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Build ye a city oh men,
Build ye a city fair,
But forget ye not, the soul must live,
And keep for us, here and there,
A plot of grass, a towering tree
Where over our heads, we, skies may see
And silvery stars on high.
Build ye a city oh men,
Build ye a city fair,
Our bodies needs must live by bread
But keep for us, here and there,
The good brown earth—the boundless sky—
Lest our souls ahungred, grow faint and die
Mid thy towering city fair.
Build ye a city oh men,
Build ye a city fair,
Build Gothic arch and marble hall,
But keep for us, here and there,
A plot of green, a waving tree,
Where, in times of stress, our souls may see
The light, for thy city fair.

SOME RESULTS OF THE LOCATION OF AUSTRALIA

By STEPHEN S. VISHER

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THE location of Australia has largely determined its climate, has greatly affected its commerce, and has had a powerful influence on the character of its biota and population.

Effect of Latitude. The location of "The Island Continent" in latitude, mostly between the 15th and 30th parallels of south latitude and nearly bisected by the Southern Tropic, puts most of the area in the Trade Wind Belt. Since Trade Winds blow towards the Equator, from the south-east in the southern hemisphere, and hence into warmer and warmer latitudes, they are able to hold more and more moisture as they advance, and therefore normally are drying winds. Only where they are cooled by rising do they drop much moisture.

With the seasonal shift in latitude of the wind belts, the southern tips of Australia are reached by the Westerly Winds in "winter" (June-August), and are watered by them. These areas resemble Southern California in climate. Northern Australia is

in the Equatorial Belt in its summer, and receives copious convectional rains from moisture drawn southward by the monsoon winds which prevail there in that season. These winds blow towards the dry interior which is superheated then and consequently is a place of exceptionally low air pressure. Some northern coastal localities occasionally receive more than 100 inches of rain in their rainy seasons.

Effect of Mountains. The low range of mountains along the eastern coast of Australia profoundly affects the climate of a strip, perhaps 400 miles wide, but has relatively little influence on the climate of the rest of the continent. The much more rapid radiation, characteristic of even moderate mountain elevations, causes the warm, moisture-laden air, just off a warm sea, to become supersaturated, and it is compelled to drop a large share of its moisture. As a result, the rainfall varies on the eastern coast from 50 inches at Sydney, towards the south, to more than 80 inches in the warmer north. Soon after the summit of the range is reached, the air descends to lower altitudes and is warmed by compression. It thus becomes able to hold more moisture, which it proceeds to pick up by evaporation. Behind the windward mountains, Australia is dry. More than half the continent receives less than 15 inches of rain in an average year, indeed much of the interior receives less than 10 inches. Two thirds of the continent has no streams which find their way regularly to the ocean.

It is often assumed that the presence of this windward mountain range is responsible for the aridity of most of Australia, but this assumption is too sweeping. If there were no such range to rob the Trades of their moisture, most of Australia still would be arid, as are all fairly level stretches passed over by those winds. However if the winds hadn't already been so nearly deprived of their moisture, the few low elevations of the interior of Australia would cause more precipitation than they now do.

The Mild Temperature. Another result of the latitude of Australia is that cold temperatures are nowhere experienced, except in the higher mountains. Indeed all the continent, except the higher elevations towards the south, is practically free from killing frosts. Consequently pastoral pursuits and other out-of-door activities are not interfered with by cold. The livestock require no shelter from the cold. Hay is used in times of drought rather than of cold. Australia is "the land of picnics" partly, no doubt, because weather conditions are so favorable. It also has a remarkably low death rate (10.6 per 1000 of the population), doubtless partly due to climatic reasons.

Products. Since Australia extends from the truly tropical

regions to the 38th parallel, it is possible to grow a very great variety of products in the continent. Some of the many plants and animals which have been introduced do even better, in some respects, than in their native homes. For example, the highest price paid for wool is for Australian wool, and the highest price paid for wheat is for Australian wheat. Grapes do remarkably well in some sections, while an American cactus plant, the English rabbit and the fox find conditions congenial over wide areas.

INFLUENCE OF ISOLATION ON THE BIOTA

The isolation of Australia since the dawn of the Age of Mammals, separated from Asia by the famous "Wallace's Line" through the East Indies or by wider belts of water, produced several highly interesting results.

Most people, when they think of Australia, recall the kangaroo. These animals are fundamentally different from the mammals with which we are familiar. One striking difference is that the young are born at a very early stage in their development, and placed in an abdominal pouch by their mother. The land mammals of Australia, except the bat and introduced forms, are closely related to the kangaroo and represent the lowest class of mammals, a class which is now practically extinct in the rest of the world, the opossum being the most notable exception.

While Australia had land connection with the continent of Asia, reptiles and birds of many sorts, and other lowly animals, and finally the most *primitive* types of mammals, established themselves. Since that remote date, the mammals of the rest of the world evolved amazingly and the diverse forms such as the cat, cow, giraffe, elephant, seal, bat, and monkey appeared in the other continents. Australia, due to its isolation, knew none of these higher mammals until the arrival of civilized man; two important exceptions were the bat, which had flown across the sea, and a dog, which had been brought in by the bush-man when he came by boat, thousands of years ago.

The lowly mammals of Australia differentiated too, and it is interesting to find animals simulating many of the types developed, among the higher mammals, elsewhere. For example, there are native mammals which resemble in habits and outward form, mice, rats, squirrels, bears, cats, muskrats, woodchucks and weasels. Such a diversity of forms, so closely related (all being marsupials), is an eloquent testimony to the influence of environment, and the results of specialization in habitat. The animals corresponding to our woodchuck and our flying squirrel, for example, lived in corresponding environments and necessarily acted some-

what similarly, and hence came to differ in habit and form from their relatives in much the way that our woodchuck and our flying squirrel differ from their relatives.

Not only were the native mammals peculiar, but many of the birds and most of the plants are too. Many of the latter are related, as in the case of the mammals, to forms now extinct in most or all the rest of the world. The characteristic tree of Australia is the eucalyptus. There are more than 300 varieties represented, adapted to nearly as widely different conditions as occur on the continent. In a land where there are no oaks or willows, some kinds of eucalyptus grow like oaks and some like willows; some grow where almost no rain falls, while others grow where there is very much. The "blue-gum," extensively introduced into California and Tropical America, in favorable localities grows to be more than 300 feet tall; some indeed, reaching 400 feet.

INFLUENCES OF REMOTENESS ON COMMERCE

The remoteness of Australia from Europe, Asia and other important land areas had great significance in its exploration and development and still influences its commerce powerfully.

The voyage from San Francisco to the nearest great port of Australia (Sidney) still requires nearly four weeks, while 35 days are commonly taken in the trip from England, going round Africa, and often more than seven weeks are occupied in going the 11,000 miles from England to Australia via the Suez Canal.

As two-thirds of the population of Australia is in the southeastern one-eighth of the continent, most of the people are 6,500 miles from Africa, 7,500 from South America, and about 4,000 from Asia.

Australia's exports are mainly products in active demand in the home country, and until the advent of refrigeration, they consisted largely of non-perishable products, and until recent decades, of products which were quite valuable per pound. Wool, hides, and precious metals long were the great exports. When efficient refrigerator ships were available, chilled meats, butter, and cheese were sent in increasing amounts to help supply the great British demand. Lately much meat has been exported, also. Now there are several hundred million bushels of wheat, purchased by the government from the farmers, stored in Australia awaiting shipment. Since it takes three times as long to take a cargo of wheat from Australia as one from the eastern United States, and since the submarine risk, around Spain, is estimated to be twice as great, the immense distance and the high freight

rates which the submarine has produced, bar so cheap a commodity as wheat, as it was barred in the days before the advent of numerous great, efficient, steel boats.

INFLUENCES OF THE REMOTENESS ON THE DEVELOPMENT

Australia is so remote that it was discovered after most of the so-called New World was explored, and first settled in 1788, and then as an indirect result of the American Revolution with consequent closure of established penal colonies.

The remoteness resulted in immigration mostly of three sorts: penal colonists in the beginning only; immigrants of the laboring and servant classes brought over by wealthy land holders; and those who came of their own free will. The last class, far the largest, mostly were exceptionally daring, optimistic and independent, for only such would be likely to undertake so trying and expensive a trip as emmigration to Australia or New Zealand two generations ago entailed.

The fact that relatively few came to Australia, the great need for labor to develop the continent's resources, and the numerous opportunities to rise out of the laboring class, combined to make the labor problem a serious one and led to systematic attempts to encourage immigration of desired sorts, to higher wages and shorter hours, to legislation favoring the laboring class, to the introduction of American labor-saving machinery, and to other advanced procedures. The comparative remoteness, and the unreliable rainfall, also made it difficult to secure the capital required to develop the abundant resources. Thus the governments themselves were led to borrow money and accomplished many note-worthy tasks which are left in most countries to individuals, such as well-drilling, subsidizing ("staking") prospectors, and fence-building, in addition to the less unusual railway, telegraph, and road extension and management.

It seems almost self-evident that the following contributions are in no small degree the result of remoteness and consequences arising therefrom as listed in the preceding paragraphs. Civilization owes to Australians or New Zealanders the private balloting booth, without which voting cannot be independent, state insurance, compulsory arbitration of labor disputes, old age and disability pensions, the best code of mining laws yet worked out, and the conviction that the government should do everything for the people that it can do more effectively than the people individually can do for themselves. The principles of old age and disability pensions were early taken up by Germany and thus are sometimes incorrectly credited to that country.