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Atlas of COMMERCIAL GEOGRAPHY

By

H. de B. Gibbins M.A.



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OF
COMMERCIAL GEOGRAPHY

CONTAINING

48 MAPS, WITH EXPLANATORY LETTERPRESS

BY

H. DE B. GIBBINS, M.A.

*Author of "The Industrial History of England," and "The History
of Commerce in Europe"*



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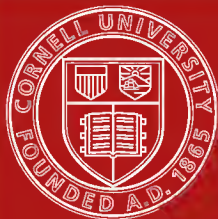


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P R E F A C E.

IN this Atlas the Editor and Publishers have endeavoured to produce a Work that shall be useful both to the man of business and to the student, as representing those geographical facts which are of most importance for commercial purposes. The maps have therefore been prepared so as to bring into view as clearly as possible, either by colouring or by lettering, the commercial advantages and facilities of each country, as well as those general physical facts—as, *e.g.*, of climate and vegetation—that are prominent throughout the world. The colouring of the majority of the maps is arranged so as to show the physical features of the country concerned, as these are of the first importance for commercial development; and the names of the various products are placed in different lettering according as they are of vegetable, animal, or mineral origin. Special attention has also been paid to marking clearly the means of communication, such as railways, canals, and telegraph lines. In a few maps colouring has been used instead of lettering to distinguish regions where certain products are predominant; and where the distribution of population is of special interest, this has likewise been shown by colour. A series of geological maps has been inserted in this Atlas, with some explanatory remarks on “Commercial Geology;” and these call attention to a most useful branch of study which hitherto, we believe, has been omitted by other textbooks and atlases. In providing the letterpress to the maps, the object has been not to give a complete manual of commercial geography (which, of course, in these limits would be impossible), but to point out the salient features relating to commercial development in each country; and it is hoped that both letterpress and maps will be found useful in promoting the study of what is in these days a most essential branch of general knowledge.



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THE COMMERCIAL ATLAS.

COMMERCIAL GEOLOGY.

(To be read with Maps 8, 12, 29, 33, 36, 42, 45.)

AMONG its many other uses, the science of Geology may be applied to the advancement of commerce and industry. Even a small knowledge of it may be of the utmost service to the miner, the engineer, the builder, or the agriculturist. For example, after examining a few fossil stems and leaves of a coal district a geologist can tell at once whether the measures belong to the carboniferous, oolitic, or cretaceous epoch, and thus predict the probable extent, persistence, and value of the coal beds. Similarly an engineer who knows thoroughly the geological characteristics of the country wherein his work lies can tell beforehand with considerable certainty the expense of construction of roads, railways, or canals, according as the surface presents rocks of various degrees of hardness and so forth. In Agriculture, again, a knowledge of geology is of use in giving a farmer accurate information as to the surface and sub-soils. All fertile soils consist of two classes of ingredients, organic and inorganic; and as the second class is derived from the disintegration of the sub-soil or the rocks underneath the surface, it is important to know of what this soil or rock was originally composed. More especially a knowledge of the chemical composition thereof will be useful, as showing what chemical elements the soil possesses so as to be useful for certain crops, and what others it lacks that may be supplied by artificial means. Thus a geologist can tell what parts of a country would afford pasture for sheep (though they would be unsuitable for high farming) by noticing where the chalk formations came to the surface, as *e.g.* in the beds of the cretaceous period in Sussex and Kent (Map 12) and in the famous Queensland downs (Map 45). The tracts just mentioned will be found in the Mesozoic beds, coloured green in these maps. Similarly it will generally be found that many beds of the Quaternary period will, upon disintegration, afford the most favourable soil for the growth of various kinds of grain. Thus in Russia (Map 8) the great grain-growing districts correspond largely with the Quaternary colouring; so, too, in Roumania and Hungary, in North Italy, in North India, the Argentine Republic, Dakotas and Minnesota, and in many other cases; the reason being that the beds in these cases are the result of fluvial deposits. Of course, however, it must be remembered that conditions of climate, height above sea-level, and other physical facts also largely influence the growth of grain or rearing of sheep, and, though geological indications are of great use, they must not be used as the *sole* guides in matters of this kind.

We will now look at the beds of the different periods separately—I. THE ARCHAËAN series include the *Laurentian*, and according to some the *Cambrian* and *Silurian* rocks. The Laurentian beds are found very prominently in the North Hebrides (Map 12), Scandinavia (Map 8), and parts of Wales, North Scotland, and in North America (Map 36), and will easily be recognised in these maps by the fainter red colour. They are important commercially as often containing the richest metalliferous veins, as *e.g.* in the Ural Mts. of Russia (Map 8). Copper, tin, and silver, and also iron ore, occur frequently; and slates are another useful product.

II. The PALÆOZOIC rocks include the *Cambrian*, *Silurian*, *Devonian*, *Carboniferous*, and *Permian* series. Of these the *Cambrian*, along with the Laurentian, are found largely in Canada and other parts of N. America (Map 36) and Bohemia (Map 8), and the *Silurian* in Wales and S.E. Ireland (as in Map 12), in the Ural district, in Silesia and Bohemia (Map 8), in the Altai and Himalaya Mts. (Map 29), in N. and S. Africa (Map 33), and E. Australia (Map 45). They are not of much commercial importance, except for the production of *gold* which is often found among them and especially in eruptive rocks of this period or where eruptive and Palæozoic rocks lie close together. This conjunction of eruptive and Palæozoic rocks is very noticeable in E. Australia (Map 45) where so many gold-fields are found. Other metals are mercury, copper, lead, tin (as in Cornwall, Map 12), and silver; while slates and limestone are also quarried.

The *Devonian* rocks of this period occur, as their name implies, in Devonshire; and also in Hereford, Brecknock, Monmouth, E. Scotland, and S. Wales (Map 12), and of course also in many Continental and foreign countries. The most important commercial product is marble of various kinds, as well as flagstones and various kinds of building stones, and spar. In this formation occur also brine springs, from which salt is extracted. It is to be noticed also that the detritus of these rocks produces a light and fertile soil. The *Carboniferous* rocks of this period are of the utmost importance to commerce, as containing extensive coal measures, especially in Great Britain. It must not, however, be thought that coal belongs only to this period or series, for it is found also in the Mesozoic and Tertiary formations. Thus the coal-fields of Borneo and Labuan (Map 29), and of Sydney (Map 45), occur in oolitic rocks; those of Vancouver Island in cretaceous beds (both Mesozoic); and some of the Austrian coal-fields belong to the Tertiary system (cf. Map 8, south of Brünn). The distribution of the coal-fields of Great Britain should be carefully studied in Map 12, and the fields of other countries in Maps 8, 29, 33, 36, 45, the formations in which they occur being noted. Besides coal the carboniferous rocks yield petroleum and asphalt; the limestones of this formation often contain the ores of lead, zinc, and antimony; and in Great Britain iron ore is generally found also. Marble, lime, and fireclay are the remaining products. The *Permian* rocks of this Palæozoic period take their name from the district of Perm in E. Russia, where they occupy large areas (Map 18), but in other countries are generally scattered. They do not yield many metals, though in Germany a variety of rock called the *Kupfer Schiefer* is worked successfully for copper. The chief commercial products are stone for building purposes, magnesian limestone (of which the Houses of Parliament are built), and gypsum is also found.

III. The MESOZOIC period (green) contains the formations known as *Triassic*, *Oolitic*, or *Jurassic*, and *Cretaceous*, some of which are very important for commercial purposes. The *Triassic* rocks are met with on W. coast of Scotland (north of the Moray Firth) (Map 12), in the Mersey basin in England; and they cover wide areas in E. France, S. Germany, and Switzerland (Map 8); also in the states of Massachusetts and Connecticut in the U.S. (Map 36), and in Central and S. Africa (Map 33). The soil from rocks of this system is light and of little value for farming purposes, as in parts of Notts., or else is a stiff, clayey loam better fitted for pasture than agriculture, as in Cheshire and round about Exeter, in England (Map 12), and the Queensland downs in Australia (Map 45). The chief commercial products are rock-salt (mined e.g. in Cheshire and in Stassfurt and near Württemberg in Germany), sandstone, limestone, and gypsum.

The *Oolitic* rocks are well represented in England, stretching in a broad belt from Dorset, through Leicestershire and Notts. to the east coast of Yorks., and including also the famous wealden of Kent and Sussex (Map 12). They are particularly noticeable also in the Jura Mts. and Erzgebirge (Map 8), in Central India and Borneo (Map 29) where coal occurs in them, and also in Virginia, U.S., where coal is again found (Map

6). They furnish valuable products: in the oolites and lias of Yorkshire, iron-stone; in many parts of England and other countries, excellent building stone (as at Portland and Caen); also marble, mortar, alum, and fuller's earth.

The *Cretaceous* formation occurs largely in the S. and S.E. of England, the N.E. of Ireland (Map 12), in France and South Germany (Map 8), in Vancouver Island and the Saskatchewan districts of British N. America (Map 36). The soil affords an excellent supply of grass for pasture as on the Saskatchewan and other prairies, but is bare of trees. The chief products are chalk and flint, fuller's earth, and (what is very valuable in agriculture) abundance of phosphates for manuring purposes. Coal occurs in this formation, *e.g.* in Vancouver Island.

IV. Coming now to the TERTIARY (brown) period, we find that its rocks occur often in certain well defined "basins," as in those round London, in Hampshire (Map 12), and round Paris, Vienna, and Mainz, and occur also over much of Belgium (Map 8) and in Virginia and Richmond, U.S. (Map 36). They furnish useful building stones, limestone, gypsum, valuable clays for pottery and brickmaking, lignite as in many parts of Germany (Map 20), and occasionally iron ore, as in Antrim, Ireland (Map 17). The soil is generally more likely to be favourable to agricultural operations than that of the Mesozoic rocks. The fertile Canterbury Plains (New Zealand inset, Map 45) are of this formation.

V. After the Tertiary system we find those recent deposits and accumulations—whether in river-valleys or deltas, in lake basins, on sea-beaches, or below the sea, whether due to igneous, chemical, or organic influences—which are called Post-tertiary or QUATERNARY (yellow) and which belong to the period in which we now live. Instances of these deposits may be found in the valleys and deltas of the Nile (Map 33), Ganges (Map 29), Tigris and Euphrates (Map 29), the Mississippi (Map 36), Rhine (Map 8), Amazon, and La Plata (Map 42). The district between the Aral and Caspian Seas (Map 29) is also of this formation. The soil is generally very fertile (*e.g.* the Black Earth district of Russia, Map 8) and the commercial products are of great value. Amongst them may be mentioned clays for bricks and pottery, sands for glass-making, gravel and shingle for roads, marls for agricultural purposes, and peat for fuel and manure. In Peru and Chile (Map 42) this system gives the well-known nitrate of soda, which is the result of former saline incrustations; near the Caspian Sea (Map 8), it gives bitumens, including naphtha and petroleum; and also asphalt. Of metals, stream-tin is found in Cornwall, and gold occurs, especially in California (Map 36) and Australia, in the sandy and gravelly deposits of this era.

VI. Lastly ERUPTIVE rocks (bright red) demand our attention. Their products are chiefly of a mineral character, and most minerals are found in them, especially manganese, copper, mercury, and gold, the native copper of Canada and America. Other products are apatite, sulphur, pumice, lavas, pozzuolana for cement, borax, precious stones (agate, beryl, etc), kaolin for pottery and enamel, fireclay, and asbestos. Among the older eruptive rocks granite is an important product (as *e.g.* in Scotland) and we may mention also basalt, greenstones, and porphyry. The soil resulting from disintegration of volcanic rocks is often very fertile as *e.g.* in New Zealand.

ISOCHRONIC CHART. Map 1.

This map is interesting as showing how far the rapidity of the means of communication aids commerce. It will be seen that Europe, the United States, and Canada possess good *railway* communication; while Asia and Africa (except in India and the Cape) carry on their commerce chiefly by means of *caravans*. The means of communication

in S. America (except in the Argentine, etc.) and in Australia (except the E. coast) are almost non-existent. The *steamer tracks* show how steamships are practically independent of prevailing winds; but to understand properly the routes taken by *sailing vessels* we must study also Maps 2 and 5 to see the prevailing winds and ocean-currents—*e.g.*, the sailing route to New Zealand from England is, after passing the Atlantic, to keep in the latitudes of the west winds of the South Hemisphere (40° - 50° S.), and to return from New Zealand *via* Cape Horn by the aid of the same winds.

One of the most interesting developments of railway enterprise is the new railway now in progress through Siberia, which will ultimately connect St. Petersburg with Vladivostock, the Russian naval station on the Sea of Japan. The line will run from Tiumen through Chelabinsk, Kurgan, Omsk, Tomsk, Irkutsk, round the south end of Lake Baikal, Stretensk, and Khabarovka to Vladivostock, following in its latter portions the valley of the river Shilka and river Amur. The political, as well as the commercial, results of this vast undertaking are awaited with much interest.

THE WORLD: CLIMATE CHART AND WINDS. Map 2. VEGETABLE PRODUCTS. Map 3.

IN this map the fluctuations of the isothermal lines are chiefly to be noticed. It will be seen that for about 20° on each side of the equator they coincide pretty closely with the parallels of latitude, but, after that, they become more irregular, because the influence of the Sun (which about the Equator overcomes most minor influences) is here diminished, and therefore other modifying causes have more effect. In the N. Hemisphere, *e.g.*, the Gulf Stream causes the Isotherms of 50° , 40° , and 30° to recede northwards to a very marked degree; while in crossing the mountainous, elevated, and therefore colder, regions of Central Asia the lines approach nearer the Equator. The influence of large masses of water in increasing the mean temperature is seen markedly in the N. Polar zone where the Isotherms of 10° and 20° recede when crossing the sea and come lower when passing over the land. This is an example of the difference between *land* or continental, and *sea* or oceanic climates, for the sea has a cooling influence in summer and heating influence in winter, thus preserving a more equal temperature all the year round; while continental climates have greater extremes of heat and cold. Thus the masses of land round the S. Pole make the S. Hemisphere colder than the North. The influence of cold ocean currents may be seen in the S. Hemisphere on the west coast of S. America, where the 70° line comes much nearer the Equator owing to the cold Peruvian Current flowing from Antarctic waters along that coast (*cf.* Map 5). Of course, also, the height of land above the sea level, the direction of prevailing winds and other causes greatly influence the temperature of particular localities; and it is a useful exercise for the student while studying isothermal lines to try to account for their fluctuations in detailed cases.

It should be mentioned that the isothermal lines divide the world roughly into seven *vegetable zones*: (1) The *spice* region, of about 20° on each side of the Equator; (2) The *sugar cane* region (coffee, etc.) whose northern limit corresponds to the 68° (say, 70°) line; (3) The region of *olives* and *figs*, whose N. limit follows the 60° line; (4) The *wine* region whose N. limit is the line of 50° ; (5) The *wheat* and *oak* region, whose N. limit is the 40° isotherm; (6) The region of *fir*, *pine*, and *birch*, with a N. limit of 30° ; and (7) The region of *lichens* and *mosses*.

As an example of the variations affecting the limits of various plants it is useful to take *e.g.* the line representing the North limit of *wheat*, in Map 3, which will be seen to vary considerably. It is much higher East of the Rocky Mts. than West of them

(partly because the west coast has too much rain), and highest of all in Norway, where the influence of the Gulf Stream is felt.

The chief prevailing winds to be noticed are the N.E. and S.E. *Trade Winds* and the *North-West Winds* south of 40° S. lat. It is well known that vessels derive great advantage from the steady character of these winds. The *trade winds* are steadier and more constant in the S. than in the N. hemisphere, because they are not interrupted or disturbed by the influence of such large masses of land. The *Indian Ocean* is so much affected by the proximity of the continental masses of Africa and Asia that the N.E. trades do not blow there at all, being converted into periodical winds, the well-known *monsoons*, which are not shown on this map as only prevailing winds are given.

DENSITY OF POPULATION AND PEOPLES. Map 4.

THIS map is coloured according to *density* of population, while the names of the various races are put into print, the colour of the letters showing to which of the three great divisions a race belongs. The *Caucasian* race is the most highly developed and civilised, and includes all the European races (except the Lapps and Finns), and of course their descendants in the New World, and also the Hindus and Arabs. The *Mongolian* race includes chiefly the Lapps and Finns, the Chinese, Tartars, Malays, and other inhabitants of Asia; while the aboriginal inhabitants of the New World, if not treated as a separate race, may also be reckoned Mongolian. To the *Negro* race, the least advanced of all, belong the Soudanese and Bantus of Africa, who must be carefully distinguished from the (Mongolian) Berbers, Arabs, and Somalis; the aborigines of Australia, with the inhabitants of the Indian Archipelago, New Guinea, and the other islands in that region.

The density of population depends now mainly on one of two natural advantages, *i.e.* whether a particular region is or is not fitted for manufacturing or agricultural pursuits. Thus, we find in Europe, the population is densest in manufacturing regions, which, in turn, depend for their position on a large supply of coal, as in England, Belgium, N. France, and S. Germany; it is also dense in the fertile agricultural districts of Holland, Belgium, and N. Italy. In America, it is densest in the manufacturing districts of the east coast. In the other parts of the world, the largest populations are found in the valley of the Nile, the plain of the Ganges, and the plains watered by the rivers of E. China—all fertile agricultural districts. In studying the distribution of population natural features (such as deserts, mountains, fertile or barren plains), rainfall, climate, and commercial facilities must be taken into account as explaining comparative sparseness or density.

THE SURFACE ZONES AND OCEAN CURRENTS. Map 5.

WE have already referred to ocean currents in the notes on Map 2, as affecting climate, and we may here call attention to their effect on navigation. By taking advantage of them a vessel may gain as much as 50 miles a day in the west equatorial current, or by sailing against, say, the east equatorial current it would lose about 20 miles. These currents are caused much in the same way as winds—the heated water near the equator evaporates and colder water sets in to supply its place and thus a regular circulation is produced. They are also affected by the prevailing winds; for instance, the S.E. trade winds keep blowing the surface water away to the west, and so a current sets in (along the coast of Peru) to supply its place, and also to take the place of the water evaporated

by equatorial heat. The most important currents are the Gulf Stream, the S. Atlantic connecting current, the Brazil current, the Kuro-Siwo or Black Stream flowing past Japan, the S. Pacific connecting current, the Mozambique and Australian current.

The surface features can, of course, be given only very roughly, but they indicate what portions of the world's surface are available for cultivation, though allowance must be made for special physical modifications and for climate. Thus we see much of S. America coloured green, as it produces vast *forests* (cf. Map 44), as do also Canada, Russia, and Central Africa. Most of Europe is available for good *pasture* and agricultural land; while *steppes*, giving much poorer pasture, are seen in the Argentine Republic, S. Russia, Central Asia, and N. America. The *deserts* of Sahara, Gobi, Eastern States of America, and Australia are clearly marked.

COLONIAL POSSESSIONS, 1790 and 1890. Maps 6 and 7.

A COMPARISON of these maps is very instructive, as showing how comparatively recent are our colonial possessions; and also how the fortunes of other great Empires have fluctuated. It will be at once seen that, in 1790, the largest colonial empires were held by the Spanish and by the Portuguese. Much of the Spanish Empire was only nominally Spanish, but still the western shores of both N. and S. America bear abundant traces of their former owners in their place names. By 1790 England had lost the American States and had not gained much more than a foothold in India, though the acquisition of Bengal had laid the foundations of our Indian Empire. The greater part of the English possessions lay in Canada and N.W. America, though of course most of that region was not yet settled. Australia and New Zealand were very little known. France had lost her American colonies to us, and also lost her influence in S. India, and had not yet gained her modern possessions in N. Africa and Indo-China. The power who had most influence in Africa, at that time, was Portugal, but much of it has now decayed; and in S. America, Brazil, first a Portuguese colony and then an Empire ruled by a branch of the Portuguese royal house, has now become a Republic. The Dutch have kept very much the same possessions as they held in 1790 (except the Cape), and though these are now 64 times larger than the mother country, they are much more under its influence than our own colonies are under ours. In fact, our colonial Empire is of the flimsiest nature.

Germany is, of course, quite a new comer in the field of colonisation, but has already acquired large possessions in Africa.

A very important feature in Map 7 for English students is the colouring showing our naval stations, viz., the S. Pacific or Australian, the Indian, the Cape, the N. American and S. American, the W. African, the China and the Pacific stations. The coaling stations should also be carefully noted. The Admiralty coaling stations have all recently been much strengthened by armament and fortifications and will afford valuable supplies to our navy in time of war. The chief of them are at Aden, Trincomali, Colombo, Singapore, Hong kong; Simon's Bay and Table Bay, Sierra Leone, St. Helena, Mauritius; Port Royal, St. Lucia, Bermuda; Halifax, Esquimaux near Victoria in Vancouver Island; King George's Sound in Australia; Thursday Island, and Sober Island.

EUROPE (Geological). Map 8.

(See *previous notes on "Commercial Geology."*)

EUROPE (General Map). Map 9.

THE physical features and situation of Europe are on the whole very favourable to commercial development. The greater part of it lies in the temperate zone, and the arrangement of its coast-line affords many parts of it, owing to their proximity to the sea, a more equable climate than would otherwise be the case; while the warm Gulf Stream and the west winds have also a favourable effect. The south of Europe enjoys a particularly pleasant climate owing (1) to its situation round the shores of a great inland sea, and (2) to the protection from cold north and east winds afforded by the chain of mountains from the Pyrenees to the Carpathians. These mountains, moreover, are not sufficiently formidable to impede the means of communication and transit very much, for, as the map shows, they are pierced at various points by railways, except in the case of the Pyrenees, where the railways run at the E. and W. base. The river systems are also such as to be useful for navigation, and in many countries water transit is aided by numerous good canals.

The map shows clearly the extent of the Northern Plain, which on the whole is well adapted for temperate grain crops, though the soil varies in fertility. The mountains of the south prevent much agriculture, except in the lowlands. It will be seen that the Kirghiz steppes are below the sea-level; so also is part of Holland, but the scale is too small to show it (see Map 22).

The railway communications are very widely developed, except in Russia. This map gives the main lines, but the maps of separate countries of course show them more fully.

THE AGRICULTURE AND FORESTS OF EUROPE. Map 10.

IN this map each country is coloured according to the relative percentage of land under forest, crops, or pasture. The largest area occupied by forests in Europe is the wide belt across the centre and north of Russia. About 30 per cent. of Russia is unproductive land, and of the remainder no less than 47.5 per cent. is under timber. This country, along with Sweden and Norway (30 per cent. together), furnishes the bulk of the timber of Europe. The timber trade of Austria and Germany is also important, and a good deal of timber is still floated down the great rivers of Eastern Germany for export. Among *agricultural countries* Belgium, France, Germany, and Italy (in this order) are foremost in percentage of land under crops, fruit, or vines, the peasant proprietors of the first three being specially skilful and industrious; while in Russia the fertility of the "*Black Earth*" soil partly makes up for the miserable development of agricultural skill. In productiveness per acre, however, the British Isles and Belgium take the lead. France produces, again, both relatively and proportionately more *wheat* than any other European country, growing on an average 280 million bushels a year, while Russia grows 250 million, Austria-Hungary 150 million, Germany 100 million, and British Isles 90 million bushels. As regards *pasture-land* Switzerland, Holland, and the British Isles (in this order) have the greatest percentage, and in Great Britain the area under pasture is larger than that under crops (32 as against 28 per cent.). Denmark comes next in area (28 per cent.) but is easily first in the proportionate number of animals kept, the number of cattle being 68 and of sheep 57 per 100 inhabitants; while in the United Kingdom the figures are 27 for cattle and 77 for sheep; in France 35 for cattle, 60 for sheep, and in Germany 34 for cattle and 42 for sheep.

The colours in this map are made to correspond, as far as possible on so small a scale, to the locality in which crops, forests, or pasture lands are *predominant*.

THE INDUSTRIES OF CENTRAL EUROPE. Map 11.

THE manufacturing districts of central Europe are in most cases coterminous with the coal-fields, except in the case of North Italy. These coal-fields extend in a belt from about Lille to Tula in Russia, and include the Franco-Belgian or Valenciennes field, across the S.E. of Belgium, in the valley of the Saubre (producing about 17 million tons annually); the Ruhr valley field in Westphalia, from Dusseldorf to Dortmund; and the Saxon and Silesian fields, the Silesian coal extending from Germany into Austria and Russia. The coal-field of Tula is south of Moscow, in the centre of Russia (not shown on this map). There are smaller fields in France (round St. Étienne, Le Creusot, and Alais) and Germany (Saar valley). Of course the position of these fields determines the position of the manufacturing towns and population, these being thickest where there is plenty of coal. In Switzerland and Italy, however, where not much coal is found, manufactures are either carried on by water-power or exist in the form of domestic industries in the workmen's own houses. (This is specially the case in the valley of the Po.)

The vine-growing and wine-making industry depends upon circumstances of situation and climate, the vine requiring sheltered valleys or hillsides, and a moderately warm and dry climate, with a long autumn. Hence it will be seen that the yellow colouring on the map is chiefly in river valleys (*e.g.*, those of the Rhine, Moselle, Neckar, Rhone) or on the slopes of hills (on the Taunus Mountains, Austrian Alps, and the spur of the Carpathians north of Tokay). The vine flourishes farthest north in Germany (52° N.); but is grown in the largest quantities in France (south of 48°), which produces about 800 million gallons of wine annually, in Italy (660 million), and Spain (440 million). Germany produces about 70 million gallons, and Austria 200 million.

The population is naturally densest in the manufacturing districts, and where agriculture or vine-growing is much pursued. Thus Belgium, where both manufactures and agriculture are highly developed, is the most thickly populated country in Europe, the next being England and Holland.

The following figures of density of population per square mile will explain the colouring of the map:—*Over 300 per square mile* (striped green)—Belgium, 520; Holland, 350; United Kingdom, 311. *Over 200 per square mile* (dark green)—Italy, 269; German Empire, 227. *Over 150 per square mile* (green)—France, 187; Austria-Hungary, 163. *Over 100 per square mile* (green dots)—Denmark, 145. *Under 100 per square mile* (pale green)—Russia, 48; Sweden, 27.

BRITISH ISLANDS (Geological). Map 12.

(See notes on "Commercial Geology" above.)

THE POPULATION OF THE BRITISH ISLANDS. Map 13.

(N.B. In No. 13 the general distribution of population is shown irrespective of county divisions. In No. 14 each county is coloured separately.)

A GLANCE at this map, which may be usefully compared with Map 14, shows us at once that the densest population is in the manufacturing districts where industries are concentrated together. It is noticeable also, if we compare the census results of 1881 and 1891, that the largest increase is likewise to be found in manufacturing or coal-mining counties, as *e.g.* in Glamorgan, Monmouth, Durham, and Northumberland, which possess many coal-mines, and in Lancashire and W. Yorks, the seat of many manufactures. The rural counties show the smallest increase; and in fact the population of

many agricultural districts is decreasing, owing to a complex variety of causes into which we cannot enter here, though we may mention that this gradual decrease (since 1877) in the area under crops is one of them.

In this map the population over 500 to the square mile is shown by striped lines, which, as will be seen, are in the manufacturing districts (red) and round about London. The next most populous counties are in England the eastern and midland, where agriculture is at its best; in the grazing and hilly districts, *e.g.* Wales and Devon, population is naturally less. The majority of the Scotch population is in the manufacturing belt between Ayr, Glasgow, and Edinburgh; after which the most populous counties are Aberdeen, Fife, and Forfar, where agriculture is well developed. In Ireland, Dublin County comes first, and then Antrim and Armagh, in which last agriculture is prominent. The coal-fields in Ireland do not, as elsewhere, support a large population, for they are not well worked.

The total population of the United Kingdom was, in 1891, 37,740,283 persons, being a general increase of 8.2 per cent. in the ten years, but including a decrease of 9.1 per cent. in Ireland.

BRITISH ISLES SHOWING PASTORAL AND AGRICULTURAL LAND; WITH THE MANUFACTURING DISTRICTS OF CENTRAL ENGLAND.

Map 14.

In this map instead of dividing the counties, as is often done, into "grazing" and "corn" counties, the percentage of land under crops and pasture has been shown by colour. It will be noticed that the counties containing most land under pasture are in the west and north of England and Scotland and occupy most of Ireland; the reason being that these parts have the moister climate, owing to the rainy west winds from the Atlantic, and therefore the grass never becomes subject to undue heat or dryness. The corn-growing and agricultural counties are nearly all in the drier regions of the United Kingdom, as most corn crops (wheat, barley, etc.) require a dry summer.

The various manufacturing towns are, of course, situated on or near the coal-fields, and in some cases, as in Lancashire and West Riding of Yorkshire, one coal-field is almost entirely devoted to one particular industry, as cotton or woollens. The various manufactures of each town are clearly shown on the map.

ENGLAND AND WALES. Map 15.

The physical features are plainly marked, and it will be seen that the E. portion is much more level than other parts, but none of the features are such as to present any great hindrance to means of communication. Hence the country is covered with a network of excellent *railways*. Several of the rivers, also, can be utilised for internal navigation by barges. The most important are the Thames, Severn, Trent, Yorkshire Ouse, and Mersey, with their tributaries, and all are connected by *canals*, some of which are of great length (*e.g.* Leeds to Liverpool, London to Warwick and Liverpool). *Ship-canal*s are also in progress (*e.g.* Manchester to the sea and the Berkeley ship canal from Sharpness to Gloucester) for sea-going vessels.

The *rainfall* and climate generally is affected to some extent by the mountain ranges of Wales and N.W. England. They cause the wet west winds from the Atlantic to deposit most of their moisture on the W. coast. Hence the E. coast has a less rainfall, especially as the east winds are naturally drier than the west, because they travel over more land than sea. Hence the wheat districts are in the E. counties as being the drier, for wheat requires rather a dry summer. The counties of the S. and E. are more

fitted for agriculture; those of the W. and N.W. for pasture, because of their more hilly nature (*cf.* Map 14). No crop, except hops in Kent and the S.E. counties, is peculiar to any one county. For manufactures *see* Map 14.

The most important minerals are coal and iron, which in England generally occur together (*cf.* coal-fields in Map 12). The other minerals—tin, copper, etc.—can easily be seen on the map.

SCOTLAND. Map 16.

SCOTLAND is not naturally well adapted for commerce, and for centuries was industrially speaking very backward. The energy and skill of its people, however, have largely compensated for natural disadvantages. The mountains of the country preclude much agricultural development as not more than one-third of the surface is capable of cultivation; but where opportunity offers Scotch farmers take every means to ensure success, and the Scotch are renowned as gardeners, farmers, and foresters. Large numbers of sheep (7,000,000 in all) are pastured both in the Highlands and Lowlands. The chief *grain* crops are oats and barley, but good crops of wheat are grown in parts, as *e.g.* in Haddingtonshire. Dairy-farming is conspicuous in Ayr, Lanark, and Dumfriesshire; and much cattle is reared for the English markets.

The *fisheries* are very important and employ nearly 30,000 people. The rivers Tay, Tweed, Dee, Don, and Spey, afford the best salmon; herring, cod, ling, and haddock are caught off the coast. The chief fishing ports are marked on the map (Wick, Peterhead, Aberdeen, Leith, etc.). The manufactures of central Scotland are also of great importance, including textiles (cotton, linen, *jute*, hemp, wool, and silk), iron goods, and especially ship-building in the famous yards along the Clyde.

The mountains form a severe barrier to means of communication, and it will be noticed that most of the *railways* are in the central Lowlands; there being only three in the Highlands. Noticeable railway bridges cross the Firths of Tay and Forth. Of *canals*, the most important is that connecting the river Clyde with the Forth, and the ship-canal (the Caledonian) between Loch Linnhe and the Moray Firth; though this latter is not used so much as was expected.

The *coal-fields* (*see* Map 12) lie in a belt between Ayr and Fife and produce about 10 million tons annually; Aberdeen, Argyll, and Kirkcubright yield fine *granite*; Fife and Mid and West Lothian possess an *oil-producing shale*.

IRELAND. Map 17.

BEING the most westerly of the British Isles, Ireland is subject to a heavy rainfall from the moist west winds, and as much of the surface is flat (the mountains being mostly near the coast) the rain does not flow off rapidly in small streams and rivers, but causes *bogs* to be formed, especially in the west where the rainfall is greatest. Though this is a disadvantage, the moisture of the climate favours, on the other hand, the growth of rich pasture grasses; hence Ireland is noted for its *pastures* and *dairy-produce*. As will be seen from Map 14, both pastoral and agricultural industries are well developed in the counties of Ulster, which province also contains the least amount of bog-land. Agriculture in most parts is, however, very backward.

The physical features present few obstacles to communication; and the *railway* system is fairly complete. The Shannon and the Barrow are the only navigable *rivers*; and the first has been made navigable as far as Lough Allen, though there is practically no navigation above Athlone. *Canals* connect the Shannon with Belfast and Dublin, and a branch canal connects with the river Barrow at Athy. There are many good ports, but their trade is small. Of minerals *coal* is very widely prevalent but not much

worked except in Leinster and Tyrone (only 150,000 tons annually); iron ore is raised chiefly in Wicklow, Waterford, and Cork; copper, silver, and lead are also produced. Granite is abundant (in Wicklow, Galway, Donegal, and Down) and so are other varieties of building-stones.

With good soil, rich pasture-lands, large coal-fields, and valuable fisheries, Ireland possesses many commercial advantages; but her people seem unable to turn them to account. Even Belfast linens go to the United States and elsewhere by way of Liverpool; and the fisheries, which are very valuable and important, only employ 4000 people, fish being even imported from England and Scotland.

FRANCE AND SWITZERLAND. Maps 18 and 19.

MAP 19 is designed to show the chief industries of the country and its population. It will be noticed that except in the N.E. corner, and in the St. Étienne and Lyons region, there are no specially marked manufacturing districts so conspicuous in Germany and England. Manufactures in France are more widely diffused, and some (especially lace-making in the northern departments) are still domestic industries. The manufacturing towns in the N.E. are all on or near the extensive Franco-Belgian coal-field, which extends, roughly speaking, from Lille to Liège (*cf.* map of Belgium) and produces half of the total annual out-put; while the manufactures of Lyons and St. Étienne are aided by the coal-field of the Rhone valley. The other fields are small and not very productive. The manufactures of SWITZERLAND are dependent not so much upon steam and coal, as on water power, and they have rapidly developed of late years, so that a large export trade is done in silk and cotton textiles, watches and clocks. Many of these also are carried on under the domestic system.

The population of France is distributed fairly evenly, the most thickly peopled districts being the manufacturing region of the N.E. and the fertile and carefully developed agricultural portion of the northern departments. The typical products are wheat and the vine, which, it will be seen, are cultivated in nearly all parts of the country, about 17 million acres being under wheat and 5 million devoted to vine-growing. The agriculture of France is exceedingly well developed, and is carried on mainly in the very small farms belonging to peasant proprietors. The soil of the Central Plateau is, however, unproductive and the climate there is bleak. The forests occupy altogether about 8½ million acres, and are now being carefully supervised under Government control. They supply the greater part of domestic fuel.

The physical features (*cf.* Map 18) offer but few obstacles to easy communication in France, but many in Switzerland, though modern engineering in the railways has got over the worst of them. Still the Alps, Jura, and Vosges, are awkward barriers. On the other hand, the rivers of France, especially in the west, are very useful, and her inland navigation is very important. All the large rivers in the west are connected by canals with the Rhone or Rhine, and so is the Seine. Most of the inland navigation takes place in the systems of the Seine, Scheldt (Escaut), and Somme, near the manufacturing districts.

GERMANY. Maps 20 and 21.

FROM the colouring of Map 21 it will be seen that the population of Germany is, roughly speaking, denser in the south and west than in the north and east. This is owing to the fact that the soil of the south, especially in the Rhine basin is more fertile than that of the northern plain, and that the south contains the chief manufacturing and mineral districts, as well as the vineyards. These manufacturing districts are, as will be seen mainly coincident with or near the chief coal-fields but there are also

many other towns in which various manufactures form an important industry scattered throughout the country, and German industry in this direction is certainly extending. Of the manufacturing districts, Alsace may be said to be pre-eminent in cotton fabrics, the district round Aachen in woollen, Krefeld in silk goods, Saxony in woollens, linen, and lace, while the Westphalian and Silesian districts have so many manufactures, both of textiles, machinery, and iron goods, that it is impossible to identify them with any particular industry more than another. The extent of land under vines is much less than that in France, and occurs, naturally, chiefly in the sheltered valleys of the south-western rivers. Hock and other noted Tannus wines for instance come from the slopes of the Taunus Mts. near Wiesbaden, in the valley of the river Main. The chief coal-fields may be named, as shown on the map, the Westphalian or Ruhr valley, the Saarbrück, the Saxon, and the Silesian fields, while, as at Aachen, there are other less important workings. Iron ores usually occur in close proximity, and iron-smelting is especially noticeable in the Ruhr valley; and the country is very rich in other minerals (zinc, lead, copper, silver, and salt) in the mountain districts.

The communications are facilitated by the fact that the N. half of the Empire is very flat (*cf.* Map 20) and the mountains of the other parts consist of rather short ranges with breaks through which railways can pass without much trouble. The most serious barrier is the Erzgebirge which separates the populous districts of Saxony and Bohemia. The railways are very extensive, though not properly centralised; the natural waterways are of great advantage as the Rhine, Elbe, Oder, Vistula, and Danube are all navigable for great distances. In the north, where the surface is flat, the rivers are connected with numerous canals; also the Rhine is connected thus with the Danube (by the *Ludwig's Canal* and the river Main) and the Seine.

BELGIUM, THE NETHERLANDS, AND N.E. FRANCE. Map 22.

THIS map is coloured on a physical basis, in order to show plainly what part of Holland is below the sea level. The chief features to notice are (1) the extreme flatness of the country, except in the Ardennes district of the S.E., and (2) the extent of the Franco-Belgian coal-field which can be seen much better here than in the map of France. Around this coal-field is one of the busiest manufacturing districts of Europe, including large manufacturing towns such as Roubaix, Tourcoing, Lille, Valenciennes, Anzin, Arras, Cambrai, Mone, Charleroi, Namur, Liège and Verviers.

The flatness of the country makes internal communication very easy and hence there is a perfect network of railways, rivers, and canals, especially in Belgium; and water transit is so much used that the weight of goods carried by water is very little less than that on the railways. The Mauss has also a very busy traffic. In Holland the water ways are twice as long as the railways. Agriculture is very highly developed, the chief crops being wheat, rye, and oats, beet and flax in the famous flax district of the river Lys. The pastures of those parts of Holland which have been enclosed from the sea (Zeeland and N. and S. Holland proper) are very rich and fertile, with excellent grass, so that horses and cattle are very numerous. On the other hand, the N.E. portion of the Netherlands has a poor and marshy soil, not of much use for pasture or agriculture (Gelderland, Drenthe, etc.).

Belgium is renowned for its manufactures of all kinds—textiles, iron goods, glass and machinery—being aided by its abundant supply of coal. The insets show the chief manufacturing districts. Iron is found near Liège and Namur, zinc and lead near Verviers. Holland has less manufactures, but an extensive foreign commerce, especially with the products of its rich East Indian possessions.

The population is very dense (*cf.* Map 11) except in S.E. Belgium and N.E. Holland.

AUSTRIA-HUNGARY. Map 23.

THE physical features of this Empire are well marked; it is surrounded and partly occupied by mountains, with the wide plains of the Drave, Danube, and Theiss in the midst. These mountains are pierced in various places by *railways* (Brenner, Arlberg, and Semmering tunnels in the Alps), and elsewhere the *rivers* are actively used for traffic, especially the Danube. The Iron Gates, a series of rapids near Orsova (*cf.* Map 28), have impeded navigation in the past, but the river is now being made navigable also at this point by recent works. *Canals* also connect various rivers together or shorten the distance by following straighter courses at the windings.

The slopes of the mountains towards the rivers afford good positions for the *vine* (*cf.* Map 11) and the plains grow crops of *wheat*, rye, oats, and maize; sugar-beet in N. Bohemia. *Silkworms* are reared in S. Tyrol. Horses, cattle and sheep are numerous in the plains; and the forests yield large supplies of timber. Minerals are plentiful, though the *coal* and *iron* deposits are in this country very far apart, coal being chiefly mined in Bohemia and Silesia, and iron in Styria (at Eisenerz, etc.) and Carinthia. *Salt* is also abundant. Gold and silver are produced largely (near Schemnitz, etc.), as well as quicksilver (at Idria) and copper. *Manufactures* are developing more rapidly now than before; chiefly in the towns of Bohemia, Moravia, and Silesia, where textiles, glass, and porcelain are all made. Iron industries naturally prevail most in Styria.

The *population* is not very dense in most parts, but all along the northern frontier, *i.e.* in the manufacturing districts, and in the N.W. it is very close, being often nearly 400 to the square mile.

SPAIN AND PORTUGAL. Map 24.

THE position of this peninsula is advantageous for external trade because it has many natural harbours both on the Atlantic and Mediterranean. The sea ports, however, have but little connection with the interior and some (*e.g.* Tarragona and Valencia) none at all. To internal trade and communication the physical features offer rather serious barriers, as the interior consists of a high tableland bordered by mountains and steep slopes, and cut into ridges by the narrow river valleys; and the Pyrenees have not yet been crossed or undermined, like the Alps, by *railways*. There is, however, very fair railway communication in some parts, as the map shows. The *rivers* are not of much use for internal navigation, being obstructed by rapids and shallows. The Guadalquivir is the most important for this purpose and traffic goes on as far as Cordova; and next the Ebro, navigable by small boats up to Logrono. *Canals* are few, owing to the hilly nature of the surface.

The *population* is thickest round the coast line, the density of the interior being only that of the Highlands of Scotland. The *climate* suffers from a small rainfall, as the mountains keep off much rain, except on the N. and W. coasts. The temperature is however high in consequence, and so, when water can be obtained in sufficient quantities by irrigation (as in the *huertas* or gardens of Elche, Valencia and Murcia), valuable crops can be grown (sugar-cane, southern fruits, rice, and maize). The *vine* thrives well without irrigation, and most wine is made in the N.E., except sherry. The tablelands also grow good *wheat* and afford pasture for numerous *sheep* and cattle. The *silkworm* is reared in Valencia and Murcia. The mineral wealth of Spain is very abundant, though not yet fully developed. Almaden has the chief *quicksilver* mines in Europe, and iron, lead, copper, and silver are found in various parts. *Coal* is abundant, though the fields are not conveniently situated for commerce (in Asturias and Catalonia), *bay-salt* is largely produced, and *phosphorite*, an excellent manure is found in Estremadura.

Fisheries and agriculture form the chief industries of Portugal, wine, fruit, and cork, being the chief exports.

In spite of her great natural resources, the manufactures and commerce of Spain are not well developed, and those of Portugal still less.

ITALY. Map 25.

THE mountains of this country though presenting considerable natural barriers to commerce have now nearly all been overcome by *railways*, both through the Alps (Mt. Cenis and St. Gothard tunnels), and the Apennines. The principal railways run down the coast on each side of the peninsula. The flattest, most fertile and busiest part of Italy is the great plain of Lombardy where communications both by water, rail, and road are abundant and easy. Elsewhere only the Arno and Tiber are of much use for navigation. On the other hand many of the smaller streams, especially in the plain of the Po, are much used for *irrigation* which is carried on in Italy to a greater extent than in any other European country. The rainfall, moreover, is not deficient, so that *agriculture* is well developed, especially in the northern plain. The chief grain crop is *wheat*, and next come *maize* and *rice*. The production of *wine* is large, though Italian wines do not improve by age as they are not well prepared. Many southern *fruits*, (olives, oranges, figs, etc.) are grown, especially in Sicily. On the slopes of the Apulian hills *sheep* are reared, their wool being noted for its quality.

Manufactures are not very flourishing, as they suffer from a lack of coal, and so are carried on under the domestic system. The chief is the reeling and throwing of *silk* produced by the silkworms kept in vast numbers in the north. The *iron* industry is developing at Terni, where water power from the Nera is used as well as steam power obtained from burning the lignite of Spoleto.

The *minerals* are sulphur, chiefly from Sicily; iron from Elba; lead and zinc from Sardinia; marble from Carrara in Tuscany; and borax from various districts in the south.

The population is densest in the north and round about Naples.

NORWAY, SWEDEN, AND DENMARK. Map 26.

THE greater part of Norway and Sweden is from its physical characteristics, incapable of cultivation, both because of the high latitude of these countries and the elevation of the surface. Only 4 per cent. of the land of Norway is under crops and grass, and 12 per cent. in Sweden. Norway has however the more favourable climate owing to the influence of the Gulf Stream (*cf.* Map 5), and also because the mountains tend to protect it from east winds. But its elevation is in general much higher than that of Sweden, as the map shows; so that this neutralises the other favourable influences.

Communication is difficult in the north; but in the south there are two or three lines of *railways* (Christiania to Trondhjem, Stockholm to Trondhjem, Christiania to Stockholm, and Helsingborg to Stockholm). The *lakes* of South Sweden assist internal navigation and are connected by *canals*, so that small vessels can go from one coast of Sweden to the other. The rivers are not of much use for navigation.

Both countries have vast *forests*, so that timber is the chief export. *Fisheries* follow next in importance in Norway. In Sweden the chief grain crop is *oats*; and dairy-farming is developing. Sweden has considerable *mineral* wealth, especially in *iron* (worked at Gellivora and Dannemorra), also copper (at Fahlun), zinc, silver, and lead (at Sala).

DENMARK is a flat, *agricultural* country, almost the only infertile portions being

to the west. Cattle and horses are reared, and much *butter* exported, dairy-farming being well developed. Communications by *sea* are numerous and easy, and the *railways* are also much used.

RUSSIA IN EUROPE. Map 27.

THE greater portion of the surface of this country is flat, but offers various hindrances to communication because of numerous marshes, and lack of stone and timber for road-making. The *railway* system is not well developed, the western portion of the empire being the best supplied. The waterways of *rivers* and *canals* are comparatively much more used, there being some 14,000 miles of navigable rivers and 4000 miles of canals. The basins of the Neva and Volga—including tributary streams—the lakes, and canals carry by far the greater portion of this traffic; and it is possible for barges to travel from the Caspian or Black Sea by water to the Baltic. A canal is in progress between the Don and Volga.

The *climate* is quite continental, that is, subject to extremes of heat and cold, there being very little sea coast to influence the temperature; and no hills to prevent cold winds blowing direct from the north. Hence the winters are very severe, and as the rivers are often frozen for several months, there are serious impediments to the navigation above mentioned. The rainfall is also comparatively small.

Russia may be divided into three zones of vegetation: (1) The Northern zone with tundras and scanty pasture; (2) a zone of forest land; and (3) a zone in which the forests give place to agricultural land, containing the famous *Black Earth* district which, however, is not so fertile as is commonly supposed (for its position cf. Map 9). After this comes the region of steppes with a very arid climate.

The *agricultural* development of Russia is very poor, though owing to the breadth of surface cultivated much grain is exported. The chief crop is *rye*, then oats, next wheat; in the west, flax and hemp; sugar-beet and maize also in the south-west.

Manufactures are very backward, though now extending; but the *mineral* wealth is important. *Coal* is found in the Perm and Tula districts, in S.W. Poland and in the Donetz valley; *iron* ore also occurs in various parts; and just east of the Urals the valuable metals *gold* and *platinum* are found, as well as copper, salt, and mercury.

The *population* is not dense, the most populous districts being the Polish coal-field; the district round Moscow and south of it, also containing a coal-field, and the agricultural region of the south-west.

THE BALKAN PENINSULA. Map 28.

THE surface of most of the States comprising this peninsula is rugged and mountainous, except in Roumania and part of Bulgaria which lie in the plain of the Danube. This plain is very fertile and so are many of the valleys of the smaller rivers in other parts. The Balkans divide the land, climatically, into two divisions, the northern half having a more continental climate, and the southern being milder and warmer and more suited for the growth of roses and southern fruits. The south half has also the benefit of the climatic influence of the sea. *Agriculture* is the chief industry of each State. In ROUMANIA it is aided by the fact that part of the country is in the Black Earth Region, and large quantities of *maize*, *wheat*, and barley are grown. SERBIA grows the same grain crops, and rears in its beech and oak forests large numbers of *swine*. Bulgaria and Eastern Roumelia also grow *wheat* and other grain, and rear *sheep*. Roumelia being south of the Balkans has a warmer climate, *cotton*, tobacco, and *roses* being cultivated, the last for making otto of roses (chiefly made at Philippopolis and Adrianople). *Silk* is also largely produced and made up into fabrics in TURKEY, but the

resources of this country are not well developed. Wine, tobacco, opium, grain, and fruits are the chief products. GREECE grows these, and *currants* also. The *manufactures* of the whole peninsula are unimportant except of carpets at Salonica. The *mineral* wealth is large, but not much developed except to some extent in Greece and Servia. Silver, iron, copper, and coal occur in Servia; *silver-lead* in Greece (at Laurium); *iron* in the island of Seriphos; and *marble* at Paros.

Communications and transit are facilitated by the Danube in the north, and by *railways* in the north and south. A *ship canal* is now being made across the isthmus of Corinth. The *population* is scanty, and only semi-civilised, and the whole country is commercially backward.

ASIA (Geological). Map 29.

(See previous notes on "Commercial Geology.")

ASIA, Map 30.

THE surface of this continent is on the whole hilly and mountainous, except just south and east of the Ural Mts. and in the plains of some of the large rivers (Tigris, Euphrates, Indus, Ganges, Mekong, Yang-tse-kiang, and Hoang-Ho). The height of the mountains and plateaux prevents any great rainfall in the interior, and consequently much of the land is infertile and arid. Hence population is sparse or scattered, except in India and E. China (*cf.* Map 4). The mountains and dry plateaux offer considerable obstacles to easy communication in the interior, but many of the great rivers are navigable for long distances.

SIBERIA has a population of some 5,000,000 settled mainly in the basin of the river Obi south of 60° lat.; its plains produce large quantities of *grain* south of 60°; and north of this latitude the *forests* afford valuable products. *Furs* and fossil *ivory* are also exported, and there is considerable *mineral* wealth (gold, iron, coal, especially S. of Tomsk; lead, copper, and graphite). The *rivers* Lena, Yenisei, and Obi are navigable, but unfortunately their mouths are closed by ice for many months. Attempts are, however, being made to establish communications by sea from the German Ocean to the mouth of the Yenisei. A *canal* is also being made about 58° N. to connect the Obi and Yenisei, and the Trans-Siberian railway (*cf.* notes to Map 1) is also in progress. *Caravans* are at present an important method of transit.

RUSSIAN CENTRAL ASIA is level but mostly desert, with a few oases, where population and traffic chiefly centre (Merv, Khiva, Bokhara, Samarkand, Tashkend, and Khokand). The whole region has been opened up by the Trans-Caspian *railway* from Usunada on the Caspian Sea to Samarkand. The chief products are *cotton* and *silk*. The region of the CAUCASUS has a climate and soil well fitted for vegetation, and wine and wheat are produced. There are also fine forests and pastures. The sheep kept here produce excellent wool. The most important commercial product is *petroleum* (from near Baku); coal, iron, manganese, and copper are also mined in large quantities.

The chief products of TURKEY IN ASIA are fruit, sponges, cotton, silk, mohair, tobacco, and coffee; of ARABIA, dates, coffee, and gum, camels and horses. *Caravans* here afford almost the only means of transit.

PERسيا exports fruits, opium, cotton, wool, silk, pearls, and carpets and rugs; *otto* of roses is made at Shiraz. Communication chiefly by means of *caravans*, though some railways are being built and telegraph lines are in operation.

AFGHANISTAN (silk and wool) and BELUCHISTAN are not of much importance commercially.

The chief products of SIAM and INDO-CHINA are timber (*teak*), rice, spices, pepper;

and gutta-percha. This region is now being more opened up to commerce by telegraphs and railways. (For other countries see notes to Maps 31 and 32.)

INDIA. Map 31.

THE *population* is very dense in nearly all parts, especially in the plains of the great rivers and on the lowlands near the coast, and this is largely owing to the development of *agriculture*. The great food-crops are *rice*, grown in the Ganges valley and delta and in other lowlying parts; *millet*, grown almost everywhere; *wheat*, which is now a considerable export, grown chiefly in the north-west. Of other crops *cotton*, grown more than anywhere else in the basin of the Taptec river, and also in Gujarat and elsewhere, forms at present the most valuable export; and the *forests* produce valuable timber, especially *teak*. The cultivation of *tea* is now rapidly becoming of great importance in India and Ceylon, so much so that in 1888 the amount imported in England from India exceeded that imported from China. Tea is grown on the slopes of hills (*cf.* the map of China) and the chief districts are near Darjiling, Kumaun, the Kangra valley, in Mysore, and Chota Nagpore; in Ceylon they are on the side of the mountains in the centre of the island. *Coffee* is also now largely grown, on the east slopes of Ghâts, in Mysore and Madras, and on the slopes of the Ceylon hills. Of minerals *coal* is extensive, but is not much worked the best field being that of Raniganj, south of Plassey; there are others in East Central India and in the Kyendwin valley of Upper Burmah. Gold is found in Mysore and Madras. The *rivers* of the N. plain afford good waterways. The *railways* are very extensive in the north, but only the main lines are here shown. In the Deccan the surface offers many obstacles to their construction.

CHINA, JAPAN, AND BRITISH POSSESSIONS IN THE EAST. Map 32.

THE *physical features* of CHINA determine its agriculture and consequently its *population*, which, dense almost in all parts, is densest in the fertile plain of yellow earth (*loess*) between Peking and Shanghai; in the lower course and delta of the Si-Kiang river; and also in the provinces of Yunnan and Szechwan in the interior where there is a peculiar red soil of great fertility. The *tea* districts are, it will be observed, all on the slopes of high lands or mountains, and *tea* and *silk* make up three quarters of the exports. *Coal* is exceedingly abundant, but as yet little worked and is even imported from Japan (which see). The *rivers* form the great commercial highways, and steamers go up the Yang-tze to Hankow and Ichang (especially in the tea season), but the coast trade is the most important, though foreigners are restricted to certain ports only, called *traty ports* (see map). HONG-KONG is a small island belonging to England which possesses, at Victoria, one of the finest harbours in the world. It is a most important trading centre, its trade being over £20,000,000 a year. JAPAN is developing rapidly, though owing to the mountainous character of the islands only $\frac{1}{3}$ of the surface can be used for agriculture. Rice, wheat, tea, silk, and lacquer are the chief products; and the minerals *coal* and *antimony* are exported also. The forests are extensive and produce *camphor*.

The whole of NORTH BORNEO is under British protection, and jungle products (canes, rubber, etc.) form the chief articles of commercial value. There is, however, a *gold-field* and a *coal-field* available. The soil is rich, producing rice, sago, cotton, sugar, and etc. Sandakan is the capital. LABUAN is a small island with a fine harbour and extensive *coal* measures. SARAWAK furnishes about half the entire *sago* produce of the world. In the MALAY PENINSULA the two most important places are Perak, noted for its *tin* mines, and Singapore one of the most important centres of the trade in the East.

AFRICA (Geological). Map 33.

(See previous notes on "Commercial Geology.")

AFRICA. Map 34.

THIS huge continent has, till lately, not been much developed owing to the difficulties offered to exploration and commerce by the natives. The northern part also contains much unproductive and desert land, with little or no rainfall. In this part communications are difficult, but elsewhere the difficulty arises not so much from physical as from human obstacles. *Caravans* and native porters are the chief means of carriage; the Arabs carry on most of the internal trade of the north and east; Central Africa is coming now more under various European influences, and South Africa has a great future before it under the direction of British enterprise, unless England (as is not unlikely) throws away her chances.

In the north EGYPT is, for the time being, under British influence, and the Valley of the Nile supports a dense population who subsist by agriculture, as the soil left by the annual flooding of the Nile is very fertile. *Cotton, wheat, rice, sugar, and pulse* are the chief crops. There are several *railways* in Lower Egypt and up the Nile to Sioot or Assiout. The *Suez canal* is commercially the most important undertaking of this century.

The SAHARA region is mainly desert, but the oases in it yield *dates* and other fruit. The countries south of it yield *slaves, ivory, gold-dust, fruits, and ostrich feathers*, many of which products are brought by caravans to the towns and ports of MOROCCO, TRIPOLI, and TUNIS. Of these, Morocco exports *leather goods and cloth, maize, beans, wool, esparto grass, palm-oil, and dates*; Tunis, *wine and grain*; Tripoli, *sponges and esparto*. ALGERIA is rapidly developing under French influence, the land being better cultivated. The exports are *wine, sheep and wool, fruit and olive oil, and alfalfa-grass*. Iron is mined.

The WEST COAST of Africa is straddled with British, French, German, and Portuguese colonies or stations all exporting *palm-oil, nuts, india-rubber, coffee, ivory, and gold*. The CONGO FREE STATE is being developed commercially, by making roads and placing steamers on the Congo which is navigable for 1000 miles. The EAST COAST, including ZANZIBAR, is mainly under German and English influence, and the trade is chiefly in *spices, india-rubber, ivory, slaves, and dyes*.

The basin of the ZAMBESI and the regions south of that river are now being opened up for commercial purposes, *gold* being the great attraction in Mashona land. Most of these districts are under British influence, though the Portuguese hold the coast and the mouth of the Zambesi.

SOUTH AFRICA. Map 35.

THE *population* of Cape Colony and its dependencies is very small, the density being only 6.6 to the square mile, and hence in the map the ground colour is *pale green*. In Natal, however, the density rises to over 25 to the square mile. The leading export, in value, of the Cape is *diamonds* (found chiefly at Kimberley) of which over £4,000,000 worth were exported in 1889. The *pastoral* industries are, however, very important,

wool and mohair being produced in very large quantities, as merino sheep and Angora goats thrive well on the elevated plateaux away from the coast. The wines of the colony are becoming noted; the chief vine districts being in the west provinces, especially on the slopes of the hills above and below Cape Town and Constantia near it, around Stellenbosch, Paarl, and Malmesbury. The great forest district of Kuyana extending from George to Humansdorp and Cape S. Francis (170 miles long and from 10 to 20 broad) produces valuable timber for building and engineering purposes. Agriculture is developing, and wheat grows well on the high lands away from the coast, while the low lands near the coast produce maize, which indeed is the chief crop and grows everywhere. Of minerals, gold is plentiful in the Dutch States (chief fields near Barberton, Johannesburg and elsewhere), and is found in the Kuyosa division of Cape Colony; coal is also found in many places, but not much worked yet and much is imported (chief mines north of Queenstown, and at Newcastle in Natal). Copper is abundant and is the most important mineral export next to diamonds. The principal mines are in Namaqualand, at Okiep, whence it is taken to Port Nolloth for shipment. Communication is carried on chiefly by ox-waggons and railways. The latter are now being pushed farther and farther north.

NORTH AMERICA (Geological). Map 36.

(See previous notes on "Commercial Geology.")

NORTH AMERICA. Map 37.

THE surface of this continent is characterised by high mountain ranges on the west and smaller ranges on the east side, while the interior consists of wide tablelands and plains. These features influence the climate in that the Rocky Mountains range shuts off much of the rainfall that would come from the Pacific and thus much of the interior is dry and occasionally barren. Then again the whole of the continent is swept by cold winds from the north which are not kept back by any mountains running across it.

The physical features, however, do not present many obstacles to communication. Railways run right across the continent and over the Rocky Mts., while the great rivers Mississippi, Missouri, Ohio, Red River, and St. Lawrence are all navigable for hundreds and in some cases thousands of miles. The great lakes also form an admirable waterway; while, in addition to these natural advantages, canals of great importance have been constructed in the N.E. States (e.g. the Erie Canal from the river Hudson to Buffalo on L. Erie, and the Champlain Canal from the same river to L. Champlain).

The climate ranges from Arctic to tropical. The extreme north naturally produces but little vegetation, but farther south and especially in the S.E. is a vast forest region, though in the States much of it is being settled. The W. and S.W. are the prairie region, which between 100° and 120° W. is particularly dry and unfit for agriculture.

MEXICO has a tropical climate on its coasts but more temperate in the interior owing to the high elevation of the surface. The population is densest around and south of the town of Mexico. Grain (maize), agave, and henequen (a kind of hemp) are the chief products of the tablelands, coffee, sugar, tobacco, and other tropical products of the coast land. But the chief resources of Mexico are the precious metals.

The chief products of the WEST INDIES are coffee, cocoa, sugar, cotton, mahogany, and logwood; but their development has been much retarded by the indolent character of the negroes.

THE UNITED STATES. Maps 38 and 39.

THE green colouring in Map 39 shows the density of *population* in various parts of the States. Compared with European standards it is everywhere low, the average per square mile being only 21.1 (excluding Alaska). The total population according to the census of 1890 was 62½ millions, the most densely populated portions being in the North-Eastern States. The *agricultural products* of the States are of vast importance, the chief crops being maize, wheat, oats, cotton, barley, rye, buckwheat, and tobacco (in this order). The great *wheat-growing districts* are found in the States of Minnesota and Dakota, along the Red River Valley, Michigan, Iowa, California, and various others. The chief *cotton* states are Texas, Mississippi, and Georgia, and *tobacco* is largely grown in Kentucky, Virginia, and North Carolina. *Sugar-cane* is grown in Louisiana, Kansas, and elsewhere. Among pastoral industries, Texas and Nebraska take the lead in *cattle*-rearing, while Iowa and Illinois owing to their richer pastures afford good fattening grounds for animals sent from the first-named States. *Sheep*-farming on a large scale is also carried on in Texas and California. The *coal-fields* of the States are enormous in extent, as will be seen from the maps (36 and 39), and the seams are mostly very thick and easy of access. The chief fields are (1) the Appalachian (along the Appalachian Mts.) yielding at present nearly $\frac{3}{4}$ of the annual output, and worked in Pennsylvania, Ohio, W. Virginia, Maryland, and Kentucky; (2) the Central field, in Indiana, Kentucky and especially Illinois; and (3) the Western field, in Iowa, Missouri, Kansas, Arkansas, and Texas. Smaller fields are found in Michigan and Maryland. *Petroleum* and natural-gas are found in large quantities in N.W. Pennsylvania, S.W. New York, Ohio, and Indiana. The chief *railways* should be noted. There were in 1891, about 155,000 miles open. *Rivers* and *canals* also offer great facilities for transit (notes to Map 37). The *manufacturing towns* are numerous, but the majority are occupied only in the simplest processes of preparing the various raw products of the country for commercial use (*e.g.* grinding grain, preparing meat, tanning, timber-sawing), and, in spite of the abundance of coal, *water-power* is used to a very large extent. Most of the large manufacturing towns engaged in making textile and metal goods are in the North-Eastern States (*cf.* inset to Map 39). The *standard time zones* are marked on Map 38 and are worthy of notice, for as the States range through 58 degrees of longitude, it is impossible to have only one time. Hence there are 5 standards differing by one hour, each applicable to a zone of 15° running N. and S. Thus the minutes are the same all over the country, but the hours differ, *e.g.*, Chicago 6.20, New York 7.20, San Francisco 4.20.

THE DOMINION OF CANADA AND BRITISH COLUMBIA.

Maps 40 and 41.

THE chief feature of British North America is the immense extent of land under *forests*, containing the most valuable timber in the shape of pines, firs, and maples. The forests of the Coast Range in British Columbia, composed of gigantic pine and fir trees, are among the finest in the world. The *agricultural* development of these countries is, however, very marked, and more trade is now done in farm produce, such as wheat, maize, live stock, and cheese. The *Red River Valley* which forms the southern half of MANITOBA (*cf.* special inset) contains some of the richest wheat-land in the world, yielding 25 bushels per acre, and the area under this crop has extended rapidly of late years, from 51,000 acres in 1881 to 710,511 acres in 1889. The number of horses, cattle,

and sheep, in the same province has similarly increased enormously. The population, is, however, as yet very scanty, being only 1·8 to the square mile. VANCOUVER ISLAND is another fertile country as yet only very partially developed, being well-watered, with valuable forests and rich mineral resources, including *coal* in almost inexhaustible supplies. The chief coal-workings are at Nanaimo. The capital, Victoria, will now become very important as the port of call for the *new line of steamers* to China and Japan, subsidised by the British and Canadian Governments, which started in the spring of 1891, and another line will soon be started between British Columbia and Australia. The steamers to China and Japan in connection with the *Canadian Pacific railway* will shorten the distance between these countries and Liverpool by over 1000 miles; and the mail service between England and China is now shortened by five or six days.

The great *prairie-region* of the North-West demands attention as containing immense possibilities of development for agriculture and cattle-rearing, the latter industry being specially followed in the Alberta district (capital, Calgary). It has also enormous mineral deposits of *coal*, *gold*, and *iron*, though as yet the coal-workings are not numerous. In fact the mineral wealth of the whole of the Canadian Dominion is as yet scarcely touched. The *coal* deposits of NOVA SCOTIA (at Sydney, Joggins, Springhill, New Glasgow, etc., see inset) are very extensive and of good quality, producing at present nearly 2,000,000 tons annually, while about £1,827,262 of *gold* has been extracted from the localities shown in the last 27 years. The *Annapolis Valley* and the *Basin of Minas*, owing to the rich marine deposits left on the shoreland by the tides of the Bay of Fundy, both contain soil of unsurpassed fertility, on which fruit of all kinds is grown most successfully, especially apples. The *agriculture* and *oil-springs* (near Petrolia) of Ontario, and the *fisheries* of Newfoundland and Nova Scotia are of great value. The *population* of the Dominion is very scanty, being only 1·6 to the sq. mile.

SOUTH AMERICA (Geological). Map 42.

(See previous notes on "Commercial Geology.")

SOUTH AMERICA. Maps 43 and 44.

THE *physical features* are here of the utmost importance as explaining the commercial development of the continent. Thus the Andes cause the wet S.E. trade winds to deposit their moisture on the plains of the Amazon, so that the north-west coast is almost rainless and desert. Similarly the S.W. winds in the south (the "roaring forties") leave their moisture on the west coast, while the plains of the south-east receive very little rain. In VENEZUELA the grassy plains or llanos of the Orinoco support immense numbers of *cattle*; in BRAZIL the forest plains or selvas of the Amazon yield many varieties of most valuable *woods* (mahogany, logwood, rosewood, etc.); while the pampas of ARGENTINA and URUGUAY, in the basins of the Parana and other rivers, give unrivalled pasture to thousands of sheep, cattle, and horses. The slopes of the hills on the east coast of parts of Brazil produce more *coffee* than all the rest of the world together; the chief districts are shown on the map, and the main outlets are the ports of Rio Janeiro and Santos. The hill-slopes round Valencia in Venezuela also produce large quantities. The *mineral region* of Brazil in Minas Geraes is very rich in *gold* and *diamonds*; and *coal* is now worked in Rio Grande do Sul. The *gold* and *silver* mines of Peru, Bolivia, and Colombia are famous throughout the world. The chief centres for

cocoa are round Caracas and Guayaquil. The inset of the grain, sheep, and cattle districts of the La Plata in Map 44 gives the chief towns and physical features of this rapidly developing region. The *railways* here are extending considerably. The *rivers* Amazon, Orinoco, Madeira, and Parana are valuable waterways.

AUSTRALIA (Geological). Map 45.

(See previous notes on "Commercial Geology.")

AUSTRALIA. Map 46.

THE surface of this continent is characterised by great plains and tablelands, except in the east, where there are several ranges of mountains. These mountains have offered considerable obstacles to communication by *railways*, though these have now in places been overcome, and railways run from the E. and S. coasts some distance into the interior. The *rivers* are often rather low in the summer time, but the Murray can be ascended as far as Albury (1700 miles) by light steamers, and the Darling and Murrumbidgee are also navigable, except in very dry seasons.

The great drawback to the development of Australia is the dry climate and barren soil of the interior. The eastern ranges cut off the rainfall brought by the prevailing S.E. winds, so that droughts are frequent. The tablelands become drier and drier as they recede from the E. coast, and in the far interior there are positive deserts.

The population is scanty, and settled chiefly round the east and south coasts, where agriculture is well developed. *Wheat, vines, sugar-cane*, and southern fruits can all be grown in different parts, and there is excellent pasture for *cattle* on the E. of the mountains (especially in Gippsland) and for *sheep* in the downs west of them.

The mineral wealth is abundant, including coal, iron, tin, copper, and silver, and much gold (see next map).

AUSTRALIA. Map 47.

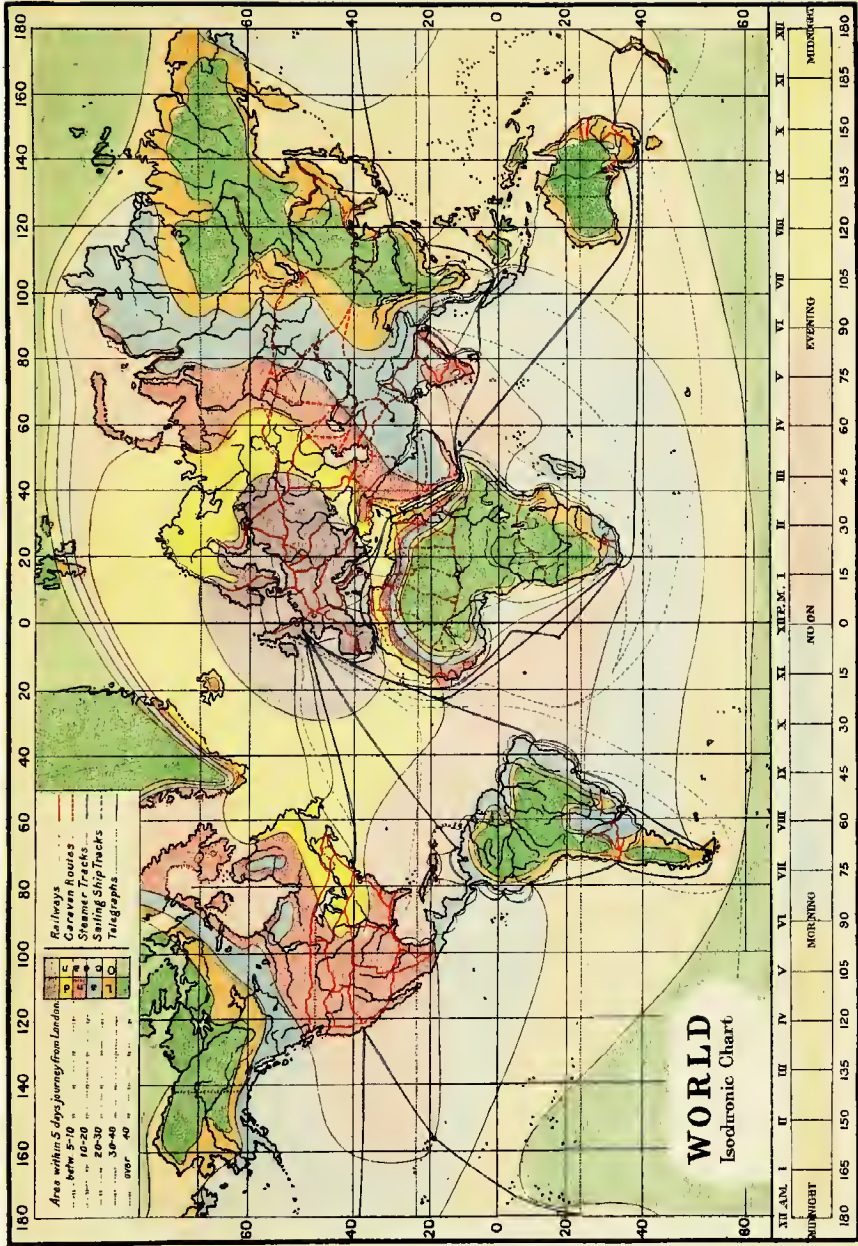
THE most interesting feature of this map of Australia is the extent to which it indicates the regions fit for settlement and those already settled. The *settled parts* are mostly on the south and east coast; and from the nature of the interior there is no hope that settlements can extend very far inland. It will be seen, however, that there are still enormous tracts of land waiting for population and development, chiefly in Queensland and West Australia. The *population* in all colonies is still very scanty, the density being highest in VICTORIA (between 11 and 12 to square mile), which colony produces more *gold* than any other. There are numerous gold fields also in NEW SOUTH WALES, and this colony includes the grassy plains of the *Riverina*, which are unrivalled in the production of fine merino *wool*. It has also abundance of *coal*, and the coal-fields are believed to occupy an area twice as large as those of the British Isles. The chief workings are near Newcastle and Sydney. There are coal-mines also at Ipswich and Maryborough in QUEENSLAND, and this colony again has many valuable *gold-fields* (at Charters Towers, the Mount Morgan mine near Rockhampton, at Gympie near the head of the Gilbert river, and elsewhere). The downs of Queensland, especially the

Darling Downs, afford some of the best pasturage in the whole continent. SOUTH AUSTRALIA has valuable *copper* mines; and WEST AUSTRALIA, though as yet little developed, is now being opened up more rapidly. Its *timber* is very valuable, the soil is good, and gold has been discovered in places.

NEW ZEALAND AND TASMANIA. Map 48.

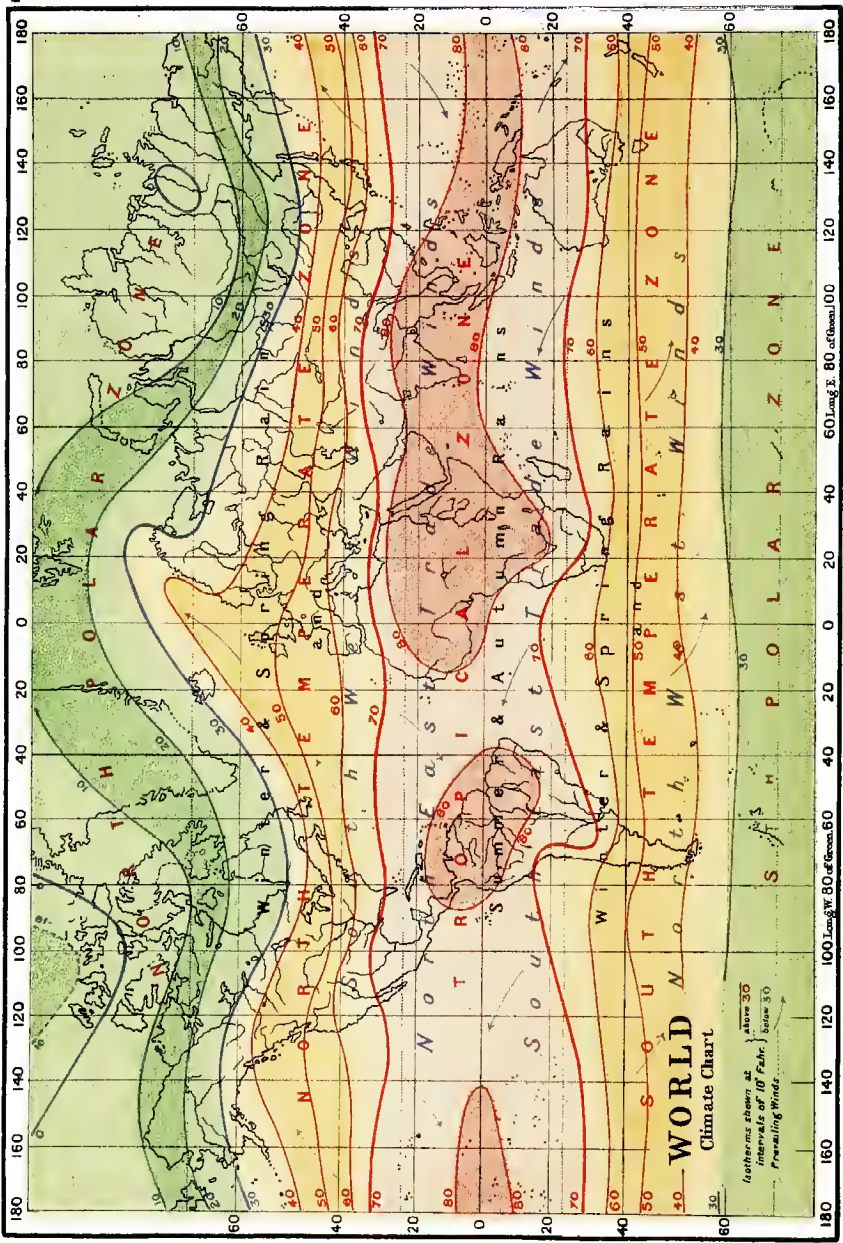
THE *physical features* of NEW ZEALAND are of great importance, as a careful study of them explains the commercial value of the islands composing it. The high elevation of most of the land gives New Zealand a more temperate climate than could be otherwise expected of its latitude (which corresponds to that of Italy); while the mountain ranges cause the frequent north-west winds to deposit a good supply of rain on their western slopes and the plains at their base, thus preserving that side of the country from the droughts so disastrous to the Australian agriculturist and sheep-farmer. The eastern side has a less rain-fall. Most of the mountain slopes are covered with *forests*, the timber from which (especially the Kauri pine, found only in the north of North Island) is of great value, and its export is increasing. New Zealand is first a *pastoral*, and secondly an agricultural country, good pasture for sheep and cattle being found on the slopes of the hills. Thus, at present, the colony produces large quantities of wool and meat. The best *agricultural* districts, especially for wheat-growing, are Canterbury (on the celebrated *Canterbury Plains*), Otago, and Southland. *Coal* is plentiful, the best mines being at Greymouth; and *gold* is also found in large quantities, being the second export in aggregate value.

TASMANIA is very rich agriculturally, large quantities of fruit being grown, especially round Franklin, Deloraine, and Georgetown. There is also much valuable *timber*, especially in the west and south. *Coal* is abundant (chief mines at Fingall and near Hobart); also *tin* (at Mount Bischoff, Mount Heemskirk, and Ringarooma), and *gold* (Lefroy, Beaconsfield, and elsewhere).



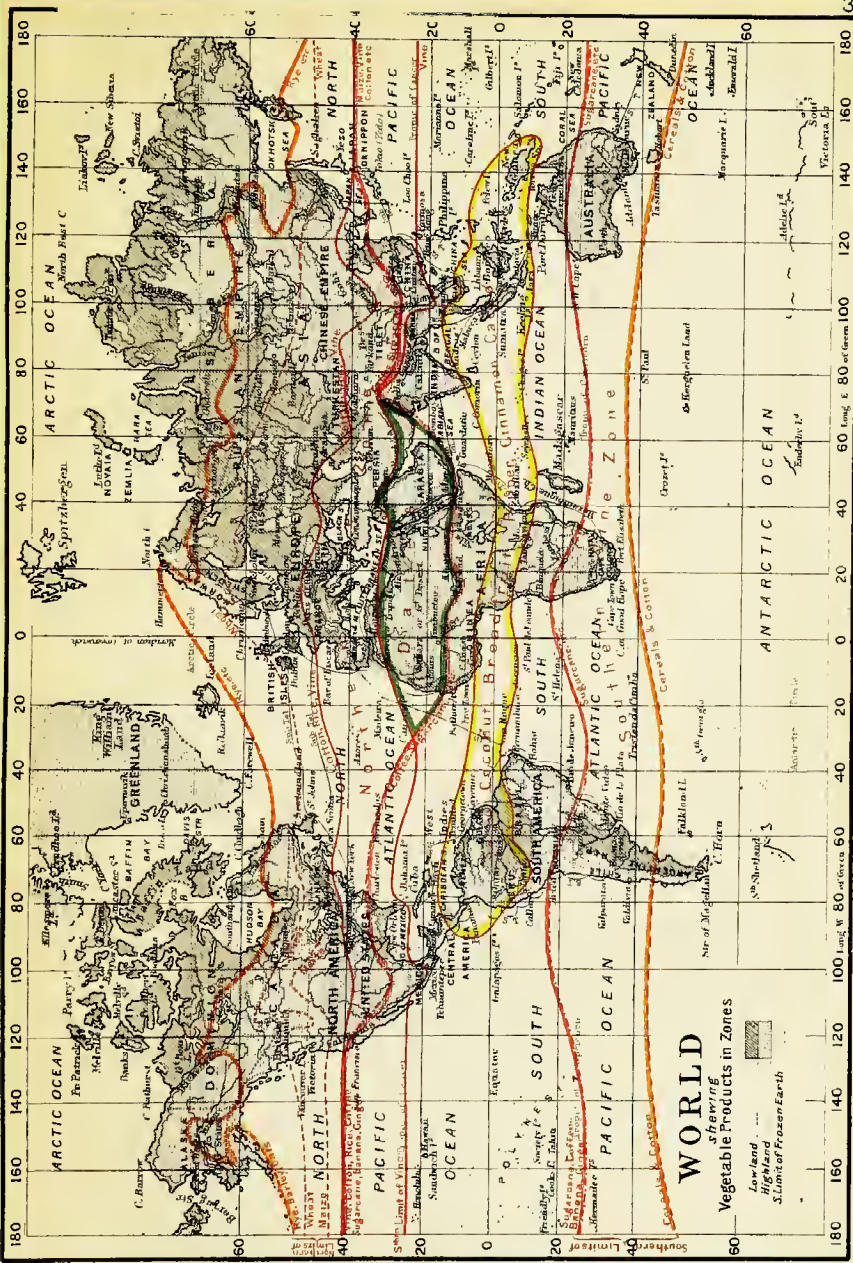
WORLD Isodronic Chart

W. & A. K. Schöner, Leipzig und London.



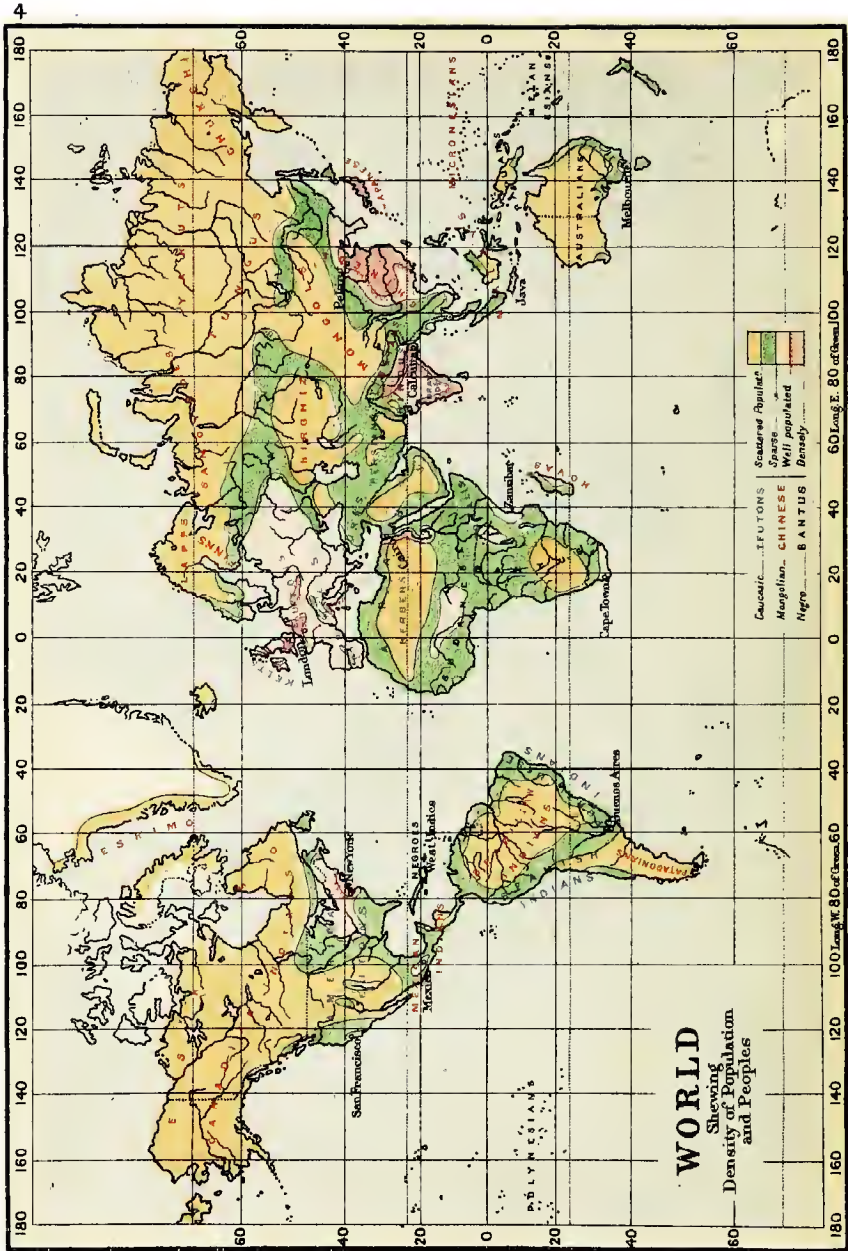
WORLD Climate Chart

Isotherms shown at intervals of 10 Fahr. above 30
 below 30
 Prevailing Winds



WORLD
showing
Vegetable Products in Zones

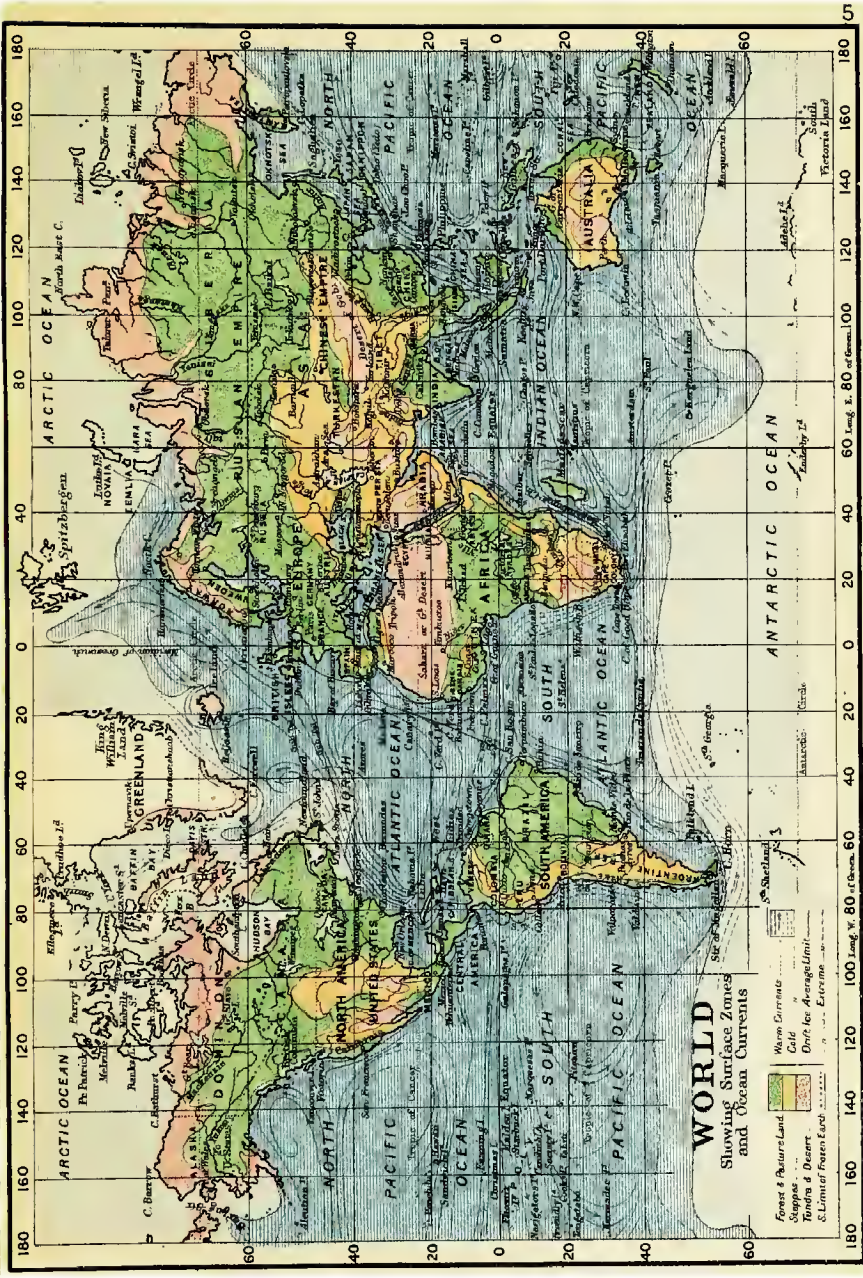
Lowland
Highland
S. Limit of Frozen Earth



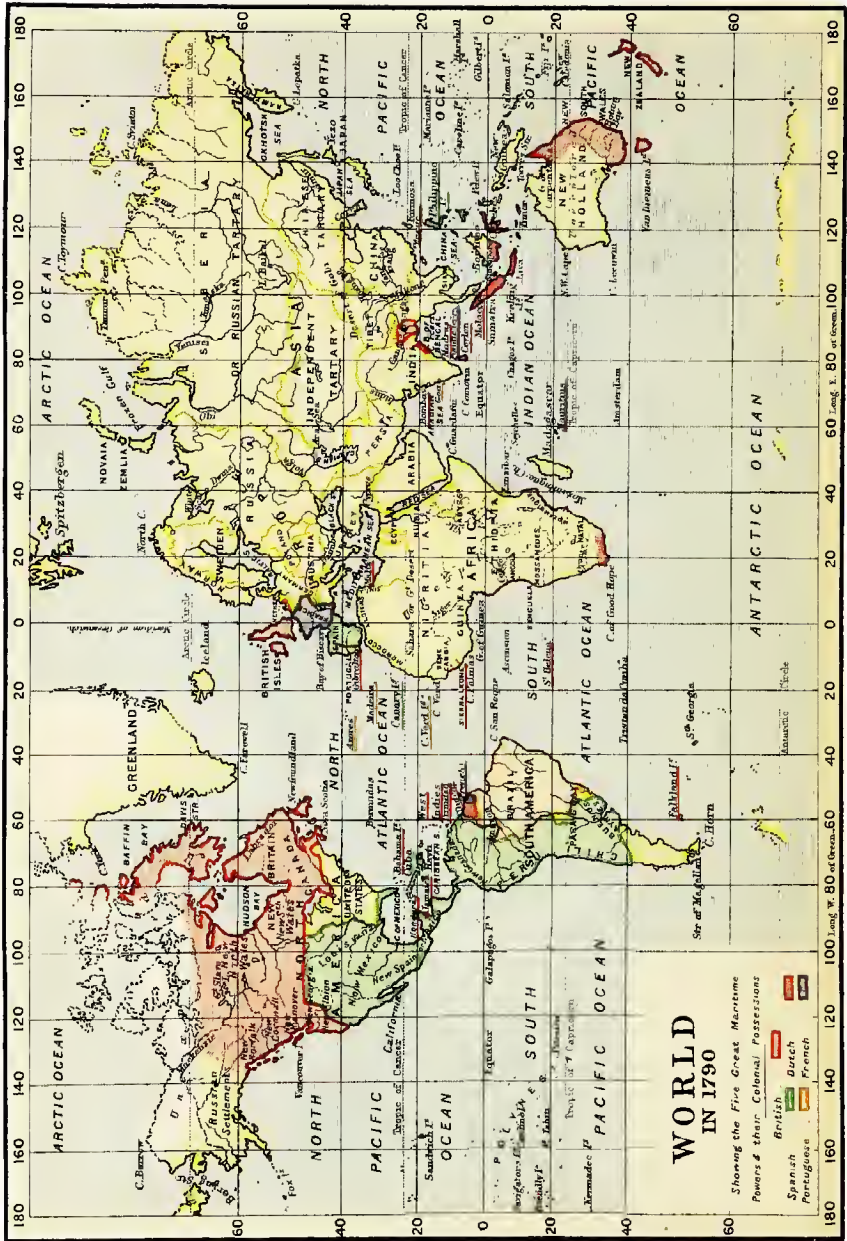
WORLD
 Showing
 Density of Population
 and Peoples

Caucasoid... UYGURS
 Mongolian... CHINESE
 Negro... SINTUS
 Scarcely populated
 Well populated
 Density

W. & A. Johnston, Edinburgh, and London.



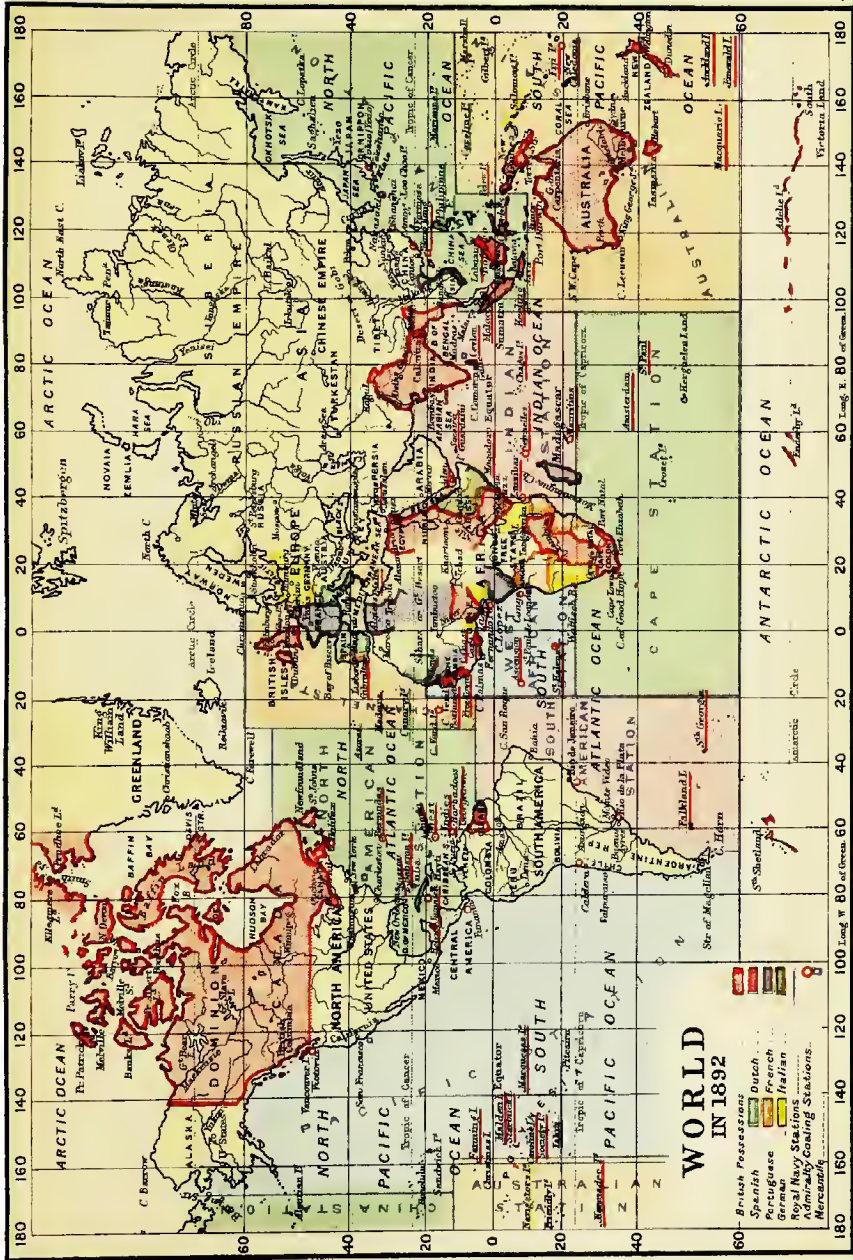
W. & A. I. Johnston, Edinburgh, and London



WORLD IN 1790

Showing the Five Great Maritime Powers & their Colonial Possessions

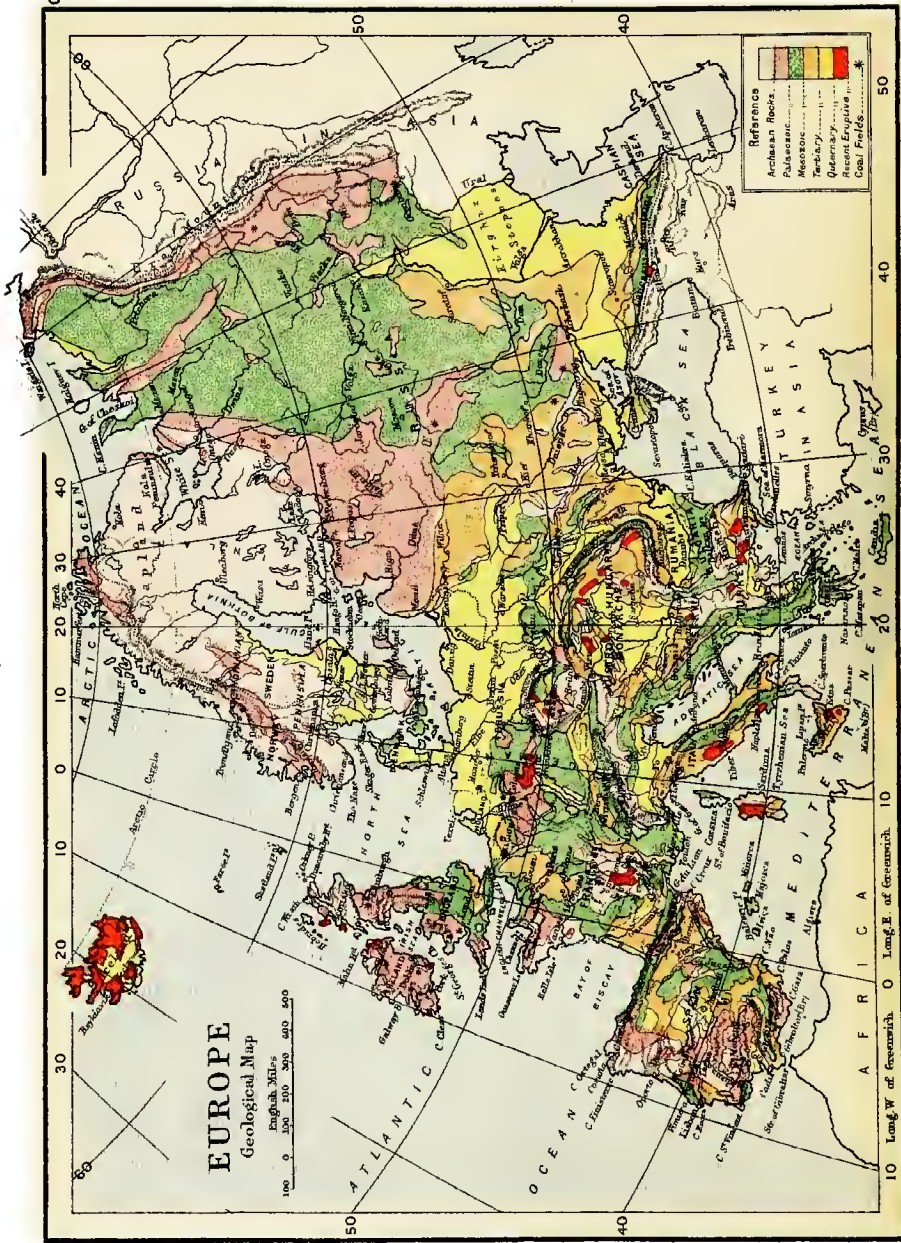
- Spanish
- Portuguese
- British
- French
- Dutch



WORLD IN 1892

- British Possessions
- Spanish
- Dutch
- Portuguese
- French
- German
- Italian
- Royal Navy Stations
- Existing Stations
- Mercantile

W. & A. Robertson Edinburgh and London



EUROPE
Geological Map

English Miles
100 0 100 200 300 400 500

References

Archean rocks*
Palaeozoic
Mesozoic
Tertiary
Quaternary
Coal Fields*

10 Long. W. of Greenwich 0 Long. E. of Greenwich 10 20 N 30 40 50

W. & A. E. Johnston Edinburgh and London

EUROPE

English Miles
100 0 100 200 300 400 500

- Reference
- Lowland
 - Highland
 - Mineral Products IRON
 - Vegetable WINE
 - Animal SILK
 - Chief Trade Centres
 - Paris London
 - Railways
 - Telegraphs

The Export trade between European countries is shown by small letters under products, thus WINE Fr. The following are the contractions used:
Bel. Belgium Sp. Spain
Fr. France G. Germany Sw. Sweden
Ger. Germany S. Sweden
U.K. United Kingdom

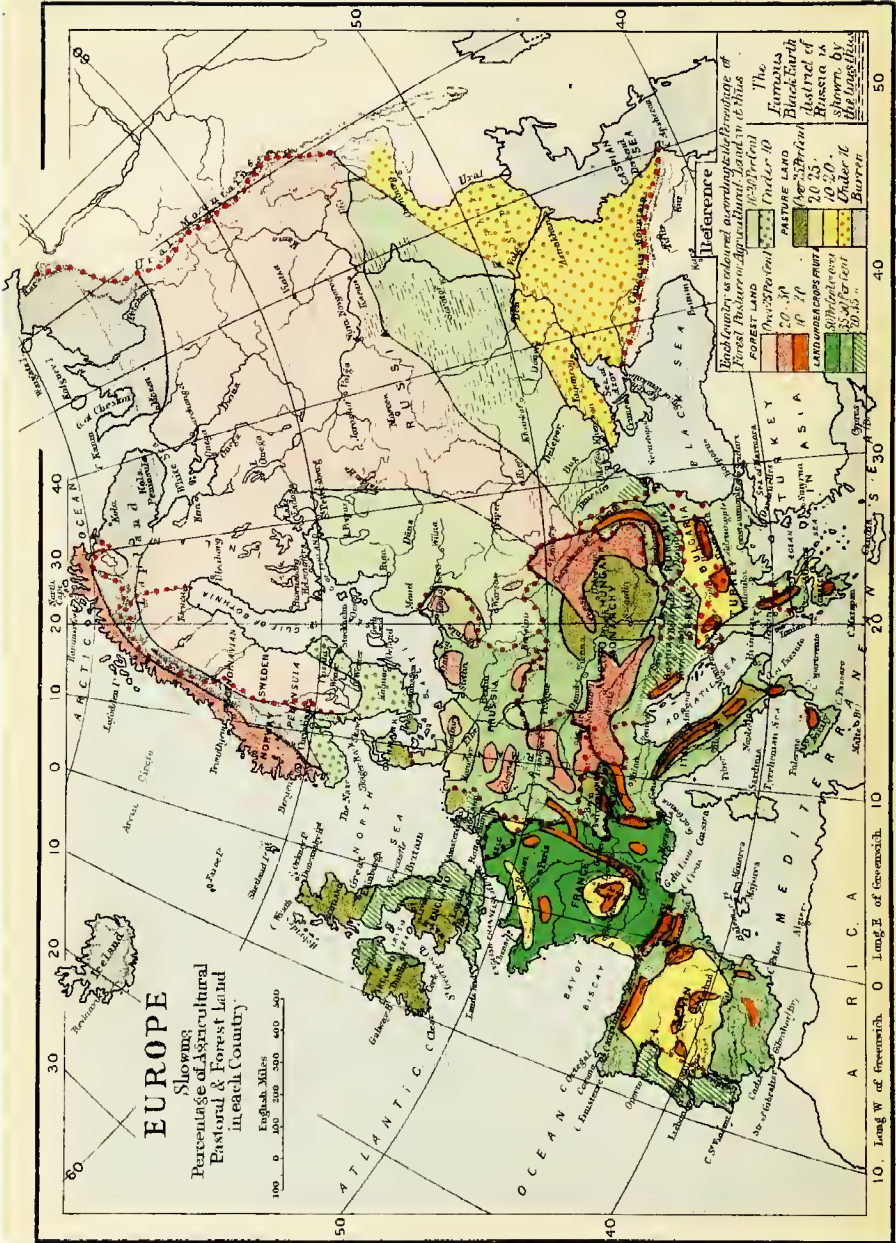
The chief European country in the production of a commodity is shown by the location of the letter when that is given, thus SOLE

10 20 30 40 50 Long. W. of Greenwich 0 Long. E. of Greenwich 10 20 30 40 50

W & A.E. Johnson, Edinburgh and London

EUROPE
 Showing
 Percentage of Agricultural
 and Forest Land
 in each Country.

English Miles
 100 0 100 200 300 400 500

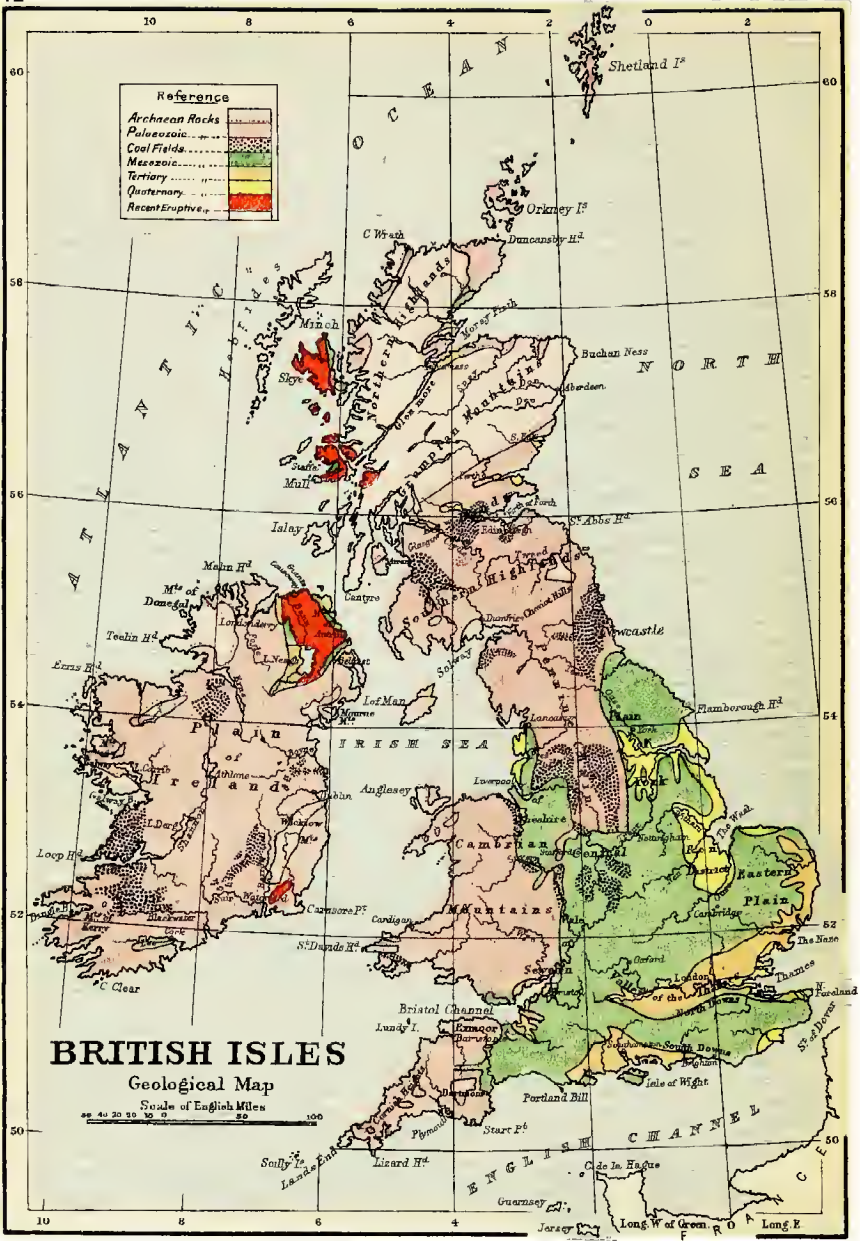


Reference

Percentage of Agricultural Land in this
 Forest Land

Forest Land	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Pasture Land	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Land under crop	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Land under forest	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Barren	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100

The Famous Black Earth district of Russia is shown by the yellow color.



BRITISH ISLES

Showing
Population, Manufacturing Districts
and Coalfields

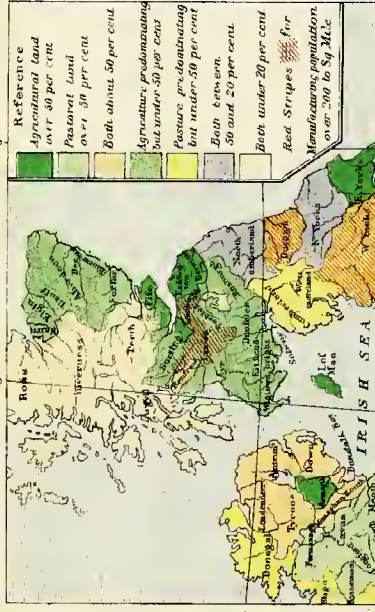
English Miles
0 20 40 60



Reference

- Manuf^d districts
- Population over 500 to 5y Ml.
- 200 - 500
- 100 - 200
- 50 - 100
- under 50
- Coalfields

N.B. In the Manuf^d districts the popⁿ is over 500 to the 5y Ml.



BRITISH ISLES
 in Counties
 Showing
 Agricultural & Pastoral land
 & Manufacturing Population
 to
 English Miles





IRELAND

English Miles
10 0 10 20 30 40



Reference

- Lowland
- Highland
- Mineral Products **COAL**
- Vegetable " **FLAX**
- Animal " **SHEEP**
- Chief Trade Centres
- Fishing Ports
- Industries (Min Products connected Veg with Anim)
- Ports **DUBLIN**
- Railways **SS&WR**
- Canals
- Telegraphs

10 Longitude West 9 of Greenwich 8 7

FRANCE & SWITZERLAND

English Miles
20 0 20 40 60 80 100 120



Reference

	Lead
	Highland
	Mineral Products
	Coal
	Wheat
	Flax
	Sheep
	France rank 1st among European countries in the production of
	Chief Trade Centre
	Industrial Min. Produce
	connected by
	with
	Ports
	Railways
	Canals
	Altitudes

W & A. Johnston, Edinburgh and London.

2 Long. W. of Greenwich 0 Long. E. of Greenwich 2

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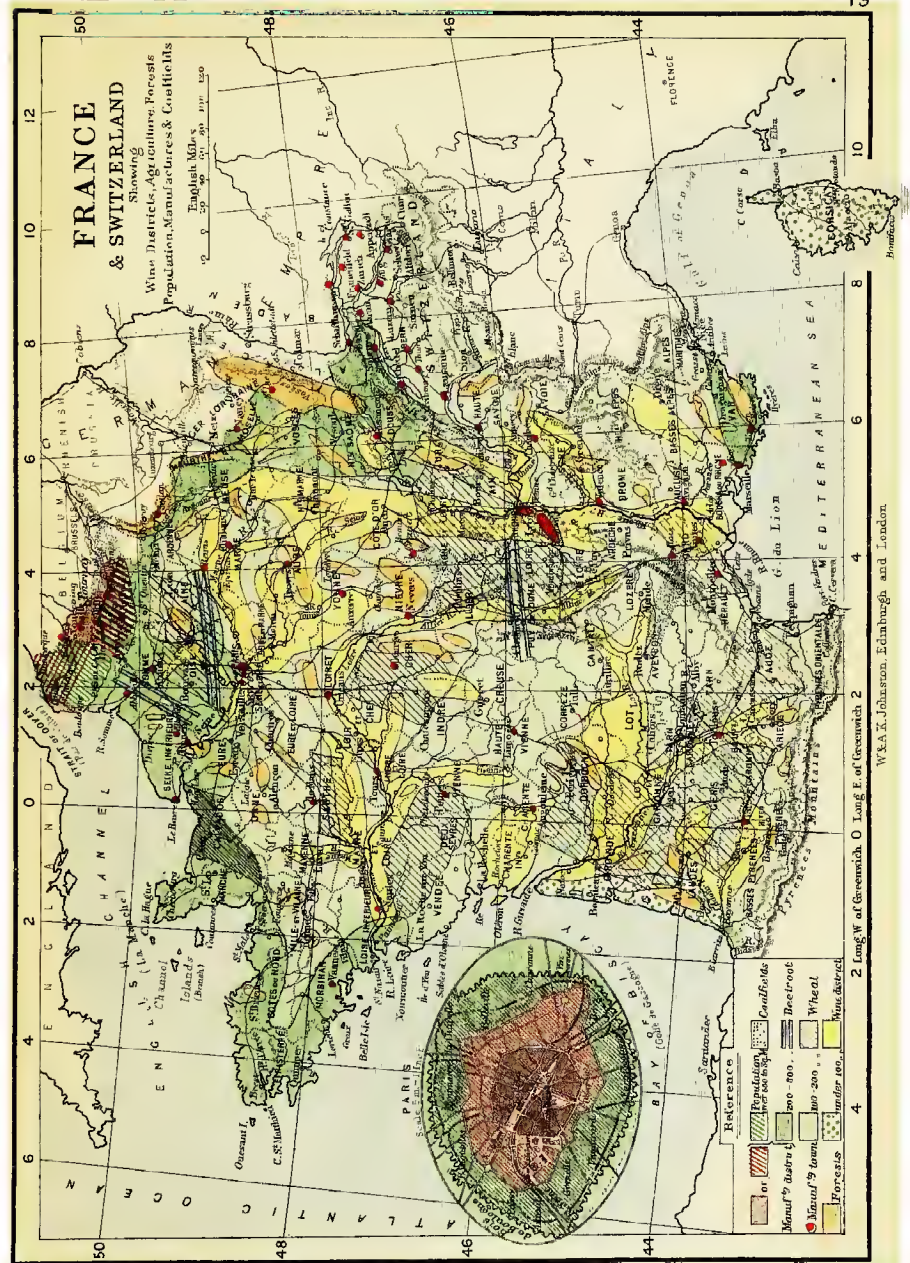
6

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FRANCE & SWITZERLAND

Showing
Wine Districts, Agriculture, Forests
Population, Manufactures & Coalfields



W & A. Johnson, Edinburgh and London.

GERMANY.

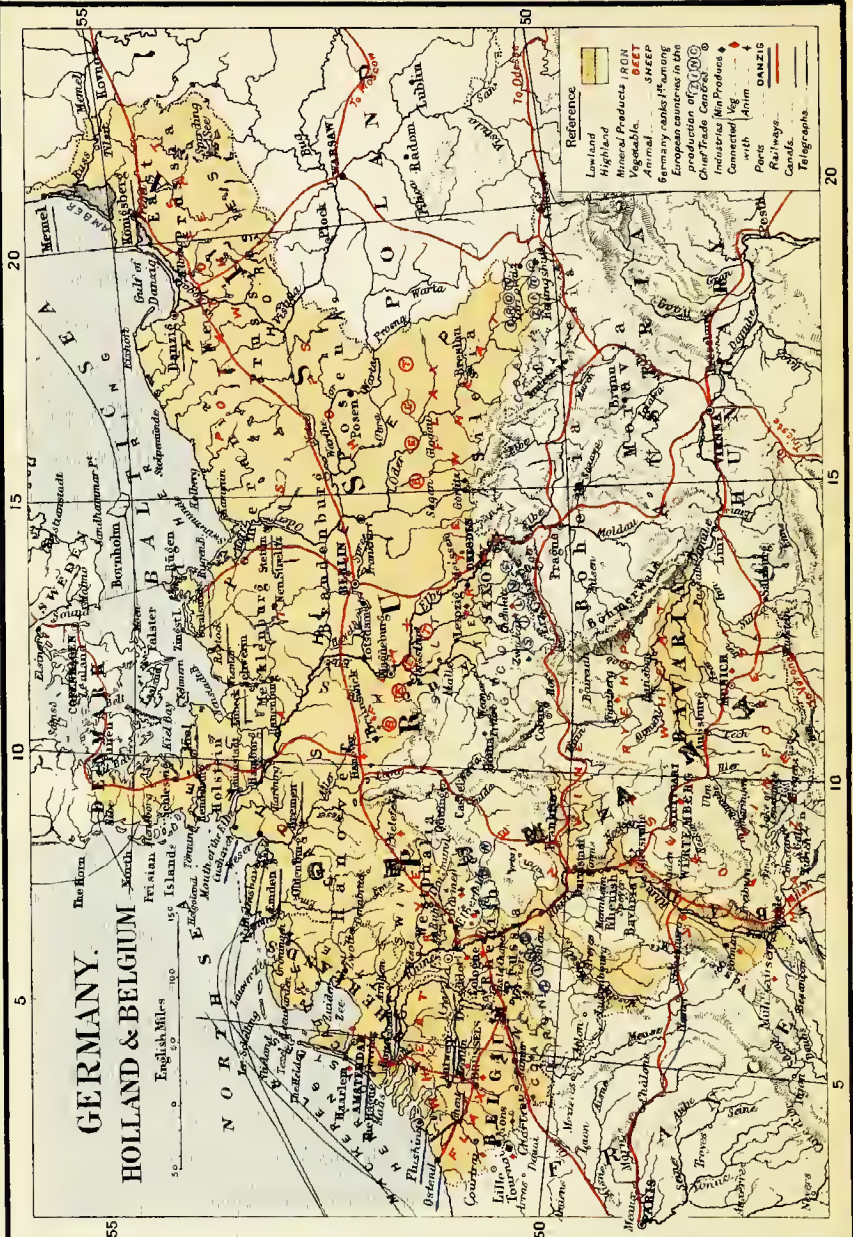
HOLLAND & BELGIUM

English Miles

0 50 100

Reference

- Lowland
- Highland
- Mineral Products
- Vegetable
- Animal
- Germany ranks 1st among European countries in the production of
- Chief Trade Centers
- Industries
- Min. Products
- Connected with
- Anim
- Ports
- Railways
- Canal
- Telegraphs



GERMAN EMPIRE

Showing
Population, Manufacturing Districts
Coalfields & Wine Districts

English Miles

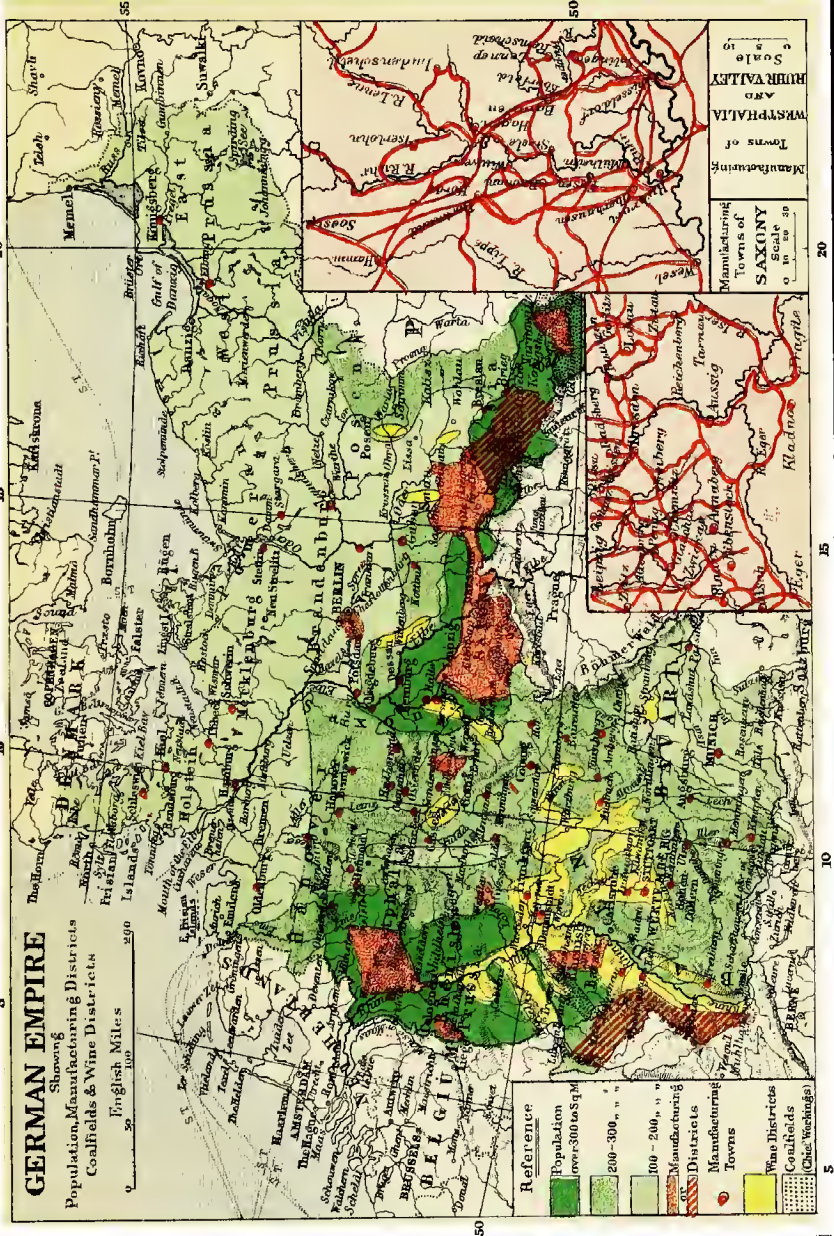
250

100

50

Reference

- Population over 300 to 500M
- 200 - 300 " "
- 100 - 200 " "
- Manufacturing Districts
- Manufacturing Towns
- Wine Districts
- Coalfields (Chas. 'Wachings)



Scale
0 10 20
Miles

Scale
0 10 20
Miles

Manufacturing
Towns of
SAXONY

Towns of
WESTPHALIA
AND
RUHR VALLEY

20

15

10

5

BELGIUM THE NETHERLANDS

AND
N. E. OF FRANCE

Showing

Physical Features
Manufacturing Towns & Coalfields
with insets of
Manufacturing Districts

English Miles

10 0 10 20 30 40

Railways

Reference

Lowlands

Highlands

Land below
Sea Level

Coalfields

Manufacturing
Towns

Boundaries

NORTH

SEA

THE HAGUE

1st Grasspolder

Brabant

HOLLAND

Schoten

N. Brabant

Walcheren

Middelburg

Puysinghe

Blankenberge

Ostende

WEST

FLANDERS

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THE IRON DISTRICT OF CHARLEROI

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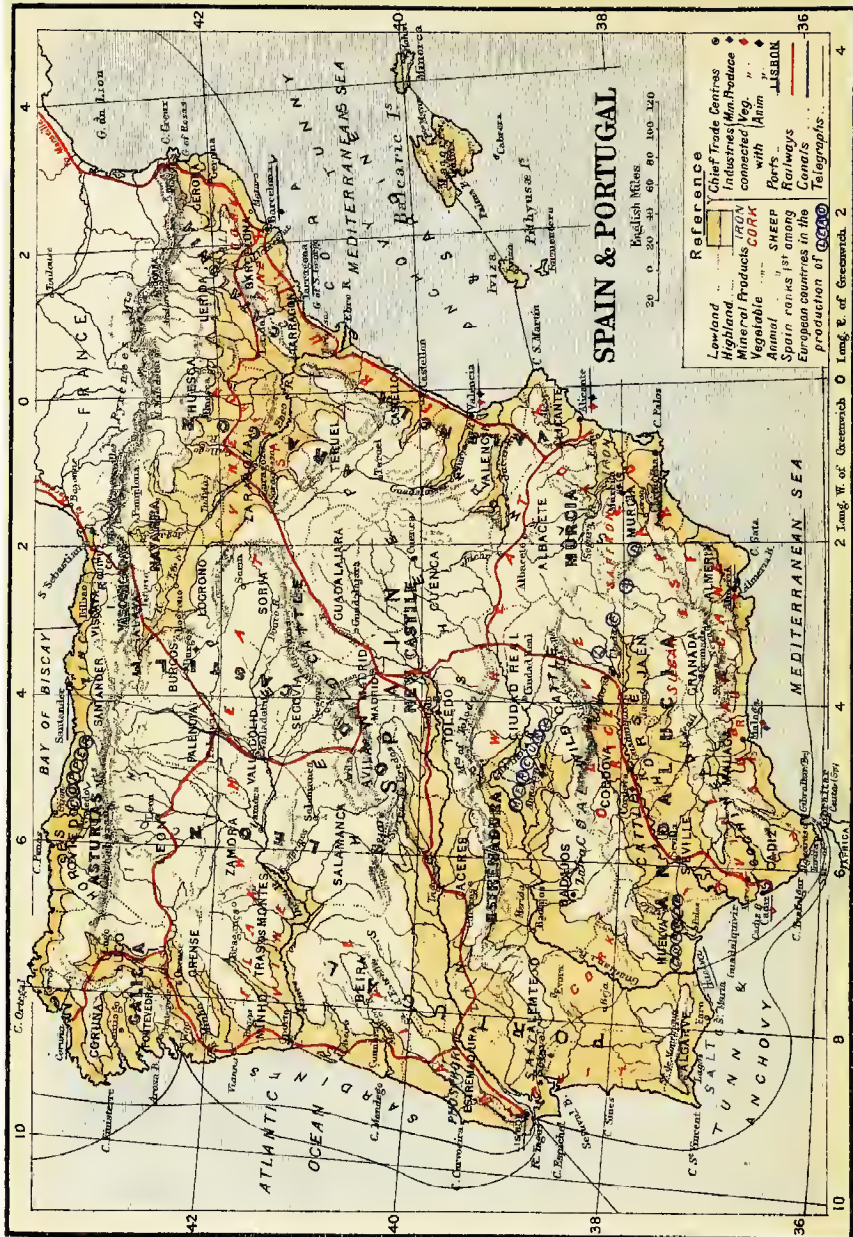
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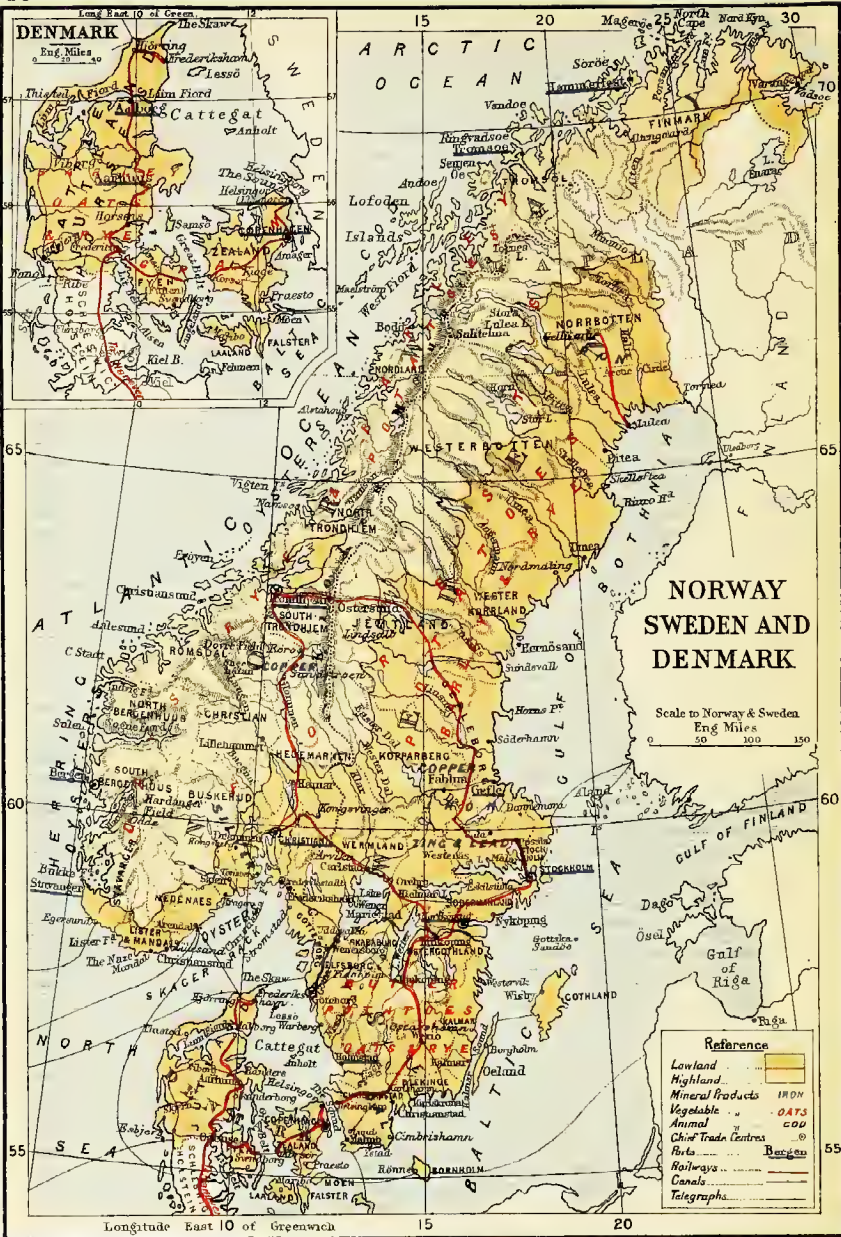


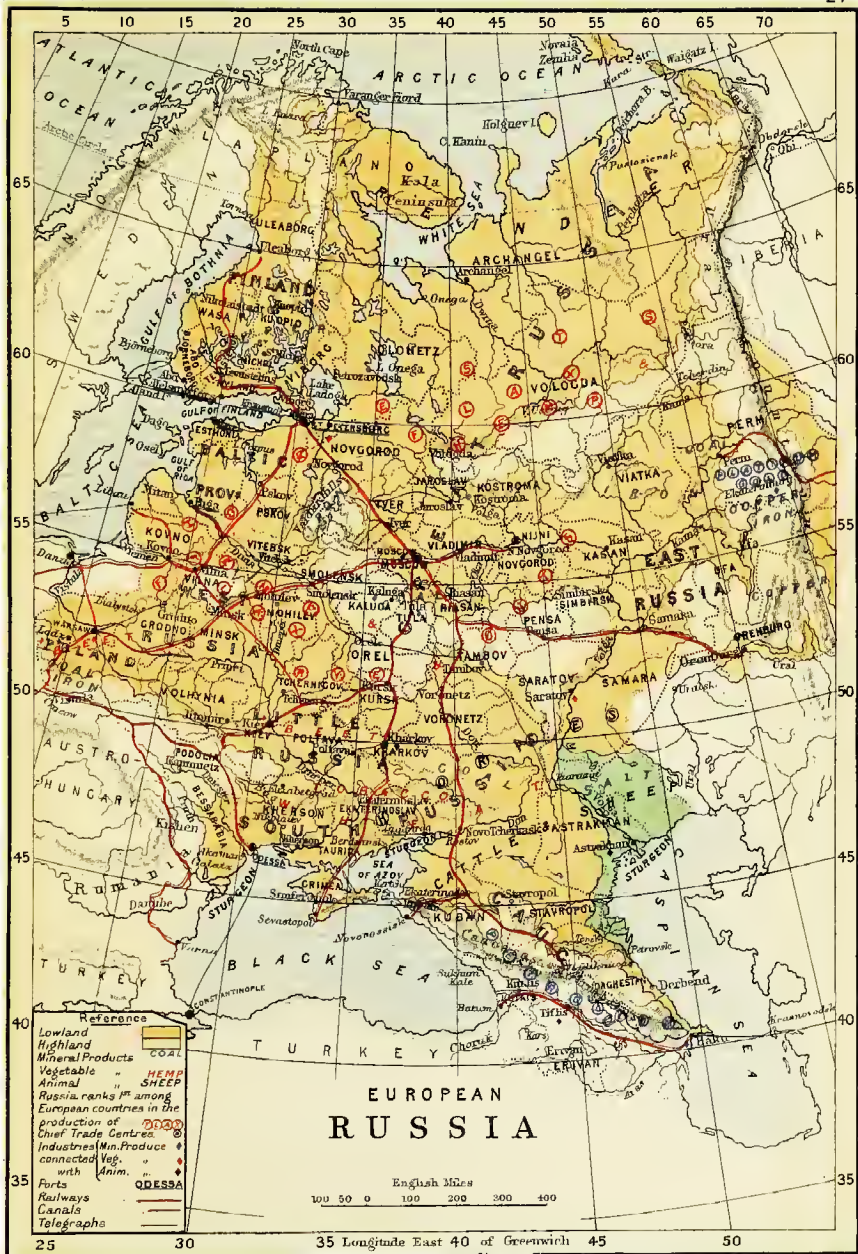
W & A K Johnson, Edinburgh and London



Reference

Lowlands	
Highlands	
Mineral Products	
Vegetable	
Animal	
Italy ranks 1st among European countries in the Production of	
Chief Trade centres	
Industries (Min. Produca connected)	
with	
Anim.	
Parts	
NAPLES	
Railways	
Canals	
Telegraphs	



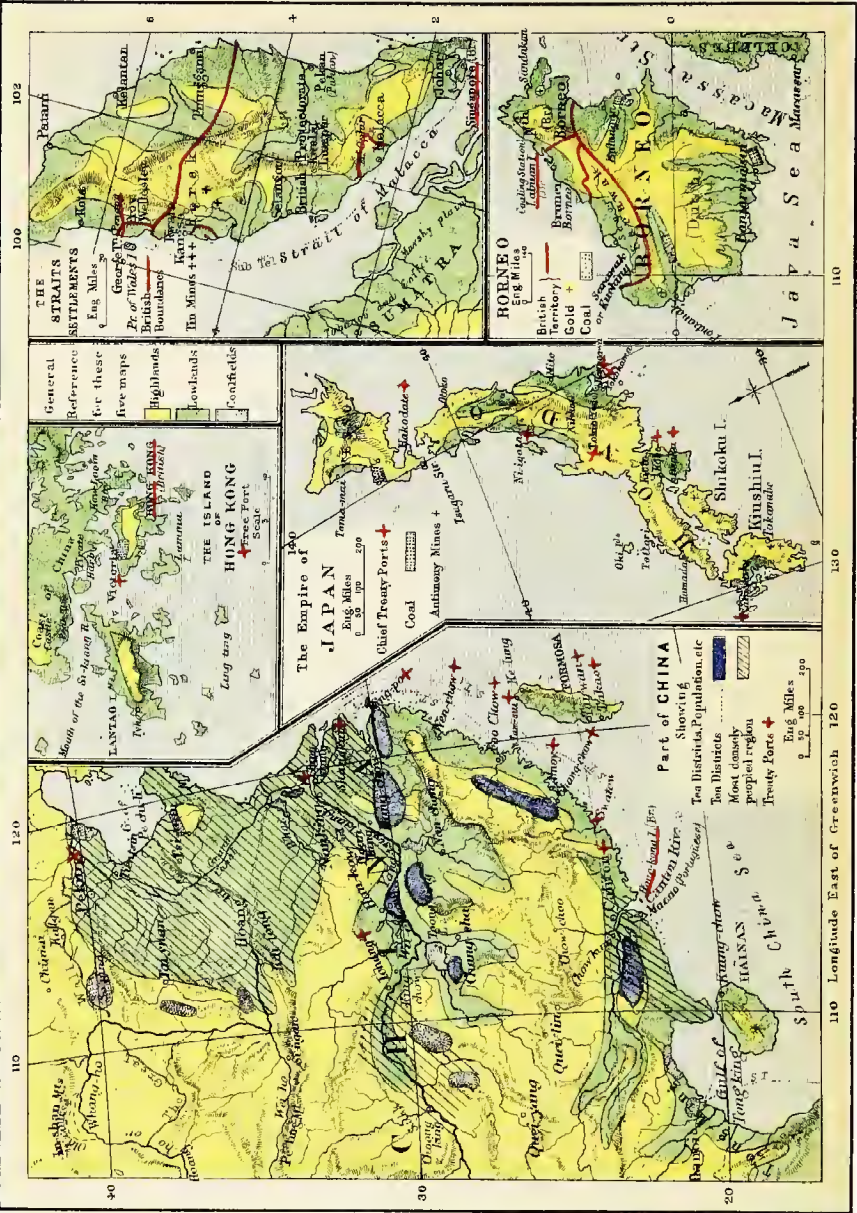






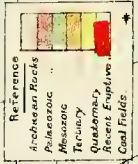
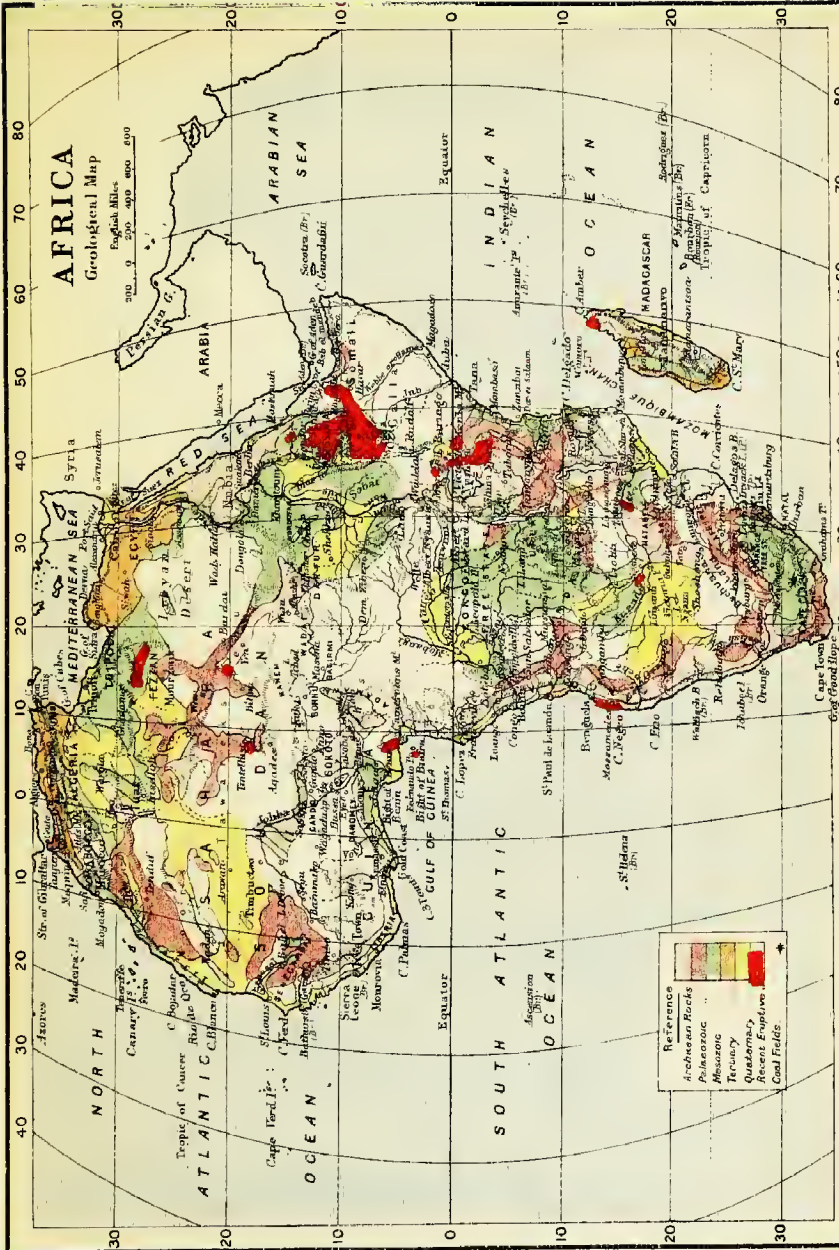
W. & A. Johnston, Edinburgh and London.

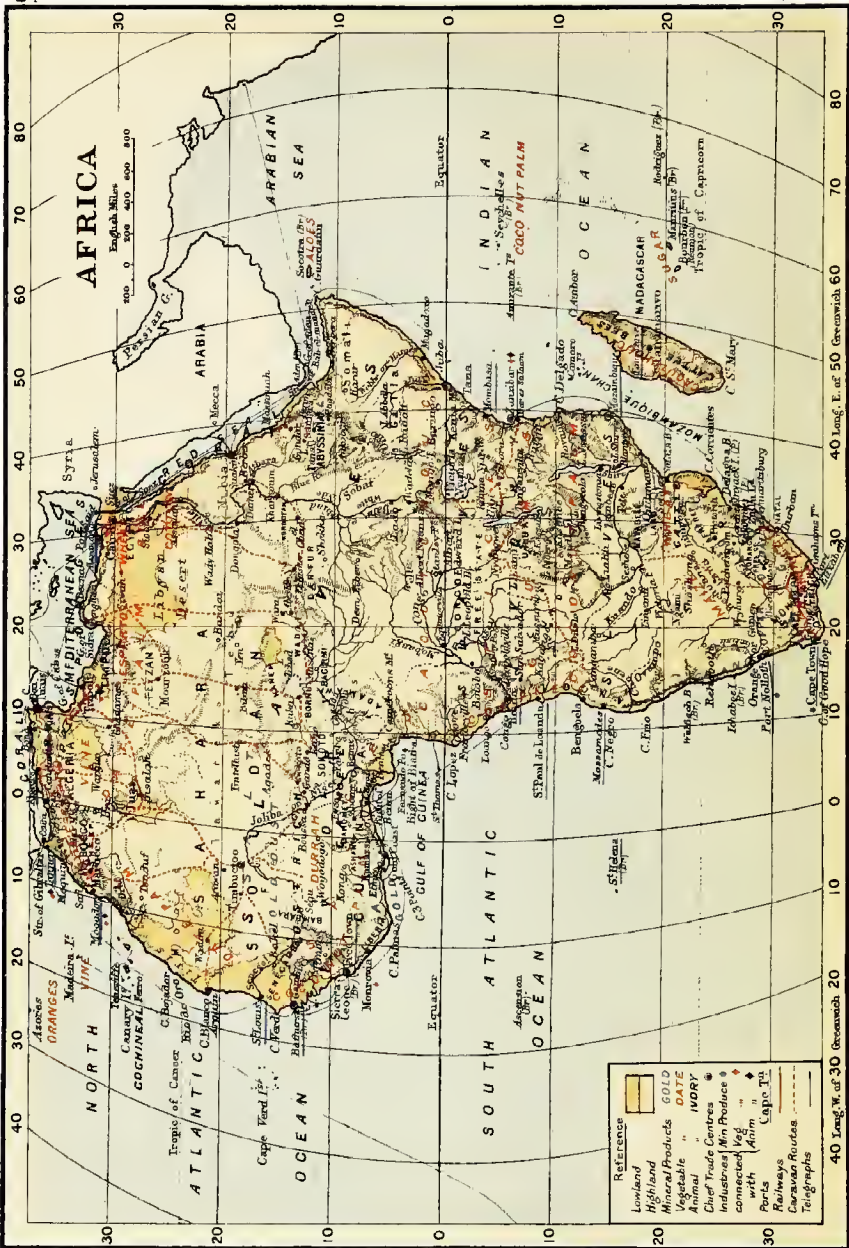
Gravé
Draught.



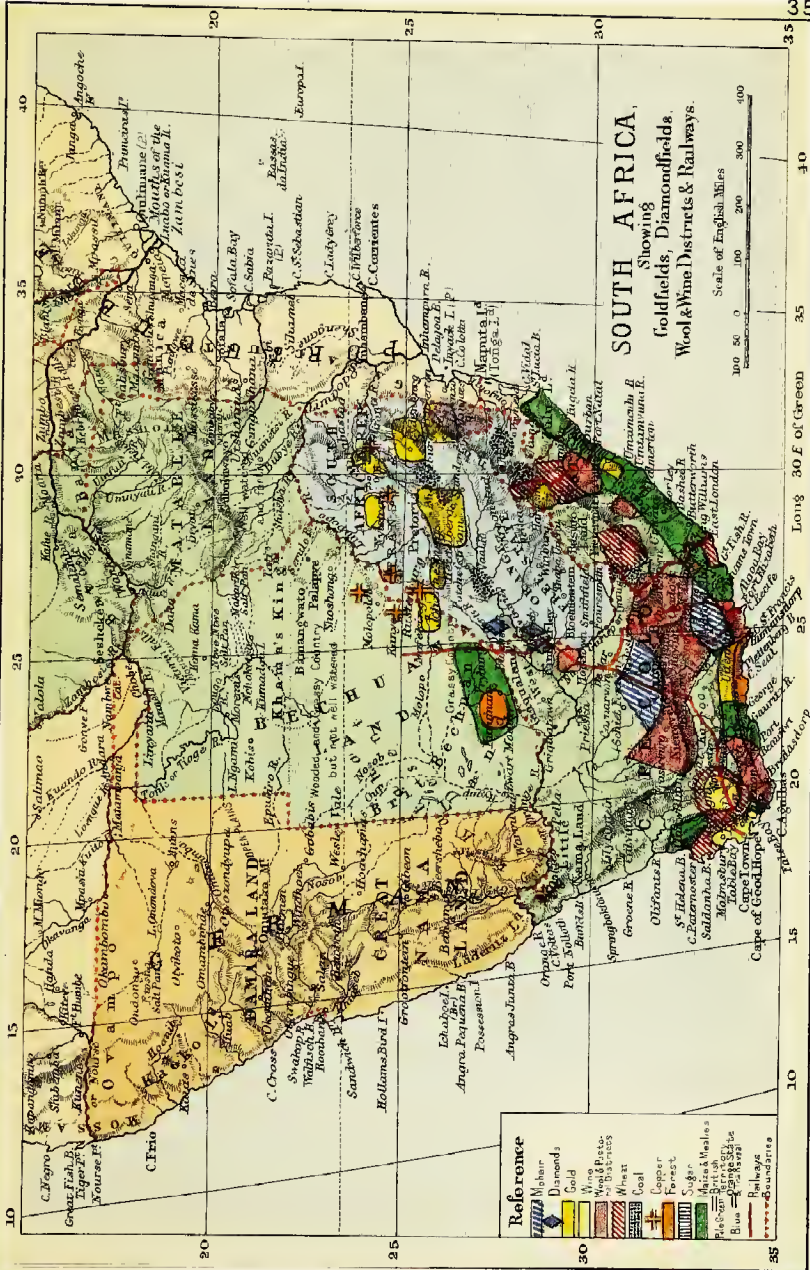
AFRICA

Geological Map
English Miles
0 100 200 300 400 500 600





W & A. Johnston, Edinburgh and London

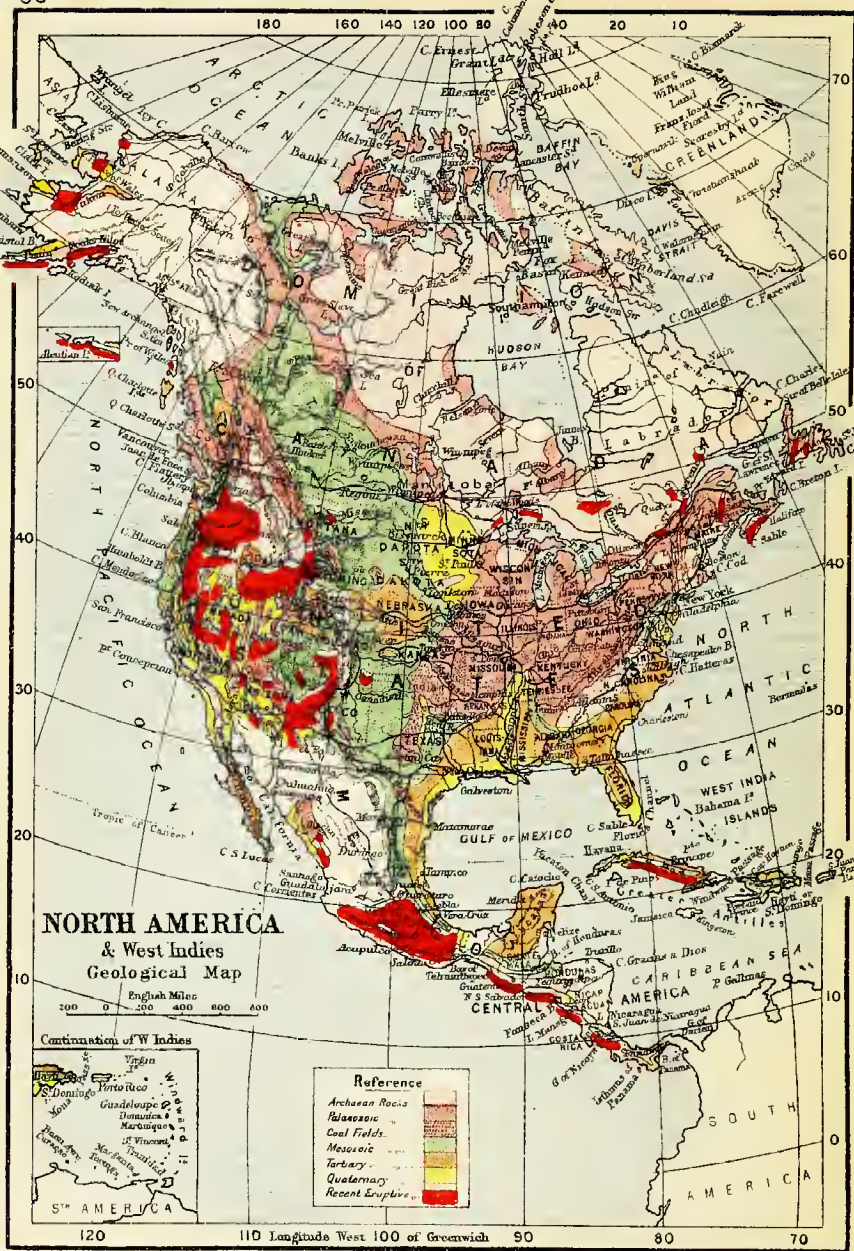


SOUTH AFRICA,
 Showing
 Goldfields, Diamondfields,
 Wool & Wine Districts & Railways.

Scale of English Miles
 100 50 0 100 200 300 400

Reference

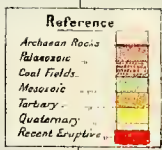
- Mchlar
- Diamonds
- Gold
- Wine
- Wool & Pasture
- Wheat
- Coal
- Copper
- Forest
- Sugar
- Maize & Wheat
- Pasture
- Bush
- Railways
- Boundaries



NORTH AMERICA & West Indies Geological Map

English Miles 200 0 200 400 600 800

Continuation of W Indies



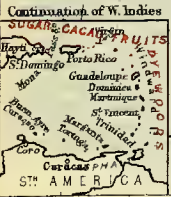
120 110 Longitude West 100 of Greenwich 90 80 70

180 160 140 120 100 80 20 10



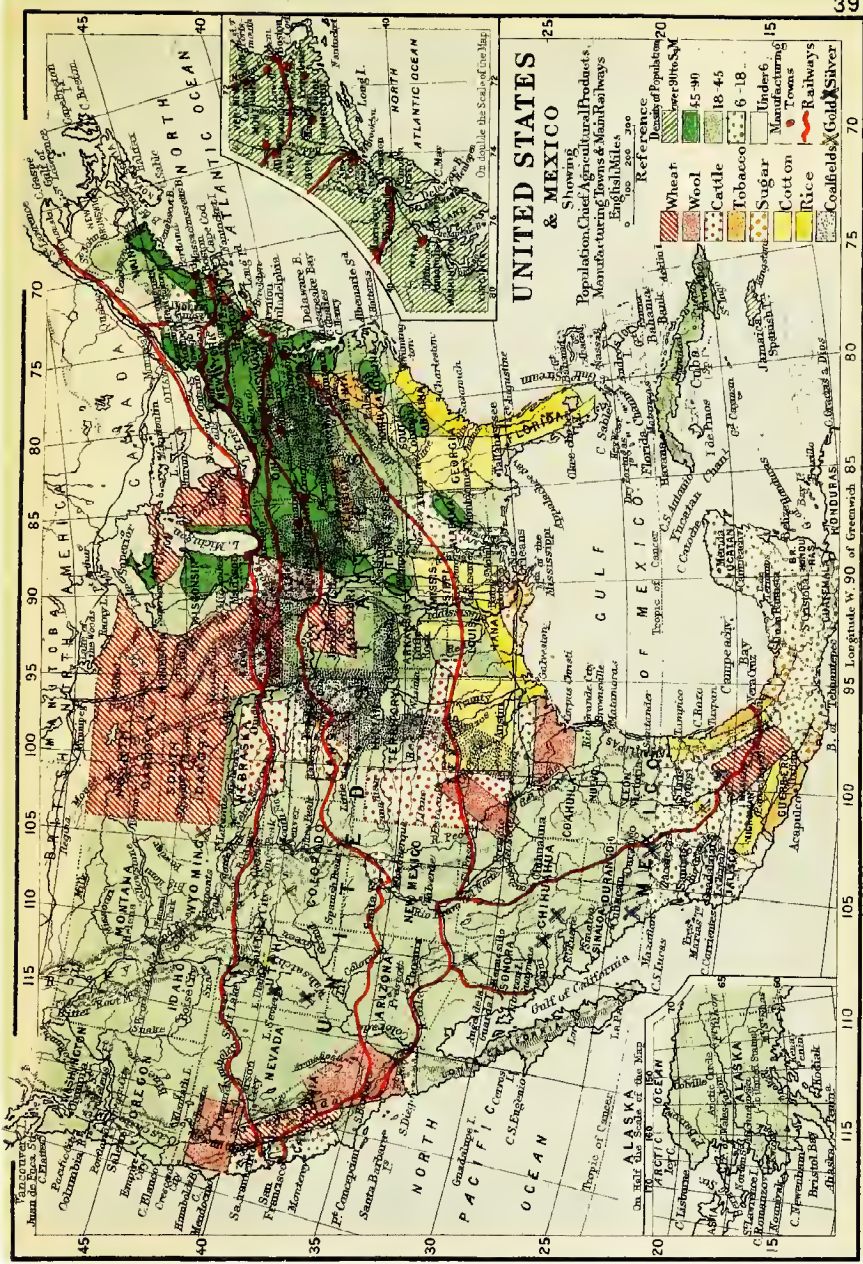
NORTH AMERICA & West Indies

English Miles
200 0 200 400 600 800



Reference	
Lowland	[Yellow Box]
Highland	[Light Green Box]
Mineral Products	IRON
Vegetable	RICE
Chief Food	SHEEP
Animal	connected Veg. with Anim.
Industries/Min. Produce	connected Veg. with Anim.
Ports	Boston
Railways	Telegraphs

120 110 Longitude West 100 of Greenwich 90 80 70





SOUTH AMERICA

English Miles
200 0 200 400 600

- Reference
- Lowland
 - Highland
 - Mineral Products
 - Vegetable
 - Animal
 - Chief Trade Centres
 - Industries
 - Min. Products connected with
 - Ports
 - Railways
 - Telegraphs

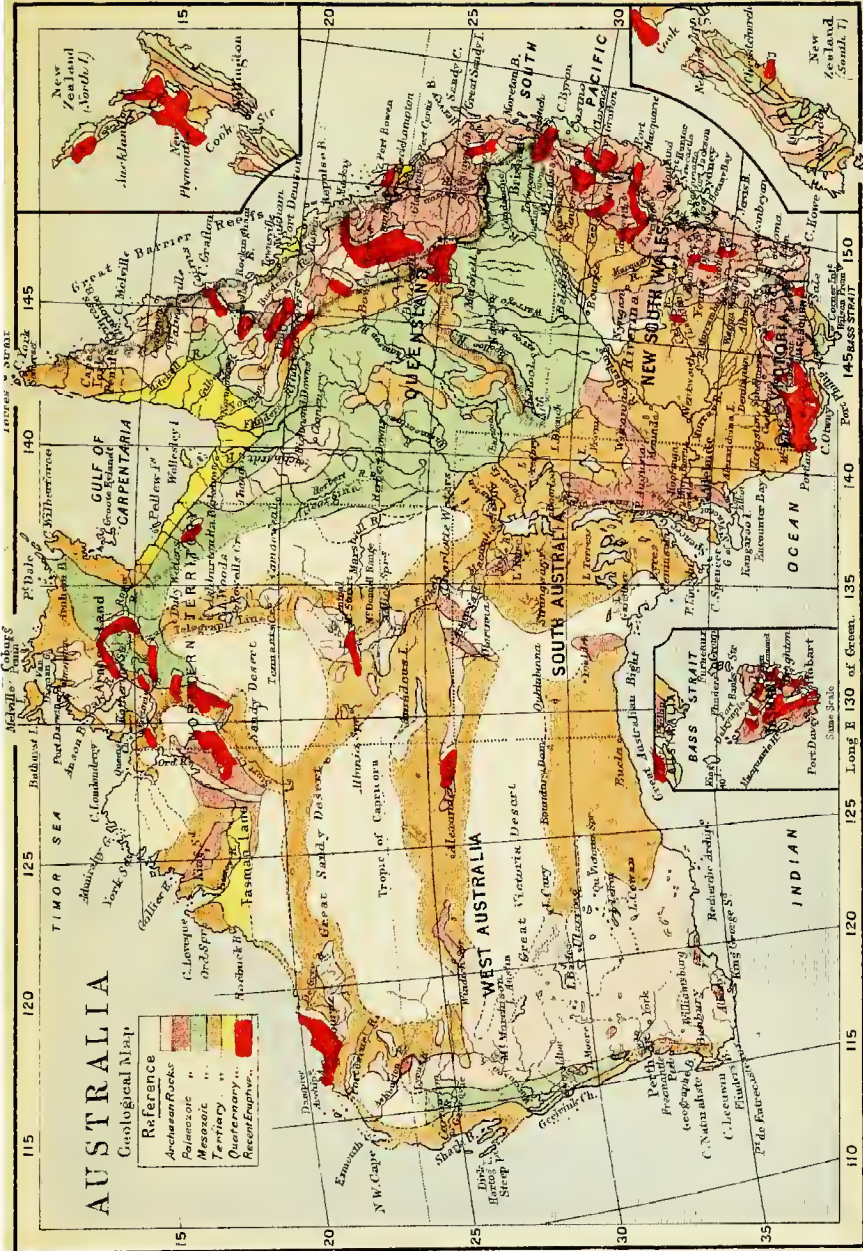
Cacao
 Sheep
 Cattle
 George Tn
 Falkland I.
 C. Piller
 C. Frow
 Cape Horn
 S. Joseph Penin.
 S. Maria
 S. E. de la Plata
 C. Corrientes
 S. George
 S. George I.
 S. George II.
 S. George III.
 S. George IV.
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 S. George VI.
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 S. George XXX.



AUSTRALIA

Geological Map

Reference	
	Archean Rocks
	Paleozoic
	Mesozoic
	Tertiary
	Quaternary
	Recent Eruptions



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