NATURE

SATURDAY, NOVEMBER 17, 1928.

CONTENTS.

Editorial and Publishing Offices :

MACMILLAN & CO., LTD.,

ST. MARTIN'S STREET, LONDON, W.C.2.

Editorial communications should be addressed to the Editor.

Advertisements and business letters to the Publishers.

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No. 3081, Vol. 122]

Reform of the British Patent System.[1]

THE recent publication of the Report of the Committee which was appointed by the British Science Guild in April of last year to consider what changes could advantageously be made in the patent law of Great Britain, will of necessity rivet the attention of all those who appreciate the very important part which a sound system of monopoly grants in respect of new inventions can achieve in encouraging progress in industrial development. The days are long past when the desirability of granting patents for inventions was regarded as a debatable matter, and the abolition of patents was advocated by quite responsible schools of opinion as being one step in the direction of freeing trade and industry from all those trammels and obstacles that hinder full development. More and more we have come to recognise that the well-being of a modern industrialised State depends on the continuous and intensive concentration of the most original and creative minds upon the task of increasing the efficiency of human labour, that is to say, in enabling more wealth to be produced or more services to be rendered by a given expenditure of human effort.

Progress in the application to useful ends of the rapidly growing knowledge furnished by science, and progress in that widely different sphere of inventive art which leads to the construction of automatic or semi-automatic labour-saving machinery—these are vitally essential if the growing populations of great industrial States are to enjoy even a reasonable minimum of welfare and contentment. Inventions such as the telephone or the manufacture of artificial silk on one hand, and inventions such as linotype and monotype machines, or boot and shoe making machinery on the other, typify the manner in which a relatively small proportion of originative or creative minds can add, generation by generation, to the effective capital of human knowledge, and thus provide the equivalent as regards all the needs of life except perhaps the primary need of foodstuffs, of the proverbial means whereby two blades of grass are made to grow where one only grew before ; and even the fundamental industries of agriculture, stock-raising, and dairy farming owe much to purely scientific experiment and research and to the inventors of the more complicated forms of mechanical aids to labour.

With a growing perception of the necessity for

[1] "Report of the Committee appointed by the British Science Guild to consider the Reform of the British Patent System." Pp. 48. (London: British Science Guild, 1928.) 2*s*.

encouraging and utilising to the full such inventive capacity as is available in any given generation, we have come to realise that under modern conditions it is more than ever difficult to give the inventor his full opportunity, unless really effective protection by way of monopoly is accorded to new inventions for a term of years. Such protection is necessary for two reasons. First, there is in every industry severe competition, and every manufacturer must be watchful of improvements or he will not keep abreast of the times; knowledge of new methods diffuses rapidly through the technical press: and modern methods of transport have overcome the barrier offered by distance. There is no question, therefore, of even a temporary monopoly accruing to the originator of some new machinery or some new process in the absence of any legal monopoly rights. Secondly, capital plays a larger and larger part in the development of industry. Even minor though useful inventions frequently demand a capital expenditure far beyond the range of an individual inventor before they can be put effectively upon the market; and if capital is to be attracted to a new and unproven enterprise, some security must be afforded that when the experimental period is over, and the new article is upon the market, or the new process is in operation on a commercial scale, watchful competitors will not at once step in and reap, or at least share the reaping, where they have not sown.

There is perhaps a tendency in these days to give disproportionate public recognition to the inventions that originate in scientific work as opposed to those that owe little to the growth of scientific research. The public is continually being asked to admire some new miracle of science. Such inventions as photography, the telephone, the transmission of power by electricity, radio telegraphy and telephony, synthetic chemistry, X-rays, kinematography, television, and so forth, strike the public imagination as being marvellous achievements arising directly out of scientific researches of which they can understand but little. Improvements in textile machinery, boot and shoe making machinery, wood-working machinery, refrigerating plant, bread-making machinery, and automatic machine tools are less calculated to strike the public imagination, but they play at least as large a part in solving the problem of maintaining or improving the standards of life of large and still growing populations. Inventions of this latter kind are not without their debts to science, but they largely arise by the creative energy of minds not mainly trained and developed in the laboratory. There is an originative type of mechanical mind that owes little to scientific knowledge.

Both of these types of creative invention, however, depend largely on a sound system of patent law if they are to be encouraged and developed and are to have their full effect on the general public welfare. Patent law and patent jurisprudence are therefore subjects deserving of serious study by any government, and should be revised and modified from time to time so as to preserve their full efficiency as instruments of progress.

The law in relation to patents should be so framed and so administered that, on one hand, it furnishes to the inventor and to his coadjutor the capitalist a secure protection for such new manufacture or improvement in old manufacture as has in fact been made. On the other hand, the law should be such, and its administration should be such, that if the inventor makes unduly broad claims, such as would either encroach upon existing rights or liberties, or would extend too far beyond the ground actually explored and brought under cultivation, as it were, by the inventor, such unduly broad claims can be refused, or at least made the subject of an official warning to the public.

There is always a danger that patents, if granted too freely without careful consideration of the existing state of the art, may hamper those who ask no more than to use existing knowledge intelligently in the ordinary variations of manufacture. There is also the danger that an astute draftsman of the claims in a patent specification may endeavour to claim in advance, developments not unlikely to flow from the invention, but as yet unexplored and unknown. He may stake out, as it were, a whole county instead of pegging out the claim upon which the inventor, as prospector, has established some sort of equitable title. Very real evils, particularly in the chemical industry, arise out of this last-named tendency, which has been fostered by a change in the law made in 1919 whereby a patentee can succeed in his first action for infringement despite the presence in his specification of one or more unwarrantably broad claims.

Broadly speaking, it may be said that the patent law of Great Britain is soundly framed, and that its administration both by the Comptroller-General and in the Courts is carried out efficiently and with balanced and equitable judgment in reconciling the interests of the inventor and of the public. But in very many directions, both of detail and of major import, there is undoubtedly room for reform, both legislative and administrative. In recent years,

demands for such reform have been increasingly manifest.

Paradoxical as it may seem, the greatest single reform that could be carried out would probably be the provision of some means whereby patent litigation could be encouraged by rendering it inexpensive. It is not far from the truth to say that the validity of no patent is certain until it has actually been tested in the Courts. It is also true to say that industry would be greatly benefited if there were some more expeditious and inexpensive way of determining if a particular mode of manufacture is or is not an infringement of a patent which is alleged to include such manufacture within its claims.

There is at present far too much uncertainty in relation both to the validity and to the scope of patents. Each patent is in the nature of a prohibition or warning to avoid certain modes of manufacture, and the number of patents actually in force at any one time in each industry varies from hundreds up to many thousands. One can easily picture the confusion that would exist in relation to real property if the boundaries of thousands of important estates were indefinite and the titles themselves uncertain, and it were known that neither could be determined except by a very expensive process of law. This is practically the position in relation to patents. The technical issues are frequently complicated and difficult, and the costs of a judicial settlement are great. The determination of the issue of validity or infringement, or more frequently of both, is a luxury that few can afford. If the patentee has the smaller purse, he may be helpless against the infringer; if the patent is in very strong financial hands, it may be made the basis of excessive or even wholly unwarranted demands. But although no other reforms can be fully effective while this difficulty remains unresolved, it presents a problem to which no solution can readily be found. The Report of the British Science Guild touches upon it only partially and tentatively.

Reform of the patent law being admittedly called for, the British Science Guild deserves thanks for its initiative in appointing a strong and representative committee to consider this matter and to report thereon. The Committee, under the distinguished chairmanship of Dr. W. H. Eccles, has presented a Report which it may be safely said will furnish invaluable aid to those whose duty it may be to draft any future Patents Bill for consideration by Parliament. The Report covers a great deal of ground, and it is impossible to furnish here anything in the nature of a compendium of its contents. Many of the recommendations made in the Report are uncontroversial and arise out of the experience of the nine years since the passing of the Patents Act of 1919. It may indeed be assumed that but for the serious and growing difficulty arising out of the shortage of available Parliamentary time, many of the anomalies, deficiencies, and defects which have been disclosed by experience would already have been remedied by the passing of an amending Act when opportunity presented itself. Until Parliament is prepared to delegate more of its work to standing or select committees, it is difficult to see how, under present-day conditions, the Statute Book is to receive necessary emendation in all the many ways in which such changes are called for. Perhaps patent law is in no worse case than many other branches of the law in that respect.

Apart, however, from these minor recommendations, which, taken collectively, are of no inconsiderable value, the Committee has dealt with a number of more important issues, and it may be useful to direct special attention to certain recommendations which deserve full consideration and discussion.

The Committee recommends that the search made in the Patent Office as regards novelty should no longer be restricted to British specifications, but should be extended to other relevant documents. At the present time the statutory search is limited to the last fifty years of British specifications. The examiner sometimes cites informally some publications outside this restricted field that are within his knowledge, but it is for the inventor to say whether he will act upon such communicated information or not. There is a certain anomaly in the fact that although the official search is so restricted, an opponent to the grant of the patent may bring forward any documentary publication whatever that has been made in Great Britain, including of course the published specifications of other countries.

In opposition proceedings the Comptroller may thus amend the claims or even refuse the grant of a patent, on the basis of documents which the examiner could not formally cite even if they were within his knowledge. The Committee recognises that an extension of the search to cover the scientific and technical literature of the world and the patent specifications of foreign countries involves an immense task, that could perhaps never be fulfilled in its entirety; but it advises that such an extension of the field of search should be introduced gradually, and it also points out that the large balance of receipts from patent fees over expenditure, which is at present used for the general purposes of the national exchequer, would cover the

cost of a very large extension of the official area of search. The advantage of such an extension would be that it would increase the security and so improve the status of British patents, and thus be conducive to the financial support which is so necessary to an invention in its early stages.

The Committee makes a recommendation which will be of interest to research workers in fields of science which are systematically explored by known methods of research. It states that there is a fear in the minds of some research workers that the validity of patents for research inventions may be imperilled by the circumstances of their origin. The Committee sees no necessity in this case for statutory enactment, but expresses the opinion that the Courts, in deciding upon the presence of subject matter for a patent in any particular instance, ought to give very favourable consideration to an alleged invention which has arisen from prolonged and meritorious research work even on a laboratory scale.

On the vexed question of granting monopoly rights in respect of discoveries which at the time they are made are not seen to be clearly capable of industrial use, the Committee makes no recommendation. The matter is one that has recently engaged the attention of the League of Nations, but it is admittedly a most difficult problem to deal with in any practical fashion.

On the question of biological inventions, the Committee thinks that something could be done to permit the patenting of a wider range of such inventions than is now possible, excluding, however, inventions subserving medical treatment. As regards these last-named inventions, the Committee is impressed by the strong adverse view of the medical profession. On the broader question, the difficulties are set forth with great clarity in a letter from Sir Daniel Hall which is printed as one of the appendices to the Report. Sir Daniel Hall, while wishing the British Science Guild success in its exploration of this question, confesses that he has never seen a method on which it might reasonably be hoped to secure legislative action.

The Committee is of opinion that the Comptroller should be entitled to call, where in doubt, for *prima facie* evidence that the invention has been described in a practicable form in the specification, and to endorse the specification with a warning notice where his objection is not satisfied. It recognises that in many cases such a course would scarcely be fair to the inventor, but the procedure could be used with devastating effect when dealing with the inventors of perpetual motors and of like impracticable schemes, and in cases where a dishonest specification is filed in which knowledge essential to successful working is withheld.

The Report does not, however, endorse a suggestion that four years after applying for his patent a patentee should be given an opportunity of revising his description, and that after an official inspection of his process the Comptroller should, if satisfied, give a certificate of sufficiency of description. This proposal was put forward to meet the difficulty that in the commercial working of an invention details are frequently found to be important which are not recognised as such at the time of filing of the original specification, and it is in the public interest as well as in that of the inventor that the specification of a proved and successful invention be made as full and perfect as possible in all its details. The matter is perhaps one that deserves further consideration.

'Short term patents' form the subject of an interesting section of the Report. It is recommended that a type of patent corresponding in part to the German *Gebrauchsmuster* or utility design be introduced into the British system. Such patents would be granted, for a period not exceeding seven years, for new and useful variations of known constructional forms and arrangements, and possibly also for compositions characterised by the inclusion of new ingredients. The scope of such patents should be narrow and rigorously defined, and the scale of fees should be low.

The heavy expense attaching to patent actions in the High Court, to which reference has been made above, has led the Committee to recommend legislation whereby the Comptroller should be empowered to act as a Court, subject to a definite limit of damages and to the consent of the parties, for deciding questions relating to the infringement of patent rights and for deciding at any time upon petitions and counter claims for the revocation of patents on all the usual grounds of invalidity. The parties should in each case agree beforehand as to whether the Comptroller's decision is to be final or subject to appeal. The Committee also recommends that appeals from the Comptroller's decisions should in all cases be heard by a special judge in chambers, instead of by the Law Officers of the Crown, to whom the large majority of appeals are at present referred under statute.

The Report closes with a recommendation that failing the institution of an Empire patent, in connexion with which the difficulties have so far proved insuperable, there should be provision for the grant of a restricted British Empire patent which should run throughout the Crown Colonies

and Protectorates. Should India or any of the self-governing Dominions be willing to become parties to the scheme, their adhesion should be welcomed.

We have said enough in this incomplete summary to show that the Report is a document well deserving of close study by all who are interested in the reform of British patent law. It may be hoped that the British Science Guild and the Committee will reap the reward that would be most welcome to them, namely, the knowledge that their labours have contributed in some degree at least to the advancement of industry and to the equitable reward of those engaged in scientific research.

The Last Ice Age.

The Last Glaciation: with Special Reference to the Ice Retreat in North-eastern North America. By Ernst Antevs. (American Geographical Society Research Series, No. 17.) (Shaler Memorial Series.) Pp. x+292+9 plates. (New York: American Geographical Society, 1928.) 3.50 *dollars.*

THE past decade has seen a great revival of interest in the whole subject of climatic changes. There have been many books presenting as many theories, so diverse as to be mutually destructive. At the same time, a great amount of new knowledge has been gained both by exploration in distant corners of the earth and by the application of exact methods of investigation to the classic centres in Europe and North America. It was evidently time to pause for an impartial consideration of the fundamental facts of the problem, and, so far as the Quaternary glaciation is concerned, we can have no better guidance than that of Dr. Ernst Antevs, with his close knowledge of the work of De Geer in Sweden and his subsequent experience in the other great centre of glaciation in North America. These fundamental problems, which must be definitely solved before we can profitably indulge in more elaborate speculations, are twofold. First, was the Quaternary Ice Age synchronous in different parts of the world? Secondly, what were the peculiar climatic conditions which caused the great accumulation of snow and ice? Both of them are closely involved with the interpretation of the peculiar banded fluvio-glacial clays known as varves.

The question of synchronism has long been obscured by the controversy as to whether the Quaternary Ice Age was a single episode or was divided into a number of alternating glacial and interglacial periods. That controversy now appears to have been decided, for few would disagree with Antevs' verdict that advancing knowledge has brought "a growing conviction that everywhere the glaciation was multiple, consisting of three or four successive epochs." In North America it has long been held that these successive epochs were not equally developed in all parts of the continent, but that the centre of glaciation migrated from west to east. Antevs believes, however, that this migration was a minor feature, and that the various stages were essentially synchronous in different parts of the continent. The same dictum applies to Europe; the correlation of deposits in Europe and North America is more difficult, but all the available evidence points to synchronism. The general similarity and parallelism in Asia also "convincingly show that the glacial and interglacial epochs were essentially synchronous in all the northern hemisphere." In the southern hemisphere the glaciations of South America and Australia appear to correspond in the same way, but it is not yet possible to say that the glaciations coincided in the two hemispheres. Recent comparative studies of annual layers of banded clays appear to show that they did coincide, but Antevs is fully alive to the dangers of long distance correlation on such evidence alone. Thus while a migrating pole is definitely ruled out, astronomical causes still remain possible.

The lowering of sea-level caused by the locking up of water in the form of ice is important in this connexion, but does not lead to a perfectly definite answer. Antevs' calculation of the ice volume at maximum glaciation shows that the accumulation in the northern hemisphere was sufficient to lower sea-level by about 272 feet. The ice in the southern hemisphere in excess of that now present adds about 33 feet. Hence, if the maximum glaciation had been exactly synchronous in all areas, the lowering of sea-level should have been about 305 feet. Actually it was at least 250 feet—additional evidence for synchronism in the northern hemisphere, but not necessarily between north and south.

The discussion of the chronological results obtained from the study of varve clays is cautious, but the correlation of the slow retreat of the ice-border across southern Ontario with the prolonged oscillations in the Danish islands and southern Scania is regarded as almost certain. This phase ended about 14,000 B.C.; from a consideration of all the evidence, Antevs decides that the last ice sheets had their greatest extent and began to wane between 50,000 and 30,000 years ago.

The comparative study of various centres of