressly forbids any person suffering from a dangerous contagious disease to expose himself "without proper precautions against spreading the disorder, in any street, public place, or conveyance", so that it is difficult to see how a convalescent patient who is still capable of infecting others, can travel, change his residence, or even leave the house without infringing the law and rendering himself liable to a penalty.

A question of the utmost importance is, whether the isolation of persons suffering from a contagious fever should be made *compulsory* and enforced by the State, and both Sir James Simpson and Sir Thomas Watson plead earnestly in favor of a measure for this

purpose. "If", says the former, "by a law which no one thinks harsh or severe, lunatics are prevented from destroying the lives of their fellow-men, why should it be thought harsh or severe that people affected with small-pox should be prevented from dealing out destruction and death to all the susceptible with whom they happen to come into contact"? The force of this appeal will not be disputed, and it seems to me that a law making obligatory the isolation of all cases of infectious fever, whether in rich or poor, if it had the cordial approval and co-operation of society, would be incomparably the most effectual means that could be taken for the prevention of these diseases. Such a law would be no real infringement of liberty, for the principle of liberty, as Mr. Mill points out, requires only that acts which do not injure others should be left free. On the contrary, acts which injure others may rightly be controlled by the State, and surely there are no acts more highly injurious to others or more likely to be followed by disastrous consequences, than to communicate the seeds of a dangerous infectious disease. To extirpate these maladies, moreover, a most vigilant and united action on the part of the public and the local authorities is absolutely necessary, and this cannot be obtained without the aid of the law; indeed, without stringent laws to prevent them, the extinction of infectious fevers either in man or the domestic animals seems an utterly hopeless task.

Hence a large number of enactments have recently been made by Parliament for the prevention of infectious disease, and one of them deals expressly with the subject of isolating the patient. A clause in the Public Health Act of 1875 directs as follows: "Where any suitable hospital or place for the reception of the sick is provided within the district of a local authority, or within a convenient distance of such district, any person who is suffering from any dangerous infectious disorder, and is without proper lodging or accommodation, or lodged in a room occupied by more than one family, or is on board any ship or vessel, may, on a certificate signed by a legally qualified medical practitioner, and with the consent of the superintending body of such hospital or place, be removed, by order of any justice, to such hospital or place at the cost of the local authority; and any person so suffering, who is lodged in any common lodging-house, may, with the like consent, and on a like certificate, be so removed by order of the local authority". That is to say, the law permits the compulsory removal to hospital of any fever patient whom the medical practitioner may certify to be without proper lodging and accommodation. But the radical defect and injustice of this enactment seem to be, that it is a law for the *poor* only, and not for the rich; it permits the removal to hospital, and compulsory isolation, of the poor, but lays no similar obligation on the rich, although the complete isolation of a fever patient is quite as necessary among the latter, and is in very many cases inadequately carried out. To be just, the law should enforce isolation equally in all classes; and if

this cannot practically be done in any other way than by treatment in hospital, it seems in fairness to follow that such treatment should be impartially enjoined in all. Another defect in the enactment, which, as pointed out by Mr. Murdoch in his "Remarks on the Necessity for further Suppression of Infectious Disorders", has greatly diminished its efficacy, is that it imposes on the medical practitioner the difficult and unpleasant task of interpreting the phrase "without proper lodging and accommodation", and thus makes him the agent in compulsorily sending patients to hospital. The only law which, I venture to think, would be both just and effectual, is one making obligatory the isolation in hospital of all cases of certain specified diseases, whether in rich or poor. The diseases which should be included in the measure, and should always, unless for some special and urgent reason, be treated in hospital, are, I think, small-pox, typhus, scarlet fever, diphtheria, and perhaps also, under certain circumstances, typhoid or enteric fever; although the prevention of the last-named disorder requires rather that the discharges should be thoroughly disinfected, and that complete security should be given for this being done, than that the patient himself should be isolated. All cases of the foreign infectious diseases, such as yellow fever or the dreaded pestilence, Asiatic cholera, should also, as it seems to me, for the public safety, be treated in hospital. With regard to measles and hooping-cough, they are affections of a less dangerous nature, and moreover they are so extremely prevalent, so highly contagious, and so difficult to isolate, that it seems better to defer for a time any attempt to extinguish them by means of legal enactments, and they might continue, as at present, to be usually treated at home.

But, besides the isolation of the patients, the other leading measures of prevention should also, in the opinion of the highest medical authorities, be made compulsory: namely, the disinfection of tainted articles of clothing or furniture, the notification of all cases of infectious disease, and, in certain instances, the isolation of persons who have been exposed to contagion—or *quarantine*, as it is commonly called. It is often thought that quarantine is chiefly applicable to infected ships, or to a line of frontier between neighbouring countries; but one of its most important and valuable forms is the quarantine of *infected houses*; for the house on land is in many respects analogous to the ship at sea. Infection spreads most readily to persons who are in the same house, and especially in the same room, with the patient, and seems very seldom to be propagated directly from one house to another, since the virulent particles are quickly dispersed and rendered harmless by mixing with the outer air. Thus Dr. Buchanan says, in speaking of infectious hospitals: "As regards the distance which, on medical grounds, it is right to secure between adjacent inhabited houses and an infectious hospital, I know of no evidence as to what proximity, if any, can be a danger to persons not actually

under the same roof ; but there is abundant evidence to show that very short distances suffice to prevent direct infection ". This fact shows the great benefits which may be derived from a quarantine of infected houses ; for when a case of fever occurs in a dwelling-house, if the patient is removed to hospital, and if the other members of the household are isolated for a few days either at home or elsewhere, during the term of incubation and while the premises are being disinfected, the disorder may very often be prevented from spreading any further. These means would, I think, be specially valuable if applied to the *first cases* of disease appearing in a locality, when every possible care should be taken to guard against the sources of contagion, and at once to stamp out the malady at its commencement. As previously remarked, compulsory powers have lately been granted by Parliament to the local authorities in several towns in the North of England enabling them to order the quarantine of infected houses, which if combined with the removal of the patient to hospital, seems to me the most complete and effectual system that should be adopted for rapidly stamping out zymotic disease.

With regard to the *disinfection* of houses, furniture, or other articles, this should always, according to Mr. Simon, be done under the direction of the sanitary authority, who would ensure its proper performance, and at the same time relieve the public from a troublesome and expensive task. It should, he says, "be made a legal obligation, that every health authority of the country should have all disinfectant processes necessary for the protection of the public health done under direction of a skilled officer, and, as far as necessary, at a public establishment, and at the public cost". The means commonly employed for disinfecting purposes, it may, perhaps, here be remarked, are heat, free ventilation, and also certain chemical substances, such as carbolic acid or chloride of lime. Of these, the surest disinfectant is great heat, whether by fire or boiling water, or by the hot air of an oven, as it at once kills the virulent germs. The most generally useful agent, however, is free ventilation and a copious supply of fresh air, which dilutes and disperses the poisonous exhalations, so that they have no longer the power to infect. As observed in a memorandum issued by the Privy Council: "The great natural disinfectant is fresh air abundantly and uninterruptedly supplied". In disinfecting a room which has been occupied by a fever patient, the usual plan is to fill it, all apertures being closed, with chlorine gas, or with the fumes of burning sulphur, and after it has been thoroughly fumigated, to throw open doors and windows, and allow the freest ventilation for several days; then to whitewash the walls and ceiling, and, at the end of a week, the room may again be safely inhabited. In Asiatic cholera and typhoid fever the virus is contained chiefly in the bowel discharges of the sick, and these should always be thoroughly disinfected immediately on their issue from the body. Another precaution, which was introduced by Dr. Budd,

and has lately been recommended by Dr. Cameron as in his opinion the best of all preventives against cholera, is to flood the drains and closets frequently with disinfectants during the presence of the disease in the country, so as to prevent the little germs or microbes, from living and multiplying in the sewage. By careful disinfection and isolation, we may hope that cholera, like plague and other scourges, will be effectually combated, and may, in the end, be entirely overcome.

To enable the sanitary authorities to ensure due isolation and disinfection in cases of infectious disease, it is evidently necessary that every such case should be *notified* or reported to them, and that this should be done as speedily as possible; for the sooner preventive means are taken the less time is allowed for the spread of contagion, and the more easily can the outbreak be arrested. The prevention of these disorders, it may be observed, has been immensely facilitated by the new sanitary organization introduced by the Act of 1872, according to which the whole country has been divided into districts, governed in matters relating to public health by sanitary authorities; each of these bodies having its medical officer of health, while all of them are under the superintendence of the Local Government Board, aided by its medical officer. Mr. Simon describes "the new sanitary organization of the country" as consisting of "the Local Government Board, viewed as a Central Board of Health, and the more than fifteen hundred district authorities which, each with its medical officer of health, locally administer the health laws". In the notification of infectious diseases, every case should at once be reported to the medical officer of health for the district. This system of notifying disease has lately been adopted with excellent results in upwards of thirty towns, some of them among the largest of the United Kingdom, and has there been made compulsory by special Acts of Parliament obtained on the application of the local authorities themselves; and Mr. Hastings has more than once introduced into the House of Commons a Bill for extending the same principle of compulsory notification to the whole country.

Although the highest authorities agree in thinking that the notification of infectious diseases is indispensably needed for their prevention by the State, and should be made compulsory, there is much difference of opinion in regard to the question, Who is to notify? In the infectious fevers, the duty of giving intimation must be performed either by the occupier of the house where the disease has broken out or by the medical attendant; and a strong feeling exists among large numbers of the medical profession that the legal obligation to notify, and the penalties for neglecting it, ought not to be laid on them, but on the householder. Thus, in an important debate on the subject which took place at the annual meeting of the British Medical Association in 1882, a resolution was carried to the effect, "That this meeting earnestly desires compulsory notification of infectious disease, but it wishes to

express its opinion that the compulsion to notify should be placed upon the householder as his duty as a citizen, and not upon the doctor". In the course of the discussion, the President, Dr. Alfred Carpenter, observed that "There could be no doubt that it was the duty of the patient or his legal guardian, to notify the existence of any infectious disease to the local authority". This seems to me a truth of the utmost importance, which should be carefully considered by the public. The real person on whom the duty of notifying infectious disease naturally rests is, I think, the patient himself, and in some diseases, which do not impair the faculties, he may be legally called upon to fulfil it. But in the contagious fevers the proper person on whom the obligation should be laid seems to be the householder, as he is the patient's natural guardian, and, moreover, it is he, and not the doctor, who has an early knowledge of the existence of the disease. The assistance of the medical man will doubtless be needed in most cases to diagnose the affection, and he will also usually be the one to fill up the certificate, though the householder may afterwards forward it to the sanitary authority. But supposing that the householder, after being informed of the infectious nature of the disease, *refuses* to notify it, from a fear of injuring his business, or other reasons, I cannot but think that it would then become the duty of the medical man, and that he should be legally required, to make the notification himself; for he could not justifiably refrain from interfering, and see a breach of law committed, which might lead to the most deplorable and even fatal consequences to many persons. The Bill of Mr. Hastings proposes, I believe, to make the obligation to notify binding on *both* the householder and the doctor conjointly; and, this, as it seems to me, would be the true principle, if it were made clear that the duty really, and in the first instance, rests on the householder, and only when he refuses to discharge it, is incumbent on the medical practitioner.

There is one of the contagious fevers in which, besides isolation and disinfection, a third preventive measure of a totally different nature, and which appears to me of immense value, has been very extensively used; I mean *vaccination* in small-pox. In disinfection the object is to destroy the germs of a disease after they have left the body, while isolation deals with them at their source in the patient himself; but vaccination may be described as consisting in this, that after the virulence of the germs has been weakened by certain processes, such as their passage through a different species of animal, inoculations are made with the *weakened or attenuated virus*, in order to protect the system against the action of the *same virus in its stronger form*. It was shown by Dr. Edward Jenner, in 1798, that inoculations with cow-pox matter have the power of protecting the constitution against the virus of small-pox—a fact which the late Mr. Marson, who for forty years had charge of the London Small-pox Hospital, regards as "the greatest discovery in relation to disease ever made by man for the preservation of human

life". It was also thought probable by Jenner that cow-pox is nothing else than small-pox modified or mitigated by passing through the cow; and Mr. Ceeley, and Mr. Badcock afterwards, succeeded in producing cow-pox by inoculating heifers with matter taken from a small-pox pustule; but as this is an experiment which very frequently fails, doubts still continued to exist, till in 1881 the truth of their opinion was completely established by Dr. Voigt, the superintendent of the Vaccine Institute at Hamburg. By inoculating a calf with small-pox matter he produced cow-pox, the lymph from which, after being further weakened by transmission through several calves, has been habitually used at Hamburg in vaccination, for the last two years, with the most satisfactory results. "Vaccinia and variola (cow-pox and small-pox) are derived originally from the same contagium", says Dr. Voigt, "and give to those affected by them an immunity one against the other". Again, the eminent discoverer, M. Pasteur, by an invaluable series of researches, has lately shown that vaccination in small-pox is by no means a solitary fact, and that the virus of many other infectious diseases can be weakened or mitigated in a similar manner, so as to furnish a protective material, or *vaccine*, as he terms it, against the diseases. The two methods by which he has succeeded in diminishing the power of an infectious virus and converting it into a vaccine are, either by transmitting it through an animal of a different species, or by allowing an interval of several weeks to elapse between two successive cultures of the little organisms or germs that produce the disease, during which period they are acted on by the oxygen of the air and gradually lose their virulence. By these means M. Pasteur has already obtained the vaccines of several infectious disorders, the most important of which are rabies (hydrophobia) in the dog, and anthrax, or the splenic fever of cattle. Of the second method for weakening the power of a virus he says especially, "We may hope to discover in this way the vaccine of all virulent diseases", and he holds that "we have here a proof that we are in possession of a general method for preparing virus vaccine based upon the action of oxygen and the air".

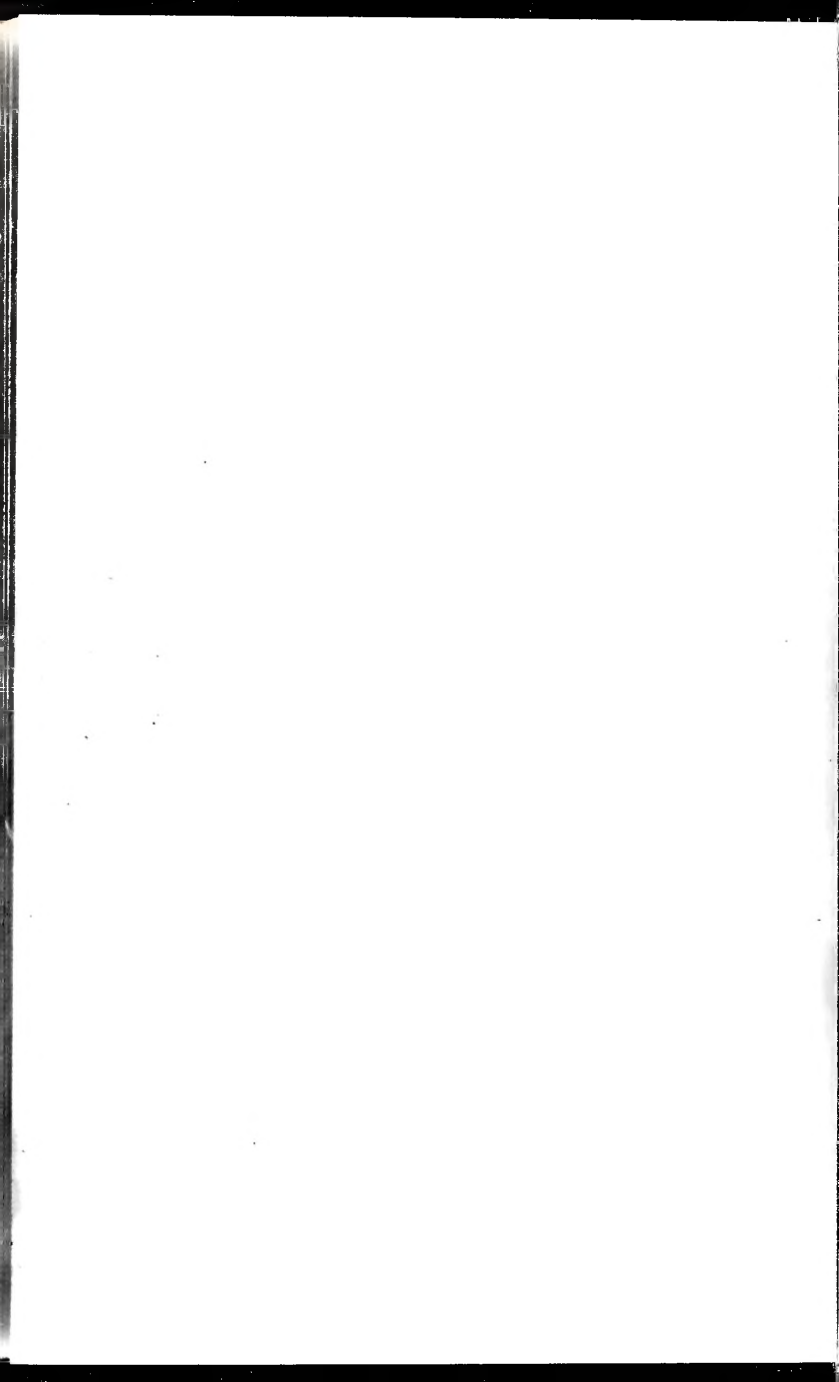
The close affinity between cow-pox and small-pox, which are really the same disease in different species, explains why the one protects from the other, and according to the best authorities the power of vaccination during childhood, especially when followed by re-vaccination later in life, to prevent small-pox, or render it milder if it does occur, is most remarkable. "One thoroughly good primary vaccination to start with", says Dr. Seaton, in his article on Vaccination in "Reynolds' System of Medicine", "and one careful revaccination at puberty, so conducted as to give evidence that the lymph was absorbed, are all that is necessary for the complete protection of the population against small-pox". The facts which seem to prove most clearly the great efficacy of vaccination are that, as shown by Jenner, inoculations with small-

pox matter (which used formerly to be practised, but were made illegal in 1840) produce no effect on a person who has had cow-pox; that the nurses who attend upon small-pox patients, and are constantly exposed to the effluvia, very seldom contract the disease if they have been previously revaccinated, not one of the nurses in the London Small-pox Hospital having become infected during Mr. Marson's long experience; and that the death-rate from small-pox has been enormously diminished in every country where vaccination is in general use. "The present average death-rate from small-pox", says Dr. Seaton, "is scarcely, in any European country, one-tenth part, and in those countries in which vaccination has been most carefully carried out it is much less than one-tenth part what it was at the end of last century". In England and Wales the total number of deaths from small-pox in 1879 and 1880 were 536 and 648 deaths respectively, which, according to the Registrar-General, are the lowest rates yet recorded. These figures show how vast has been the reduction in a disease formerly more dreaded in Europe than even the plague itself. They show, too, the immense assistance which may be derived from a vaccine in the final extinction of an infectious disease; and they inspire the hope that by careful isolation and disinfection, aided by vaccination, we may succeed before long in completely stamping out and abolishing small-pox, which Sir Thomas Watson describes as "the most hideous, loathsome, disfiguring, and, hydrophobia excepted, probably the most fatal also of the various diseases to which the human body is liable".

There still remain two classes of infectious disease, on whose extinction I would like, before concluding, to say a very few words, namely, first, those derived from the lower animals, the most important of which is hydrophobia; and secondly, the venereal affections, and especially syphilis. With regard to the terrible malady hydrophobia, besides the vaccine lately discovered against it by M. Pasteur, it has been earnestly urged by Sir Thomas Watson in the *Nineteenth Century Review*, that a means for its complete extinction could be found in subjecting all dogs to a quarantine of six or seven months (which might perhaps be done by muzzling them), as recommended by Mr. Youatt and Sir James Bardsley, for in this period every case of the disease which was in process of incubation would show itself, and the animal might be destroyed. "By destroying every dog in which the disease should break out during strict quarantine", says Sir James Bardsley, "not only would the propagation of the malady be prevented, but the absolute source of the poison would be entirely suppressed".

As regards the venereal affections, their extinction is a subject of enormous importance, for there are very few diseases which give rise to such a fearful amount of human misery. The Acts for their suppression, commonly known as the Contagious Diseases Acts, which were so deeply unjust to women, have been virtually

annulled by the resolution of the House of Commons, in 1883, condemning compulsory examinations, and a better system of prevention is most urgently needed. The high authority, M. Mauriac, holds that of the three venereal affections, gonorrhoea, syphilis, and simple contagious sore, the first cannot be extinguished, but that the two others admit of complete extinction, though the last of them, being a slighter and merely local affection, could be far more easily eradicated than the formidable malady, syphilis. It seems to me that the true object to be aimed at in the prevention of syphilis by the State, is to deter individuals from spreading the disease by the fear of being detected and punished. This object could, I venture to think, be best attained, in the first place by making the communication of syphilis a punishable offence in both sexes, as is strongly recommended by Mr. Berkeley Hill, and other distinguished writers; and in the second place, by making compulsory the notification of every case of syphilis and of simple contagious sore to the sanitary authority, or in other words to the medical officer of health for the district; and also, in addition to these two enactments, by instituting a most careful and searching inquiry into the origin of every case of syphilis, so as to discover who has been guilty of spreading it. Syphilis differs from the contagious fevers in this most important point, that the patient in a multitude of cases knows perfectly well by whom he or she has been infected, and therefore the origin of the disease can very often be traced. All these inquiries, as well as the notifications of disease to the authorities, should be kept strictly private, so that no names would ever be divulged except those of individuals who, knowing themselves to be diseased, assist in the spread of infection. Whether an individual had acted in ignorance or from culpable negligence would often appear from the circumstance that his disease had been notified and he had been warned of its contagious nature. With regard to notification, which seems to me in syphilis, as in all other dangerous infectious disorders, of immense importance for its prevention, the legal obligation to notify should, I think, be laid upon the patient himself, and not upon the medical attendant; although the latter could voluntarily give intimation in cases where he desired to do so, and would doubtless very often perform the duty at the patient's request. By notification the amount and distribution of syphilis in the country would become known, its increase or diminution could be tested, and the disease would be rescued from the fatal secrecy which, more than any other cause, promotes its ravages. It appears to me that these measures would be just to both sexes, and, though sometimes attended with very painful disclosures, would be no real burden on any but those who wilfully or recklessly communicated disease to other persons; and they would also, I venture to think, be found in the end more effectual than the previous Acts in stamping out syphilis, which has so long been the scourge and terror of mankind in all parts of the globe.



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