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BRILLIANT SCIENTIST

Honors for Adelaide Man

IMPORTANT ENGLISH POS

South Australia has turned out brilliant men who have taken their place alongside world leaders in scientific, literary, and art circles. While the fame of the writer or painter is quickly broadcast over the world the scientist generally accomplishes his greatest work in silence, if not nearly in secret.

Twenty odd years ago William John McBride graduated in science at the Adelaide University with first class honors in metallurgy and geology. Since that day he has steadily climbed the ladder, quietly and unobtrusively mastering one branch



Mr. W. J. McBride

who is about to proceed to London to undertake important metallurgical work.

of his science after another. Now a larger field is opening out. On February 12 Mr. McBride will leave Sydney by the Makara for London to continue investigation work.

A son of former Inspector W. J. McBride, Mr. McBride was born at Glenelg. He received his early education at the Kapunda Unley, Sturt street, and Grote street Schools. He matriculated from Christian Brothers' College and graduated at the University in 1898.

CLEVER METALLURGIST

Leaving the University his first work was assisting to rearrange the mineralogical collection at the museum of the School of Mines. A term as assayer and mill superintendent at the Katicoola mine near Palmer followed.

In 1900 Mr. McBride joined the staff of the Broken Hill South mine as assayer. In 14 years he rose to the position of chief metallurgist. At the outbreak of war he was sent to Port Pirie to represent the great mining companies of Broken Hill at the smelters where concentrates were being smelted by the Broken Hill Proprietary Company on a partnership basis. When the Broken Hill Associated Smelters took over from the Broken Hill Proprietary in 1915, Mr. McBride enlisted, leaving Australia with the late Australian Tunneling Company, a unit of Professor Sir Edgeworth David's famous mining corps.

Gallantry on Hill 60 brought Mr. McBride an M.C. and a captaincy. After a tour of Great Britain and America, in which he investigated the latest developments in metallurgy, Mr. McBride returned to Australia in 1919, and rejoined the Broken Hill South Company. In company with Mr. Gilbert Ring he visited Burmah in 1920 to assist in conducting metallurgical investigations.

The treatment of zinc concentrates was the next work which engaged the attention of Mr. McBride. In 1921 he joined Mr. Rigg in the service of the Associated Smelters and Electrolytic Zinc Company in connection with the development of zinc concentrates roasting and acid manufacture operations.

IMPORTANT SERVICES

His appointment as engineer in charge of the zinc roasting campaign for the Associated Smelters on the staff of the Electrolytic Zinc Company followed in 1922, and in 1924 he was appointed consulting metallurgist to the Electrolytic Zinc Company in connection with their main-line roasting operations. He is now about to proceed to England, and will be with the Australian Ore and Metal Company, Gresham House, London.

In addition to helping in the development of the flotation process at Broken Hill, Mr. McBride successfully collaborated with Mr. Rigg in the progressive development and operation of blende roasting furnaces, especially in those mechanically operated and without the use of fuel. No less successful is a special dryer for handling fine flotation concentrates. Messrs. Rigg and McBride also developed to an unusual degree of perfection the use of high grade alloy steel castings for service in blende roaster plants.

Mr. McBride was formerly well known in tennis and rifle shooting circles in Broken Hill, and achieved the distinction of making the highest score in the district championship meeting of the Rifle Association in 1914. For several years he was secretary of the Tennis Association.

Mr. McBride will be accompanied to England by Mrs. McBride. He will proceed via America, where he will enquire into the latest developments in metallurgy.

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THE LAND AND

WHEAT MARKETING.

DR. RICHARDSON'S REVIEW.

Concluded from yesterday.

The price of wheat is determined by the world conditions of supply and demand. Wheat and rye are the world's principal foodstuffs, and there is sufficient variation in supply and demand of these commodities to cause great fluctuations in price.

In Europe the production of rye is approximately equal to that of wheat, and the production of both crops taken collectively averages about 70 per cent. of that of the entire world.

Among the causes of variation in the world's supply of wheat and rye may be mentioned—

1. Climate.—Variation in climate and in amount of rainfall to which the wheat and rye regions are subject.
2. Price.—Variation in acreage, resulting from variations in price.
3. New settlement.—Increase of acreage resulting from settlement of new country.
4. Competition of Other Crops.—Decrease of acreage due to planting of other crops when there is an unusual demand for livestock and animal products.
5. Improvements.—The continuous advance and improvement in methods of production, communication, and methods of transportation.

Among the causes which may effect a variation in the demand for wheat are:—

1. War, which causes variation in the foreign demand.
2. Standard of Living.—The standard of living is rising, and this increases the demand for wheat, especially in rye-producing countries.
3. Substitute for Rice.—The increasingly demand for wheat from Oriental countries, in which rice is being gradually replaced by wheat as a staple article of diet.

The fact that wheat is the staple article of food in the nations of the greatest economic strength tends to keep the demand firm, whilst the fact that the world's supply of wheat comes from all quarters of the globe tends to prevent any shortage in the general supply.

When wheat prices fall so low that wheat production becomes unprofitable, capital tends to engage in the production of other crops which yield a larger return. When, on the other hand, wheat rises too high, other substitutes are used by the consumer. The demand, therefore, decreases, the price falls, and production is lessened. Thus the forces of supply and demand always seek equilibrium.

The average price of wheat cannot, therefore, be below the cost of production for any considerable period. On the other hand, the price cannot be above what the consumer is willing to pay. Cost of production and value to the consumer are respectively the minimum and maximum limits of price.

Improvements in production methods have decreased the cost of production, and have allowed a larger supply at a lower price to be placed on the market, and in consequence the demand has increased and more wheat is consumed.

Communication and transportation become important factors in the price of wheat wherever export conditions prevail. All markets are affected simultaneously by a change in either supply or demand. The only difference in price which should exist between any two markets, or between what the producer receives for wheat and what the consumer pays, is that resulting from transportation and commercial charges. When, however, a country consumes all the wheat it produces, the prices of wheat is fixed within the country, provided there are no restrictions to trade, and the cost of production is not greater than the cost of importing grain. Some countries impose import duties on grain. The effect of this is to add the amount of the duty to the cost of production, and to make the local price equal to the price of wheat in the foreign market, plus the cost of importation and duty.

The World's Wheat Markets.

Wheat prices are the result of supply and demand for wheat in the great markets of the world, the chief are those at London, Liverpool, and Chicago. The prices of wheat cannot be predicted from a knowledge of conditions in any one locality. The whole of the conditions affecting the supply and demand over the wheat belt of the world must be known to forecast the probable trend of wheat

prices. Cables are continually passing between great wheat markets and all parts of the world. News regarding the condition of the wheat crop in the various regions of the world is received daily. On receipt of such information as a drought in Canada or the United States, failure of the monsoon in India, abundant falls of rain in Australia and Canada, a plague of locusts in Russia, or the outbreak of fungoid or insect pests in any wheat-producing country, the prices of wheat immediately rise or fall according to the relative importance attached to the news. The effect is to concentrate the price-determining influences in these world's markets.

Modern transportation, which enables the grower in Australia, Argentine, Canada, or India to send his wheat to London or Liverpool, and cable communication, which has eliminated the time element in the receipt of news, have resulted in the whole world becoming dependent for prices on these great markets, where grain traders, dealers, and speculators in wheat buy or sell according to their requirements, or according to their estimates of the probable world supply and demand.

Speculation and "Futures"

In Liverpool and Chicago extensive trading is done in what are known technically as "futures" or "wheat options." Wheat is bought or sold for future delivery. The "future" is a contract for the future delivery of wheat without reference to specific lots, made under the rules of some commercial body in a set form by which the conditions as to the unit of amount, the quality, and the time of delivery are fixed, and the determination of the total amount and the price is left open to the contracting parties.

The persons who buy and sell wheat on these exchanges are usually wheat dealers, millers, and professional speculators. The speculators are divided into two classes—"bulls" and "bears." The "bull" speculator buys wheat for future delivery. He takes the risk of a fall in price in order that he may make a profit from a rise in price. The "bear" speculator short-sells

wheat, i.e., he sells wheat for forward delivery at a fixed price. He does not own wheat at the time he sells, but he expects to be able to buy it in the market at a lower price before the expiry of his contract.

The market becomes "bullish" and strong when reports of crop damage are recorded, when droughts threaten to affect the world's wheat supply, or when any factors operate which tend to diminish the world's wheat supply. On the other hand, when reports of favorable rains, favorable crop reports, increased wheat shipments are received the market becomes "bearish" and weak.

The operator who sells in a speculative deal may settle the contract on the day of delivery in two ways—Delivery of the wheat or buying the same quantity of wheat on the same exchange. If he buys wheat on the same exchange his operations are settled through the clearing house. Only the difference in the cash cost of the two transactions is paid. The great cereal market of the United States is in the building of the Chicago Board of Trade. On the floor of the Grain Exchange are the "wheat," "corn," and "oat" pits, where trading in cereals is conducted.

Chicago Wheat Pit.

The Chicago speculators are typical of the great wheat speculators of the world. Their facilities for acquiring information are unsurpassed. The daily weather map issued by the meteorological service informs them of the weather in each of the States of the Union. The experiment station reports and bulletins inform them of the damage done by insect and fungoid diseases. Their intelligence system keeps them posted regarding the progress of the wheat crop in other countries, and the cables inform them of the fluctuations in price in the principal markets. They have an intimate knowledge of the visible supplies of wheat stored in the world's great terminal elevators, and of the wheat being transported in car and vessel. The shipping companies afford them information regarding freight rates in all parts of the world. They are constantly determining the ratio between supply and demand, and from this form judgments as to the probable changes in price.

The Chicago Board of Trade is one of the largest organizations for dealing in wheat. Approximately 90 per cent. of the transactions of the "pit" are speculative, neither buyer nor seller expecting to receive or deliver a bushel of grain. It is said that 10,000,000 bushels of wheat have been sold in the Chicago pit in less than ten minutes. Through the courtesy of the Chicago Board of Trade the writer was able to visit the floor of the exchange and witness the operations of the traders in the "corn" and "oat" pits during 1918.

The wheat pit was closed for the duration of the war, as the Government had fixed the price of wheat at 9/2 per bushel for the 1918 and 1919 crops. The scenes in the corn and oat pits were very animated. From 9.30 a.m. to 1.30 p.m. each day the floor of the pits was pandemonium with the chorus of yelling and excited brokers buying and selling, and the scurrying of hundreds of messengers and satellites hastening to deliver to the brokers the buying and selling orders, with such variation in the market. From an elevated platform an official recorded every fluctuation in the market, and flashed the information to a series of electric "tickets," whence it was transmitted by wire throughout the United States. The unit on the exchange is 5,000 bushels. Immense quantities of wheat, corn, and oats may be bought on the floor of the

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a sign, a nod, or a scrawl on a trading card. The brokers use manual signs to indicate the prices and quantities they are willing to operate on. Despite this, the noise in the pit is deafening. The life of the institution depends on the scrupulous honesty of all its members, and it is more profitable for the operators to make certain honest gains than to destroy the institution by making dishonest ones.

The Function of Speculation.

It is sometimes stated that speculation on the great grain exchanges determines prices regardless of the law of supply and demand, and that high prices for com-

modities are often caused by the operation of speculators. Such an idea is erroneous, for the freer the competition between the buyers and sellers the more minute is price regulated by demand and supply. Nowhere is the competition between buyers and sellers keener and freer than on the world's great grain exchanges. By studying closely and accurately balancing the many intricate factors controlling supply and demand, the grain speculators are able to make fairly accurate estimates of future prices. The speculators buy and sell on their estimates of probable future values. The most successful speculators are those who get first-hand information, and their success is dependent on the accuracy of their estimates. The best facilities for securing early and reliable information are to be found where speculation has been highly organized.

A committee of the British Association for the Advancement of Science in 1909 as a result of an investigation into the effect of "futures" on the prices of wheat and cotton, reported that the prices of commodities subject to dealings in "futures" were lowered both by the reduction of risks and the diminished cost of handling the commodity. "Futures" increase the frequency of price fluctuations, but decrease the range of these fluctuations. According to Dodlinger, "Speculation is the fly-wheel which imparts to the modern commercial machine a motion so uniform that all its parts operate continually and simultaneously. As men produce and consume, as well as exchange, according to comparative prices, it also directs production and consumption in commodities into the most advantageous channels."

The effects of speculation are, therefore, beneficial to the community. Speculators are the men best equipped for securing and interpreting news of variations in supply and demand, and a price is determined which, with slight local variations, prevails throughout the world. Speculation lessens fluctuations in price, for the short seller "keeps down prices by short sales and then keeps them strong by covering purchases."

The objection to speculation lies in the fact that a group of individuals may secure control of the market and manipulate it as they please. Manipulation may be made either from the "bull" or the "bear" side, but "bear" manipulations are rare. A successful "bear" manipulation consists in selling a commodity short in sufficient quantities to lower the price and to cover these contracts at the low price. A sufficient volume of short sales will depress the price, but the price will immediately rise again when the "bear" commences buying. Attempts to manipulate the "bull" side of the market are more common. "Bull" manipulations may result in corners. A successful corner results when the market is over-sold, that is, when the "bulls" have secured a considerable portion of the supplies and have induced so much short selling that the supplies in the market are insufficient to cover the required time. Though successful corners in wheat were made in Chicago by Hutchison in 1888, and Leith in 1898, they are now almost impossible of accomplishment owing to the magnitude of the purchases which must be made, and because of the fact that when prices rise rapidly enormous supplies are rushed into the market from unexpected sources.

Though occasionally pernicious practices arise from speculation, it is now generally admitted that speculation in "futures" is beneficial to the community in so far as it tends to keep prices steady, and to direct production into the most advantageous channels.

High prices for our primary products should not blind the producers to the fact that markets for these commodities fluctuate rapidly and incessantly. Altering conditions abroad influence the market immediately. Profitable prices this year will very probably excite the producers to greater activity, and there will be a general desire to increase output. Other countries will do likewise, and the upshot will be an increased world production. Supply will overtake demand, and it is then that prices recede. Australia may not limit its production, but in increasing output producers will be serving their and Australia's interests by paying greater attention to the quality of the output. We have seen abnormal prices in the past make our producers careless in their methods. They have been carried away by the thought that profitable prices would be maintained, and that because of that they could double their individual output at a higher cost and at a sacrifice of quality. But when the pendulum swings back, as it inevitably will, the producers are at the mercy of conditions of their own making. They have on hand a large surplus of low-quality products, which the world is not in urgent need of. They have "struck a bad year" by ruining a good market with inferior quality products.