

Long Life for Barrier, but Oil Prospects Poor

NEW GOLDFIELDS

New goldfields may be found in Western Australia.

Broken Hill has a long life ahead in the supply of lead, zinc, and silver. There are also large ore bodies in Tasmania, New South Wales, and at Mount Isa.

South Australia is likely to continue to lead Australia in the mining of iron, salt, and gypsum.

The great days of tin mining in Australia are probably over.

There are good prospects of finding rare metals like tantalum and vanadium in Western Australia.

Prospects of finding petroleum in Australia are poor.

These points summarise part of an interesting lecture on "The Future of Mining" delivered by Mr. H. W. Gartrell (lecturer in mining engineering at the School of Mines).

Mr. Gartrell said:—Competent geologists believe that new goldfields may be found, particularly in Western Australia, where there are large areas of ancient rocks of favorable type which have been examined only cursorily. Further alluvial deposits comparable with those already exploited can hardly be expected, but geophysical prospecting will certainly reveal many buried rivers like those deep leads which yielded so much gold in Victoria.

As for lead, zinc, and silver, Broken Hill has a long life ahead. At the rate of production maintained in recent years 20 years' life is assured, while it is almost certain that a great deal more ore will be found. There are great ore bodies in the Read-Roseberry district in Tasmania, and a fine ore body almost ready for production at Captain's Flat in New South Wales. In addition to those there is at Mount Isa in Queensland a field which may well rival Broken Hill itself.

NEW BROKEN HILLS

It is clear that the next generation is secure, and some geologists believe that it is reasonable to hope for other Broken Hills, but, unfortunately, not in South Australia. This State, however, is likely to continue to lead the rest of Australia in the production of several minerals, particularly iron, salt, and gypsum. There is enough high-grade iron in South Australia to satisfy the present Commonwealth demand for a couple of hundred years, and the salt lakes will yield as much salt as they do now for quite as long.

The great days of Australian tin-mining are probably over, but Western Australia has good prospects of finding valuable deposits of rare metals like tantalum and vanadium; it is already the chief producer of tantalum.

As for petroleum, Australian prospects are poor. Some will be found, but existing knowledge does not justify us in hoping for much. Tasmania, however, expects to distil ultimately some 2,000 million gallons of oil from her oil shales, and New South Wales at least 3,500 million. It would not mean a great decrease in costs to make some of these deposits workable at the present price of oil.

There is, however, no need to regard Australia as permanently dependent on the outside world for motor fuel. There are a number of processes for treating coal, so that a large part of it is converted into oil. The Bergius process, for instance, is already giving yields up to 800 lb. of oil, half being motor spirit, from a ton of coal, and recent work by the British Fuel Research Board has led to the conclusion that yields of 1,200 lb. are practicable. We may expect that within a few decades such results will be obtainable commercially.

COAL MINING LOSSES

The Australian black coal resources are large, though very unequally distributed. Fortunately, most of our coal is near tide-water and centrally situated with regard to those districts which are likely to provide the chief future demand.

The Australian per capita consumption may be expected to grow, for we do not use nearly as much power per workman as is desirable, but out of the evil of the increasing cost of coal has come improvements in steam engines, electric lamps, and so on, so that for a given amount of power or light we use far less coal than we did 20 years ago, and improvements will continue to be made. But the coal supplies are far from inexhaustible, and more should be done to diminish the losses in mining, particularly of the Greta coal, which is especially valuable for gas making. We may then expect Australia to be self-supporting for centuries as regards coal, iron, and some of the non-metallic minerals, and that for many years we will be exporting gold, lead, silver, and zinc. We cannot visualize a time when mining will be an industry of small importance in Australia, but it is hardly likely ever again to be so relatively important as it was when gold was establishing Victoria and copper was enabling South Australia to tide over bad seasons.

COAL LIKELY TO REMAIN KING
Competition of Wind, Oil, and Water

Ever since man first generated power in considerable quantities coal has been king, and, according to Mr. H. W. Gartrell (lecturer in mining engineering at the School of Mines), it must continue to be the world's chief source of power.

In some regions water power, he said, in a lecture on the "Future of Mining," was more important, in others oil; there was the frequent revival of perpetual motion, but in a thousand years' time the position of coal would be even more secure than it is now. Water power might last indefinitely; it was often cheap, but not necessarily so. In the United States today most of the large low-cost power stations used coal. Nor was water power always conveniently situated. Though water power might last indefinitely, oil certainly would not.

The amount of coal in the world was not known with much accuracy. The tonnage of black coal was probably between three million million and four million million tons, the amount of brown coal somewhere about two-thirds of this. Australia was thought to have one half of one per cent. of the black coal, and two per cent. of the brown coal, while the United States, which was of equal area, appeared to have about one half of the world's black coal.

WILL CONSUMPTION INCREASE?

The world's annual consumption of black coal was about 1,400 million tons, of which Australia used about 13 million. At this rate the world supply would last between 2,000 and 3,000 years—a long while, but by no means forever.

The first question which arose was:—Will not the rate of consumption increase? Before the war the consumption was fairly rapid, but the League of Nations report for 1929, taking 1913 as a base, gave the production of black coal for 1926 as 98, for 1927 as 105, and for 1928 as 102. This year it would undoubtedly decrease, so one could not be certain whether there was likely to be any increase for some time.

There had been large water power installations and much competition from oil and natural gas. In almost all fields collieries had been opened up far in excess of needs, so that they had been competing with one another as well as with other fuels.

In the United States there had for some time been such an excess supply of

oil that the price of coal had had to come down to meet the competition. The United States coal production had been practically stationary for many years, though the horsepower produced from coal had very largely increased. They might then expect but a slow increase in the production of coal until oil supplies dwindled.

Oil, like coal, occurred chiefly in the Northern Hemisphere, and especially in the southern part of it. How long the oil would last could only be guessed, but it was not likely to last nearly as long as the coal, though they might expect much of the oil remaining in the sands after pumping was finished would some day be recovered.

It was true that there were inexhaustible supplies of power in winds, tides, and solar radiation, but the cost of the necessary equipment was so high per unit of output that they could not be taken as important competitors of coal. As far as he could see coal must continue to be the world's chief source of power, and they could not regard it as even 4,000 years' supply as satisfactory.

WASTE MUST STOP

Public opinion would in time demand a reduction in coal consumption by such means as increased use of water power, using coal dust, at present discarded, burning the coal more effectively, and, particularly, by mining the coal more completely. At present many collieries mined only the best steam, and often left much of that in the form of pillars, as it was more profitable to the company to do so than to provide other means of support for the ground.

Australia, which had a very small share of the world's black coal, and which might be reasonably proud of its power plants, had little reason to be proud of the wasteful way in which its coal was mined. The fact that Australia had lost almost all its export coal trade was deplorable only because it implied an unduly high home price. Posterity would have reason to deplore a large export trade on the part of the present generation.

DOES REPETITION WORK DEBASE A CRAFTSMAN?

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"May I say," remarked Mr. H. W. Gartrell (lecturer in mining engineering at the School of Mines) in a lecture this week, "how little patience I have with the statements, so frequently met, about the degradation of the craftsman to the state of semi-skilled worker tending a machine, and of the debasing effect of repetition work? These statements contain just sufficient truth to make them hard to scotch.

"The semi-skilled man has come chiefly from the ranks of the unskilled; behind him is a great body of highly skilled workmen, and over them a greatly increased staff recruited to no small degree from the families of workmen. As for the debasing effects of repetition work, I believe the classical example of repetition work is Mr. Henry Ford's assembly lines. I have been down these lines, I have carefully looked at the faces of the men for evidence of the statement, but I have been able to find no evidence for it whatever."

Mining, he added, had not been exempt from the changes so general in other industries, though the nature of the miner's work had generally lessened those changes. There was a considerable amount of specialisation and standardisation, of restricted responsibility and lessened discretion. The increase in the scale of mining operations inevitably caused a lessening of the demand for the all-round workman, and, as inevitably, it lessened the demand for the man who shovelled ore or pushed trucks all day long.

Generally the trend was toward fewer mines, fewer men per ton of ore or coal raised, high output per man, a high degree of mechanisation, and a high degree of technical control and technical skill. Fortunately none of these was inconsistent with high wages and low price of product. The physical conditions in which the miner worked had been greatly improved, and would be still further improved; his work would always require skill, and would always involve responsibility.

25 JUL 1931

OLD STYLE PROSPECTOR
Scientific Development Has Not Driven Him Out

The old-style prospector for minerals has not disappeared and will not disappear entirely for a very long time. That is the opinion of Mr. H. W. Gartrell, lecturer in mining engineering at the School of Mines.

In an address on the Future of Mining this week Mr. Gartrell said that the finding of ore was proverbially an uncertain matter. Geophysical prospecting, he said, was in no sense a scientific development of that perennial delusion, the divining rod. It required expensive instruments, very skilled observers, and still more skilled interpreters, and so was essentially a university contribution to the mining industry. Few geophysicists claimed to be able to find ore or oil. They found structures likely to contain oil, they might locate sulphide ore bodies, but they could not as yet distinguish between a body of valueless iron pyrites and one of valuable copper pyrites.

Prospecting would continue to be carried out in widely differing ways. It would tend to become more and more systematic, more and more scientific, but the old-style prospector would not disappear entirely for a very long while.

GEOLOGISTS HAMPERED

No Topographical Map of Australia

Geological work in Australia is greatly hampered by the non-existence of a topographical map of the continent, according to Mr. H. W. Gartrell (lecturer in Mining Engineering at the School of Mines). The geologist, he said in a lecture on "The Future of Mining," could be of much assistance in telling where to look for ores, and it was to the geologist they must look for information on which to base estimates of mineral resources. It was not sufficient for the geologist to know his position on the plan; he must know his elevations, not only locally, but relatively to neighboring areas.

Many lines of levels had been run for railway and for hydraulic projects. Much of the information obtained would have been of great value if only a framework had existed to which it could have been added, and which would have provided the means of correlating it with details gathered in other areas. Much of the information had been obtained at unduly high cost simply from the lack of the proper framework, and was largely hidden in department records from which it could be recovered only at much expense.

The Australian geologist needed nothing so urgently as a Federal Topographic Survey. The mining industry would not be the only one to benefit from such a survey; the finding of water, the siting of roads, the reticulation of water supplies, and a long list of projects would be aided.

Anyone who had seen farmers carting water because roads were thrown open for settlement without any attempt at a water survey, anyone who had laboriously climbed some of those places marked on the map but quite impassable to ordinary vehicles, would realize how greatly the State had lost through its unwillingness to make an apparently non-reproductive expenditure on topographical surveying.

RESULTS NOT ADEQUATE, SAYS PROF. GRANT

Is our expensively trained younger generation capable of brilliant ideas? Prof. E. O. G. Shann asked the question at a conference of the New South Wales Agricultural Bureau recently.

Prof. E. O. G. Shann, of Adelaide University, does not feel that results are commensurate with the measure of education. They received, but Mr. E. W. Holden (chairman of directors of General Motors-Holden's Limited) said that he had seen world developments in industry, and he knew that many of them were the result of the brains of youth.

Prof. Shann stressed the need for inventive skill to increase the flow of Australian goods or, better still, to develop a technique that would enable us to export our goods in better quality at a more advanced stage of manufacture. "What have our young people achieved?" said Prof. Grant today. "They are being drowned in education. We have not yet produced one inventor of first-rate ability, a scientist, a poet, or an artist."

"Every generation brings forth its brilliant young men, and it is an unfortunate habit of older men to think that nothing good can come from the younger generation," said Mr. Holden.

"At the same time, I believe that altogether too much is spent at high schools on the education of many young men who do not aspire to be anything more than laborers."

An Adelaide educationist said that the young generation was capable of brilliant ideas, but the world did not accept them easily. New ideas needed money to develop them. Never before had there been a time of such spectacular progress in every branch of life, and the young people were doing their bit.

Adelaide Hospital
Appointments

The following appointments to Adelaide Hospital were made in Executive Council today:—Dr. W. L. Reid (a resident medical officer), Dr. R. McM. Glynn (honorary curator to the ear, nose, and throat section of the pathological museum), Drs. R. G. Burnard, E. F. Gartrell, N. T. M. Wigg, and H. W. Wunderly (honorary clinical assistants to the medical section), Drs. G. H. Burnell, W. J. W. Close, A. F. Hobbs, and H. R. Pomroy (honorary clinical assistants to the surgical section), Dr. W. C. T. Upton (honorary clinical assistant to the skin section), Dr. F. H. Beare (honorary assistant physician), Dr. F. R. Hone (temporary assistant honorary physician), Dr. R. G. Matters (honorary assistant gynaecologist), Dr. B. H. Swift (honorary curator to the gynaecological and obstetrical sections of the pathological museum).

Dr. Beare, who is at present in London, was recently admitted as a member of the Royal College of Physicians, London. He will take the place of Dr. J. A. Southwood, who was recently appointed acting chairman of the Central Board of Health.