

thirty-eight. Most of the party met at Minneapolis and journeyed to the coast in chartered cars which were cut off for several days in the mountains both going and returning. This enabled those who wished to climb some of the peaks in the vicinity of Banff, Laggan and Glacier. The whole region along the Canadian Pacific Railway from Banff to Mission abounds in problems for alpinists, and there is no better climbing in Europe or North America than that near Laggan, where Mounts Temple, Victoria, Hector, Hungabee and Lefroy, among the rest, are a perpetual challenge to the venturesome.

At the Minnesota Seaside Station, three buildings have been erected. One, a large log boarding house some thirty by sixty feet upon the ground and two storeys in height, serves as a camp. A smaller one storey log house is used as a laboratory for zoology, and a two-storey frame building, twenty-four by forty feet in dimensions, is occupied by elementary and advanced students of botany. Lecture courses last year were conducted for the most part out of doors—either in the forest or upon the rocks by the sea. Indoor talks in connection with

enrolled themselves among its members. It is, in fact, organised somewhat like a club, and while unable to compete with the older stations in expenditure, nevertheless derives a certain advantage from its community of interest and independence.

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MR. CARNEGIE'S ST. ANDREWS ADDRESS.¹

MR. CARNEGIE'S rectorial address at St. Andrews is an interesting study in the psychology of the typical business man of modern times, as well as a memoir on the conditions of great business, which people must read for the sake of the shrewd and acute remarks themselves, such as no statesman or economic student can afford to overlook. The address is written exclusively from the point of view of a great industrial chief who has availed himself to the full of the conditions of business in the most favoured and wealthy community which

the world has yet seen—that of the United States. He has observed and seized the great opportunity for the concentration and development of industry on a large scale which the United States has afforded. A large area of complete internal free trade, and an active, vigorous and rapidly growing population throughout this area, have given the United States manufacturer for many years an unrivalled opportunity for colossal arrangements, involving the cheapening of cost by means of subdivision of labour and the institution of mechanical and automatic processes wherever hand labour could be superseded. This opportunity, properly used, has been the occasion of Mr. Carnegie's gigantic fortune, and it is accordingly natural that he should speak of all business as conforming to this type, so that a community like the United States supplies the model for great manufacturing business in future. The cheapness of production once established, it is assumed, will enable the United States to be the most successful competitors internationally, and Britain accordingly will take a second place in future, if not a third place, with Germany second. Naturally



FIG. 3.—Kelp-covered rock at low tide showing specimens of *Alaria*, *Egregia* and *Halo-saccion* in characteristic attitudes. *Phyllospadix scouleri* appears in the foreground.

microscopic study of fresh material or around the fireplace in the large living room after dinner were also features of the work.

Several papers, both of a scientific and popular nature, and based upon observations or research at the Minnesota Seaside Station, have already been published. Some of these have appeared in "Minnesota Botanical Studies" and others in "Postelsia," the year-book of the Station, the volume of which for 1901 has recently come from the press.

Many useful phases of marine biological work have not yet been, and perhaps never will be, developed at Port Renfrew. There is an absence of dredging apparatus. No pumps, conduits or artificial aquaria have been installed, nor are the buildings supplied with electricity or gas. A serviceable steam launch is still one of the dreams of the future. Unlike most other marine stations, the one on the Straits of Fuca has never received any gratuities whatever from Government, institution, society or individual, but has been built and modestly equipped entirely through the cooperation of those who have

also, Mr. Carnegie regards the protectionist policy of the United States as having contributed to this result and given the United States manufacturer the monopoly of his large home market. Nor is it surprising to find the ordinary American idea about the economic effect of military armaments put forward by Mr. Carnegie as explaining the backward state of Europe compared with the United States. The ideas come from his environment and history, and the result of their combination with Mr. Carnegie's own shrewd observations is the present most instructive address.

The interest, however, is mainly psychological. Economically, there is nothing really new and true. Adam Smith explained long ago the economic gain of the subdivision of labour, the condition of manufacturing on a large scale, while the practical value of manufacturing on a large scale and for the largest possible market was exemplified first of all, not by the American, but by the Lancashire manufacturer, who had the home market of

¹ A rectorial address delivered to the students in the University of St. Andrews, October 22, by Andrew Carnegie. (T. and A. Constable, 1902.)

the British Empire at his command as well as the general market of the less civilised nations of the earth. Where the United States has gone ahead has been in the special business of iron and steel, a development required by the more special conditions of industry in the United States, and not in every business requiring large markets. *Pace* Mr. Carnegie, also, it does not appear that the protectionist policy of the United States has favoured the development of great manufacturing. In iron and steel especially, the advance was favoured by naturally high prices attending the great demand for iron and steel, which was always producing a shortage in the old countries of Europe, especially Great Britain, such as we now witness in the United States itself. This recurring shortage, apart from the United States tariff, must infallibly have developed naturally the iron and steel industry of the United States, though Mr. Carnegie and others might have realised smaller fortunes than they have done in the process. As to Europe being over-weighted in any way by military armaments, there is an obvious want of connection between the effect and the alleged cause. Extravagant expenditure is, of course, one reason why one community or individual should accumulate wealth at a lower rate than another community or individual, but extravagant expenditure on military objects has precisely the same effect, and no other, as any other kind of extravagance. Overbuilding, excessive outlay on dress or carriages, outlay on churches or theatres, are, or may be, forms of expenditure in which nations or individuals may indulge to their hurt as well as in armies and navies. Nor can the American community throw stones at any other community in this matter, as extravagance is one of the American's special vices, and there is one conspicuous case of this extravagance in the remarkable pension list which has grown up since the Civil War, and affects them economically much as a great debt or great expenditure on army and navy would affect them. Besides, when analysed, however great the outlay may be, the maintenance of armies and navies does not add to the cost of production in other industries in any country. The expense of these "luxuries," let us call them, is a deduction from the earnings of the community, so that there is, *pro tanto*, less to spend on other things; but the cost of producing these other things is not concerned.

While making these observations on Mr. Carnegie's theories, we cannot but agree with his view that the primacy of Great Britain as an economic unit is passing to the United States. The economic force of the United States is obviously the greatest single force of that kind; and the preponderance of the United States is increasing. This is no new idea. Mr. Gladstone and many others long ago pointed out how modern industrial forces were tending. People should weigh well, however, what Mr. Carnegie has to say in his own department as to the approaching exhaustion of the iron ores of Great Britain, a matter of common knowledge to those interested. Great industrial changes must follow this impending change. More interesting and surprising even is Mr. Carnegie's anticipation as to the exhaustion of the United States supplies themselves. "Even the United States," he says, "has a proved supply of first class ore only for sixty to seventy years, and a reserve of inferior grades which may keep her supplied for thirty years longer, say for a century in all, unless the rate of consumption be greatly increased. The enormous extent of territory in the republic over which ore can hopefully be looked for encourages the belief that new deposits are sure to be found." Germany, it is added, has the most enduring supply, although its ore is not nearly so rich as the American. All this points to great economic changes even more far reaching than what is implied by the exhaustion of iron ore in Great Britain only.

With many other observations, there must also be

agreement, especially as to the importance of home markets, the diminishing importance of foreign trade and the like. There is, in truth, no distinction in essence between home and foreign markets. The proper distinction is between near, less near and distant markets which are all in their nature the same, the availability and accessibility in each case varying with every variety of goods and every variation in the conditions of transportation. Other things being equal, there is, of course, more exchange between near than between distant markets, and there are many goods and services where the exchanges are necessarily local.

The one weak point in the address is really what is said about the effect of European armaments, upon which comment has already been made. It may be admitted that, so far as there is insecurity and fear of invasion, Europe is politically less advantageously placed than the United States, and European business is, *pro tanto*, checked. But in itself, military expenditure is no worse than any other expenditure, and so far Europe is not handicapped in the race. We should like to throw out also for the consideration of Mr. Carnegie and other Americans whether they are not living in a fool's paradise so far as their supposed safety from invasion is concerned. If the United States fleet were to be defeated by a European Power, say by Germany, and circumstances were otherwise favourable, the territory of the States would not be safe from invasion. Descents upon the coast such as England was able to make in the War of Independence and in the war of 1812 might be repeated, and even a more serious invasion attempted. The American boast of their freedom from European militarism is one which it is not quite wise or safe to make.

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THE JUBILEE OF LORD LISTER.

ON December 9, 1852, just fifty years ago, Joseph, now Lord, Lister passed his examination and was admitted a Fellow of the Royal College of Surgeons, thereby becoming a member of the medical profession. The jubilee of such an event abroad would have been made the occasion of a congratulatory address and of the compilation of a notable "Festschrift" to the honour of the great master of antiseptic surgery. Here we do things differently, and it has been reserved for the *British Medical Journal* to issue a Lister Jubilee number, in which eminent men of various nationalities give their appreciation of Lister's life-work.

Von Bergmann, of Berlin, contributes some remarks upon the use of iodoform gauze in operations upon the cavities of the body; Lucas-Championnière, of Paris, writes on Listerian methods of the present and of the future; and Oscar Bloch, of Copenhagen, upon the antiseptic system in Denmark; while von Mikulicz-Radecki, of Breslau, gives a contribution upon the treatment of fractured patella. Among the British contributors, Ogston, of Aberdeen, and Hector Cameron, of Glasgow, discuss the influence of Listerism upon military surgery and upon the evolution of modern surgery respectively, Watson Cheyne, of London, discusses Listerism and the development of operative surgery, while Annandale, of Edinburgh, writes pleasantly of early days, and Chiene, also of the Scotch capital, gives an account of the Edinburgh Royal Infirmary from 1869 to 1877—that is to say, during the time Lister held the chair of clinical surgery there. It is a notable number devoted to a notable man.

Although it is as the founder of antiseptic surgery that Lister's name will descend to posterity, his other achievements must not be forgotten. Into surgery he introduced many valuable methods of operative procedure and also the use of the catgut ligature, and his contributions to the