

FIG. 121.—SWITZERLAND AND THE ALPINE PASSES.

### Western and Central Alps.

The above map is designed to show the chief passes of importance, the great international railway routes, and the position of the best known tourist resorts and mountains. Only those names which do not occur elsewhere have symbols attached to them. The new peaks are thus labelled: P 1, P 2, etc., according to height. Below the 3,000-foot contour agriculture is possible; trees flourish well up to the 6,000-foot line, above 9,000 snow lies throughout the year.

**A** Switzerland can roughly be divided into three natural divisions: (1) The Jura, a folded limestone range covered with trees and pastures, celebrated for its special trade of watch-making. (2) The plateau of Switzerland running north-east from

the Lake of Geneva to the Rhine, containing nearly all the agricultural land. Wheat, wine and cheese are the most important products. (3) The Alpine regions, where every available spot that can be used for tree-growing or pasture is made the most of by the energetic inhabitants. Only about one-twentieth of the entire country is above the line of perpetual snow and ice.

The importance of railways across the Alps consists in the links which they make between the great trade-centres of Europe and the Mediterranean. The enormous traffic of the Rhine valley required a connexion between Basle and Genoa. Of the two routes now open, the St. Gotthard is the more direct, but the Simplon is at a much lower level (2,000 feet as opposed to 3,500 feet), and hence the haulage of trains is cheaper.

Marseilles is the natural Mediterranean port of France, but there is also a stream of traffic from Dijon to Genoa. The weak point in the route from France to the Simplon is the high railway over the Jura; this can be improved by a tunnel. Another scheme is to make a direct route from Dijon to Geneva under the Jura, up the Chamonix valley, beneath Mont Blanc, and so on to Genoa.

The Brenner is far the lowest pass, and was the first to have a railway over it. The Mont Cenis was the next Trans-Alpine railway, and is the route taken by the "Rome Express" from Paris.

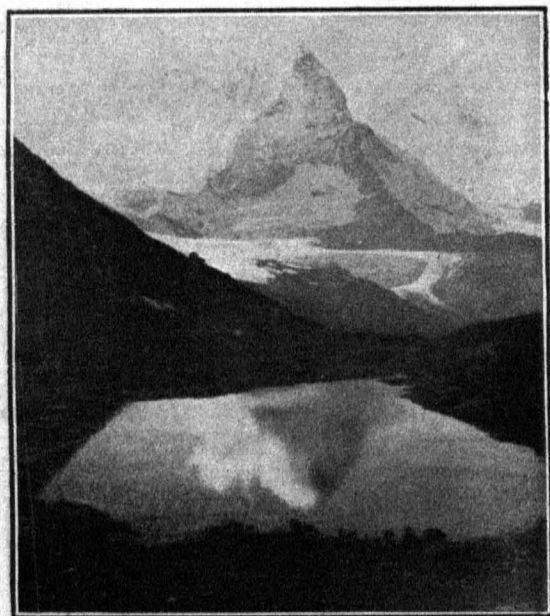
## QUESTIONS AND EXERCISES.

**A** 1. Trace the map, indicating the sea coast, and marking and naming all the towns in heavy print. Shade in pencil all land over 6,000 ft., and mark the three Trans-Alpine railways to Genoa, and the line from Basle to Venice (via the Brenner).

(Or, instead of naming, insert symbols from the map of Central Europe, and use the result as a test map.)

2. What are the three main divisions of the Alps here named? What are the passes which divide the groups?

3. In journeys from Dijon to Genoa via (1) Lucerne, (2) Lausanne, (3) Mt. Cenis, (4) Marseilles, through what towns and passes would a traveller go?



Copyright

[Mrs. A. Le Blond.]

FIG. 122.—THE MATTERHORN.

The summit is 14,000 feet above sea-level. At what height is the tree-line in Switzerland? From what height at least must the picture have been taken? In what division of the Alps is this? Give the approximate latitude from the map. Why does a cloud often form against the mountain-side? Do you see any signs of ice action here? How do you suppose the small lake has been formed? Why is the mountain itself comparatively free from snow? Of what material is the slope, which is to be seen on the right of the mountain beginning about half way up, composed?

**B** Geologically the Alps may be said to consist of a core of crystalline rock, occupying most of Southern and Eastern Switzerland, round the edges of which are to be found intensely folded limestone mountains, which are best developed along the northern border. The Swiss plateau consists of newer sandstone rocks, covered over largely with glacial deposits. The Jura mountains may be looked upon as a repetition of the limestone Alps on a smaller scale, the same rock beds reappearing in a fresh series of great folds. After the glacial period, a general subsidence of the entire region must have taken place to account for the elongated lakes or drowned valleys which are so common on both sides of the Central Alps.

## QUESTIONS AND EXERCISES.

1. Trace the map as directed above (A, question 1), but add the additional names for your section.
2. What are the two divisions here marked of the Central Alps? Say what river systems they separate.
3. What effect have the Trans-Alpine railways had upon the

prosperity of Marseilles, Genoa, and Venice? How has the opening of the Suez canal helped?

4. Would a railway from Berne direct to the Simplon be of advantage? What obstacles are there in the way?

**C** 1. Make a tracing of the map, marking in carefully all river courses and lakes. Shade in pencil all land over 6,000 ft. Mark the railways in red ink. Put symbols instead of the names where these are given. (Eight towns, six passes, five peaks, one lake, one mountain group.) Use the result as a test map.

2. Make a list of all the lakes named in Switzerland and Italy.

3. Name what river-basins are connected by each of the passes mentioned.

4. Write a list of all the peaks named, saying to what mountain group each belongs.

5. Draw a diagram on squared paper to show the comparative heights of these peaks (let one division = 500 feet vertically): Mont Blanc (15,700), Monte Rosa (15,200), Matterhorn (14,700), Jungfrau (13,700), Finsteraarhorn (14,000), Bernina (13,300), Pilatus (7,000), Rigi (6,000).

Foreign spellings: Genève (Geneva), Lac Léman (Lake of Geneva), Basel (Basle).

## Italy and the Balkan Peninsula.

## Natural Divisions.

**A** The Alps form the natural boundary to the north of Italy, the line from Fiume along the Save and Danube to the Black Sea may be taken as the northern limit of the Balkan Peninsula. (Rumania is dealt with here, though it physically belongs to the plains of Southern Russia.)

South of these limits, each of the peninsulas can be divided into three parts.

1. The Half-continental region, consisting in Italy of the plains of Lombardy; in the Balkan Peninsula, of the interior part of the triangular mass of land between the Danube and Greece.

2. The Peninsulas proper.

3. The Islands.

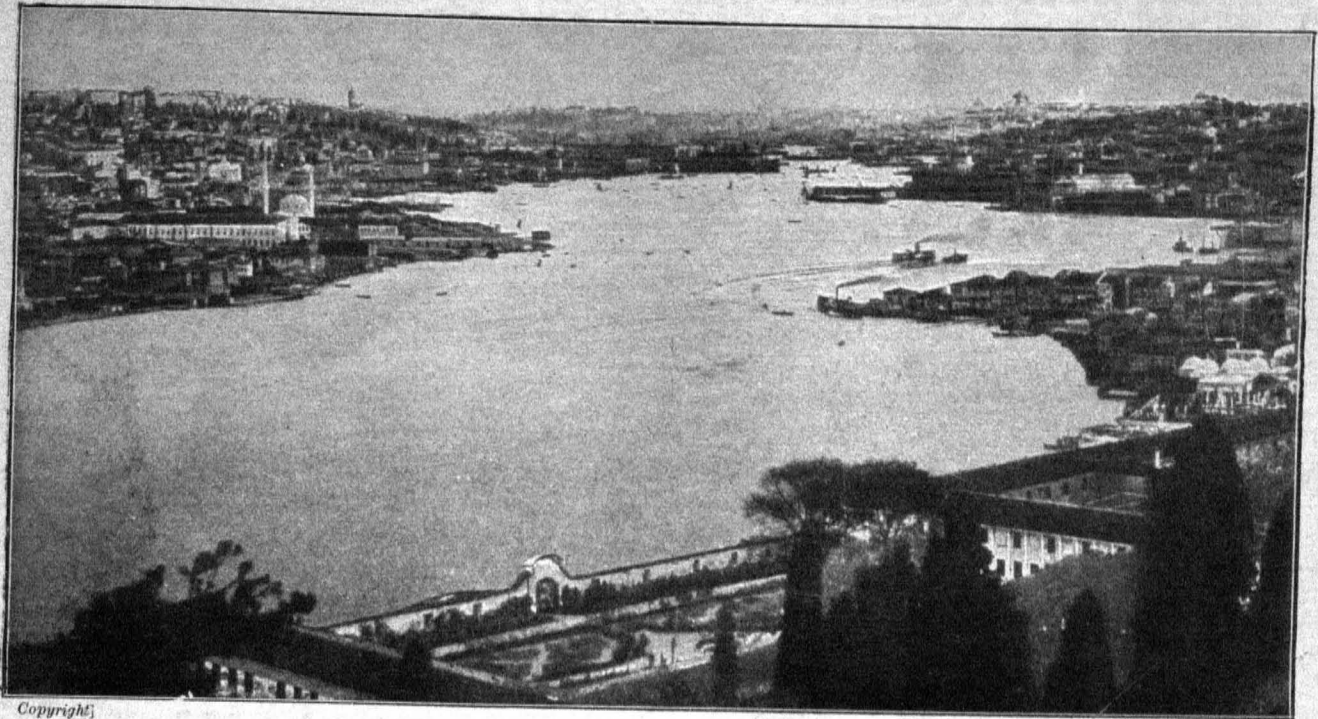
**B** Geologically there are many points of similarity between the two peninsulas.

The Apennines are a continuation of the folded Alps. They consist of clay and limestone, and are of comparatively recent age, and therefore Italy has no coal and but little mineral wealth. Sicily is formed by a continuation of this fold-system. Sardinia (and Corsica) and Elba, on the other hand, are the remains of an ancient rock-mass now chiefly submerged, and contain many valuable mines of lead and zinc and iron.

In a similar fashion the great folds which form the limestone region of the Dinaric Alps—well shown in the island-chains of the Adriatic—are continued southwards through Albania, Epirus, the Ionian Islands and the Peloponnese, to reappear in a southern chain of islands bounding the Ægean Sea, Crete being the most conspicuous. Euboea and North-eastern Greece is also occupied by limestone fold-mountains with a trend from west to east. In Bulgaria, the Balkans show a similar direction.

The intervening region, consisting of most of the rest of the Peninsula south of the Danube, with the exception of the western ranges and the Balkans, is a mass of much





Copyright]

FIG. 123.—CONSTANTINOPLE, LOOKING NORTH-WEST UP THE GOLDEN HORN.

[Photochrom Co., Ltd.]

Do you see any mosques or minarets? Does this look like a commercial harbour? Is there any tide here? Why do minarets always have projecting galleries? Give the latitude of Constantinople, and its difference in time from Greenwich. How many towns on the continent have a greater population?



Copyright]

[Mrs. A. Le Blond.]

FIG. 124.—ANCIENT ROME, SEEN THROUGH A TRIUMPHAL ARCH.

The view is taken from near the Capitoline Hill looking south-east across the Forum. In the foreground, under the covers, is the tomb of Remulus, recently excavated. In the distance can be seen the Arch of Titus, the captor of Jerusalem. Notice the Roman method of paving roads, and the classical style of architecture, so often badly copied in modern times.

older crystalline rock, which rises often to a height of nearly 10,000 feet in the Rhodope Mountains, Olympus, and the Shar Dagh. This region is traversed by two remarkable troughs, now utilized by the railways from Servia to Salonica and Constantinople, just as in ancient days they acted as the most important highways into the interior.

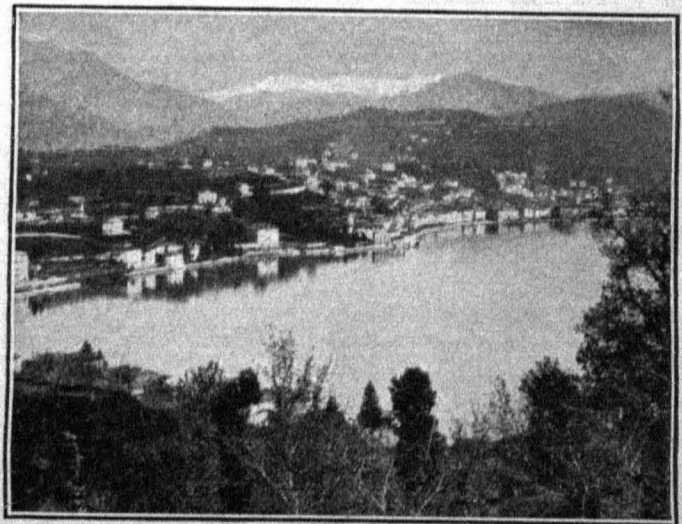


FIG. 125.—LAKE LUGANO.

Between Como and Maggiore. The water must be imagined of an intense blue the houses of pink marble. Looking north. What mountains are these? What great railway comes down the valley opposite? The foreground is a typical example of Italian cultivation in terraces. The rows of sticks are to support vines. Why do you think that this view was taken in spring-time?



Copyright

[Photochrom Co., Ltd.]

FIG. 126.—NAPLES. OLIVE TREES IN THE FOREGROUND.

Why are olives cultivated? Can they stand drought? Locate Naples in the map on plate 32. Give its approximate latitude and longitude. What is the mountain? In which direction is the mountain from the point of view? Account for the peculiar shape of the mountain? Contrast the architecture with that of Constantinople and Moscow (see views later on). Is Naples the most populous town in Italy (see plate 32)?

### Climate and Products.

**A** From the Isothermal Maps on Plate 25 it can be at once seen that in winter the Po Valley has a similar climate to Central France or Eastern England; that is, with enough frost and snow to prevent olive trees from flourishing; that Bulgaria and Rumania share the climate of South-western Russia, and therefore are naturally suited to the growth of wheat and maize—Rumania is, in fact, one of the most important wheat-growing countries of Europe, three-fourths of its exports consisting of grain. All the region south of isotherm  $40^{\circ}$  (in January) may be regarded as in the Mediterranean zone of climate and vegetation, resembling the Riviera, except of course in elevated districts. Here the olive and vine are conspicuous. Italy is second only to France as a wine-producing country. All the crops of Europe can be produced within her fertile borders; the wheat of Sicily, the wheat, rice and maize of Lombardy, being famous. Most of the currants of commerce come from Greece.

The Rainfall Map on Plate 26 indicates a fair annual average in all this region, but its seasonal distribution is of great importance. Throughout these peninsulas, except in the north, there is a tendency to prolonged drought in summer, and hence much of Italy and Greece shows withered and parched vegetation, except where irrigation has been highly developed, or where mountains induce some rainfall.

**B** Oranges and lemons are notable products of the irrigated lands of Sicily.

Italian agriculture is much hampered by the prevalence of malaria in the southern half of the kingdom, and fertile lands have often to be left uncultivated for this reason.

The splendid natural resources of European Turkey are only partially developed, owing to the system of government; but even so, there are considerable exports of tobacco, barley, figs and raisins.

**C** Servia is another instance of a naturally rich land poorly developed. A very small proportion of the land is cultivated. The rearing of swine upon the acorns of the great oak forests is still the leading industry.

### Industries and Trade.

**A** Outside agriculture there are few industries within this region. Much activity is shown in Northern Italy, but lack of native coal prevents great developments. Silk weaving is important. Genoa is by far the greatest of Italian ports, and acts as the seaport of South-west Germany.

Constantinople still remains the leading trading town of the Nearer East. Smyrna, though outside Europe, belongs in many ways to this region, and must be mentioned as the chief exporting centre of raisins, figs and Turkey carpets.

#### QUESTIONS AND EXERCISES.

**A** 1. Write a list, with symbols from Plate 33, of the rivers, mountains, lakes, islands, political divisions, and parts of sea which are named in brown, and be ready to write or repeat from the Test Map. Add to what country each island belongs.

2. Name five seaports, marked in brown, two volcanoes, and the straits east and west of the Sea of Marmora.

3. Make a list (from page 59) of the populations of Italy, United Kingdom, Turkey-in-Europe, Rumania, Bulgaria, Servia and Greece, in order, giving the numbers to the nearest million.

4. Do the same as to their volume of trade by value, giving figures to the nearest five million pounds.

5. In a journey by train from Budapest to the Bosphorus, and from the St. Gotthard to Naples, what towns would a traveller pass?

6. What port in Italy would most naturally be called at by a ship sailing between London and India?

7. Account for the importance of Bucharest, Belgrade, Genoa, Constantinople.

[The city of San Marino is the oldest and smallest republic in the world, with about 8,000 inhabitants.]

**B** 1. Write a list, with symbols from Plate 33, of the rivers, mountains, peaks, lakes, islands, states, and parts of the sea which are named in brown or blue, and be ready to write or repeat from the Test Map.

2. Mention five different routes by which a traveller might cross the Alps by train from Bologna.

3. Write a list, with symbols, of the divisions of Italy, Greece, Turkey, Bulgaria, and Rumania, as marked in blue.

4. Name six divisions which appear to you less mountainous than the rest.

**C** 1. Make a list, with symbols, of all rivers, mountains, peaks, lakes, islands, states (with divisions), and parts of sea. Be ready to repeat these from Test Map. Say to which country the various islands belong.

2. Make a list of the naval stations of Italy.

3. How is Italy an important link with the Far East; the Balkan Peninsula with the Near East?

4. Compare the two peninsulas in respect of population, area, natural boundaries to the north (their extent and kind), geological formation, natural products and trade.

5. Compare the climate and products of Lombardy and Bulgaria, Sicily and Morea.

6. What are the four ports of the Danube basin? Why is it that not one of them is at the mouth of the river?

7. What places would a railway traveller pass on his way from Milan to Brindisi, Budapest to Constantinople, Marseilles to Naples?

Foreign spellings: Genova (Genoa), Milano (Milan), Torino (Turin), Firenze (Florence), Venezia (Venice), Napoli (Naples), Sardegna (Sardinia), Livorno (Leghorn).



## ITALY AND BALKAN PENINSULA.



Scale 1:7,500,000 (118½ miles-1 inch) 0 50 100 150 Statute Miles

### Secant Conical Projection

George Philip & Son Ltd The London Geographical Institute

# ITALY AND BALKAN PENINSULA.—Test.



Scale 1:7,500,000 (1/82 miles = 1 inch) 0 50 100 150 Statute Miles





Copyright

FIG. 127.—ST. PETERSBURG.

{Photochrom Co., Ltd.

The photograph was taken at about 10 a.m. Is this the south or north bank of the river? What river? Is it navigable for sea-going steamers? Do you notice anything curious about the equipage of Russian carts?

## European Russia, Scandinavia, Denmark.

No special maps of these countries are given, as their features and topography can be easily seen from Plates 21, 23, 25, 26, and 27.

### Climate, Products and Trade.

A comparison of the Temperature, Rainfall and Vegetation Maps of Europe will make it clear that the zones of climate and vegetation do not follow the lines of latitude, but vary rather from east to west. With the exception of the west of Norway, the south-west of Sweden, and Denmark, almost the entire area has a continental climate.

The rainfall in a similar manner decreases from west to east. The isobars show that except along the coasts most rain must fall in summer, as then only can winds from the ocean penetrate easily inland.

Agriculture is by far the most important industry, as might be expected from the lack of coal, except in Russian Poland and round Moscow and Kharkof.

Mining is of importance in Sweden and the Urals.

Denmark and Southern Sweden may be treated together as a region somewhat similar in climate to Eastern Scotland. Dairy farming is the chief industry. The export of Danish butter to Great Britain amounts to £9,000,000 a year. Oats, rye, and potatoes are the staple crops.

Much of the rest of Sweden and Norway, wherever the elevation is not too great, is tree covered, and the export of timber is of great value.

The manufacture of wood, chiefly by means of water-power, is the leading industry of Scandinavia and Fin-

land. Sweden also has some not unimportant iron and steel works.

The Danes, Scandinavians and Finns are nearly all highly educated and technically advanced, as opposed to the large majority of Russians.

The great forest region extends across the northern half of Russia; this is succeeded by the central belt, where the leading crops are rye and oats, while the hot summers of the South are suited to wheat and maize. Flax and hemp are characteristic crops of Central Russia, and provide valuable materials for export.

### QUESTIONS AND EXERCISES.

1. Write a list, with symbols from Plates 21 and 22, of the rivers, mountains, and parts of sea marked in brown, which have connexion with these countries. Be ready to repeat from the Test Map (Plate 22).

2. Do the same for towns, from Plates 23 and 24, arranging them according to their countries.

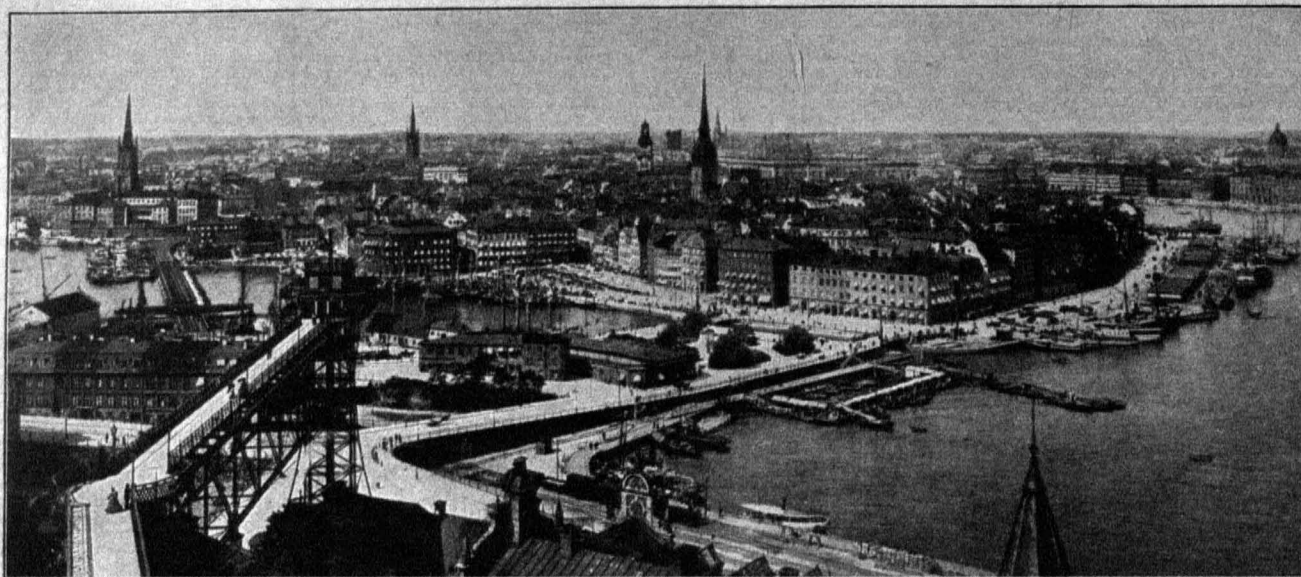
3. Name the capitals of these four countries, the largest lake in Europe, the chief island of Denmark proper.

4. Make diagrams on squared paper to illustrate the comparative populations and foreign trade of these four countries (see page 59).

5. From Plate 20, write down the chief exports of these countries to the United Kingdom.

One of the richest iron mines in Europe has now been opened in Swedish Lapland. Northern Sweden is being rapidly developed. The railways of this country, taken as a whole, are more extensive in comparison with the population than those of any other European state.

The egg industry is of great importance in Denmark and Russia. Each of these countries sends about £1,000,000 worth to the United Kingdom annually.



[Copyright]

FIG. 128.—STOCKHOLM.

[Photochrom Co., Ltd.]

The picture was taken at about 2 p.m. In what direction did the camera point? The town is built amid islands, where the arms of the Baltic and the lake-system meet. On which side is the Baltic? Do you see any sign of sea-traffic? Was this taken during hot weather? Compare the July temperature of Stockholm with that of London (Plate 25).

## QUESTIONS AND EXERCISES.

1. Make a list, with symbols, of the rivers, mountains, parts of sea, and lakes marked in blue or brown, which have any connexion with these countries. Be ready to repeat from Test Maps.
2. Do the same for the towns, arranging them according to their countries.
3. What towns belonging to these countries would you expect to be the chief ports of the Baltic and Black seas?
4. Account for the importance of Copenhagen, Bergen, Warsaw, Odessa, Astrakhan, Archangel.
5. Give the average temperature in January and July of Archangel and North Wales. Account for the differences. Which has the greatest range?

**C** Besides the fir-forests of the North of Russia, there is marked on the Vegetation Map on Plate 26 a tree-covered region midway between the Black Sea and the Baltic. This corresponds to a region of comparatively light population. Much of this timber is floated down the rivers to the Baltic.

The petroleum industry that centres round Baku is of enormous value, and its only rival in the product of natural mineral oil is the United States of America.

Russian railways are less developed than those of most European states. The navigable rivers are of less use than would be expected, as they are frozen for much of the winter and too low during the summer. Only during the spring floods can full use be made of them.

In Norway the fisheries are of great value, and fish-curing is the almost universal occupation of the inhabitants of the coast. Norway thus produces a numerous race of sailors, who not only man the extensive mercantile marine of their own country, but, together with the Swedes, are to be found very commonly on British ships.

## QUESTIONS AND EXERCISES.

1. Make a list, with symbols, of all the towns mentioned in Russia, Sweden, Norway, and Denmark (on Plate 23). Be prepared to repeat them from the Test Map.
2. What are Russia's naval stations? Mention all the ports of the four states in question.
3. Account for the distribution of population in Norway and Sweden. Why is Russian Poland the most densely populated part of the empire?

4. The Donetz coal-field, north of the Sea of Asof, is by far the richest in Russia. What is the port of this region?
5. On what rivers are Kasan, Kief, Riga, Orenburg, Rostof?

## REVISION QUESTIONS.

- A**
1. Compare Europe in size with the other continents.
  2. Compare the climate and rainfall of Western Norway and Central Russia.
  3. Name the chief mountain ranges of Europe. Compare them as to height with Ben Nevis and the Himalayas.
  4. Name the states of Europe, with their capitals.
  5. Give the four most populous states of Europe, and the three least populous.
  6. In what way is the arrangement of sea and land in Europe advantageous?
  7. What are the chief European ports in the Mediterranean? Give some account of the nature and direction of their trade.
  8. Give some account of the navigable waterways and canals of Europe.

- B**
1. Compare the configuration, climate, products, industries and state of development of France and Spain.
  2. What are the chief manufacturing centres of Europe? Give some account of them.
  3. Account for the importance of Salonica. What is the "Near Eastern" question?
  4. What states have broken away from Turkey since 1820?
  5. Give the dates for the formation of the modern states of Italy, Germany, Austria-Hungary, Greece, Belgium.
  6. Between what three empires has Poland been divided? Give some account of its climate and products.
  7. How would you divide Russia into Zones of Vegetation? Give physical reasons.
  8. Why have Spain, Italy, Norway few manufactures?

- C**
1. What parts of Europe have been affected by Mohammedan conquests at any period? What evidences still remain?
  2. Describe generally the arrangement of isotherms over Europe in January and July.
  3. Explain how the arrangement of isobars (see Plate 25) causes the prevailing winds in Europe at different seasons, and say how the rainfall is thereby affected?
  4. Can you explain the causes of the formation of the Alpine lakes, the lakes of Finland, the fiorded coasts of Norway, Western Scotland, and Dalmatia?
  5. Why does the possession of older sedimentary rocks place England in a more advantageous position than Italy?
  6. Describe in general terms the geological structure of the Alps, and of the Iberian Peninsula.
  7. What are the great continental ports of the North Sea? How are they connected with the interior of Europe?



## CONTENTS OF PART IV.

## (Fourth Term).

	PAGE		PAGE
Position on Globe, Size . . . . .	73	Asia—Races and Religions . . . . .	82, 83
Surface Characteristics of Asia and North America . . . . .	74, 75	Geographical Dates, Political Map and Test . . . . .	84
Structural and Physical Maps, with Test, Notes and Questions . . . . .	76, 77	North America—Dates, Races, and History, Communications, Political Map and Test . . . . .	85-87
Ocean Currents, Temperature, Pressure, Winds, and Rainfall, with Map . . . . .	78	Mexico . . . . .	6, 87
Vegetation . . . . .	79	United States, with Map and Test . . . . .	88-90
Seasonal Variations in Temperature, Winds, and Rainfall, with Maps . . . . .	80	China, Corea, and Japan, with Map and Test . . . . .	91-93
Vegetation, Population, and Development, with Maps . . . . .	81	Palestine, with Maps . . . . .	94-96
		Notes on Countries without Special Maps . . . . .	97, 98
		Revision Questions . . . . .	98

(NOTE.—It is recommended to revise Plates 8 and 9 with the questions on page 29, at the beginning of each term.)

## Position on the Globe.

**A** To realise the relative positions of the continents of North America and Eurasia the best method is, no doubt, to study a model of the earth. If a globe is not available, much can be done by using different flat projections.

The map on Plate 6 will show that these great continents encircle the North Polar basin almost symmetrically, while the opening between Greenland and Norway is much wider and deeper than the Bering Strait.

A look at Plate 2 will at once make clear the fact that Asia and North America occupy very similar positions in regard to the great Pacific Ocean. If a map of this sort were folded along meridian  $180^\circ$ , the United States would coincide with China, and Southern Canada with Southern Siberia. See also Plate 8.

Towards the equator, a comparison between the relative positions of Mexico and the West Indies, with the southern extremities of Arabia, India, and the Malay Peninsula, can easily be made from the same map.

## QUESTIONS AND EXERCISES.

(Using the above mentioned maps.)

- A** 1. How many degrees nearer to the North Pole is the mainland of Asia than that of North America?  
 2. How many degrees nearer to the equator is: (a) Singapore than Panama; (b) Hongkong than Havana; (c) South of Vancouver Island than South of Ireland; (d) Ottawa than Paris; (e) San Francisco than Madrid?

- B** 1. Now many miles nearer the North Pole is: (a) Sakhalin than Newfoundland? (b) St. Petersburg than Winnipeg? (c) San Francisco than Smyrna? (d) Winnipeg than Irkutsk; (e) London than Peking?

2. Make a list of five great towns fairly near to lat.  $40^\circ$  N., three to  $50^\circ$  N., three to the Tropic of Cancer.

- C** 1. On the Mercator map of the world, does a straight line from London to Peking represent the shortest distance? Explain your answer. Is the same true (on Plate 34) of a straight line from Ceylon to mouth of the Yenesei?  
 2. When it is noon at Greenwich, what time is it at Madras, Tokio, Dawson City, and Mexico City?

## Size.

The map on page 24 gives the areas of the continents in millions of square miles.

## QUESTIONS AND EXERCISES.

- A** 1. Write down in millions of square miles the areas of Asia, North America, Europe, and Eurasia.  
 2. How many times the unit of area (page 31) are the above continents respectively?  
 3. How many Australias would equal Asia in area?  
 4. What fraction of Africa is North America in area?  
 5. How many degrees is it (a) from the south of Malay Peninsula to Cape Chelyuskin, (b) from Bering Strait to West Coast of Norway?

- B** 1. What fraction of the combined area of all the continents is (a) Asia, (b) North America?  
 2. Is the Pacific Ocean larger than Asia; Hudson Bay than the Black Sea; Iceland than Ceylon; Vancouver Island than Sicily?  
 3. In what time could a bird fly, at fifty miles an hour, from London to Birmingham, from Singapore to Cape Chelyuskin, from Mexico City to Winnipeg?

- C** 1. Compare the distances from the sea of Winnipeg and Irkutsk (north, south, east, and west).  
 2. If the journey from Moscow to Vladivostok takes ten days, what is the approximate rate per hour?  
 3. If the average rate of a train from Quebec to Vancouver is thirty-five miles an hour, how long would the journey take?

## Surface Characteristics of Asia.

**A** The map of Asia (Plate 34) shows that if a line is drawn from the south end of the Caspian to Bering Strait, the continent is divided into two distinct parts—one exceedingly level, the other very mountainous.

The great plains of Siberia are very similar to the great European plain in Germany and Russia, and are divided from it by the comparatively low ridges of the Ural uplift. The mountainous half consists of a great series of plateaus, with the exception of the river plains in Mesopotamia, Northern India, Siam, China and Manchuria.

Of the elevated masses, Arabia and Southern India are true tablelands, composed of horizontal layers of rock; all the rest are systems of gigantic folded mountains, Asia Minor and the Iran plateau of Persia being generally over 3,000 feet—Tibet, the loftiest of all, having its valley-floors usually about 12,000 feet above sea-level. There is a large area of comparatively low land with continental drainage in the centre of the great mountain mass, consisting of the Tarim basin and the Desert of Gobi.

The great mountain ranges—in almost every case—are the edges of great plateaus, often rising considerably above the interior level, but in many cases only appearing as mountains at all when viewed from the surrounding plains.

The eastern coasts of the continent are fringed with successive wreaths of volcanic peninsulas or islands from Kamchatka to Sumatra.

**B** The great fold-mountain system of Asia may be said to start from the plateau of Asia Minor. Here the direction of folds follows the lines of latitude roughly parallel to the coasts. In Armenia the folds seem to approach each other in a kind of node near the source of the Tigris. They then open out, encircling the high land of Persia, and again close up in the lofty Pamir region. From here, extending in two huge sweeps, they enclose the great plateaus of Central Asia, to meet again near the west coast of the sea of Okhotsk. The Himalayas are the most striking feature of the southern system—the Tien Shan, Altai, and Sayan, successively rising from the great plains, form the northern barrier.

Of the area thus enclosed, Tibet is embraced in a similar way between the Himalayas and Kwen-Lun. At its eastern end, where the Salwin, Mekong and Yangtse approach each other, another node is found, from which a series of ranges, much dislocated and faulted, spread southwards towards Burma and Siam.

**C** The western fold of the latter system seems to extend through Assam, the Andaman and Nicobar Islands to Sumatra. Its middle limb forms the Malay Peninsula, while its western edge forms the high ground of Tonking and Annam.

Between the Kwen-Lun and the Altai should be noticed the remarkable depressions that are found between the folds.

It will be noticed that Asia contains the greatest area of inland drainage in the world. The Caspian, Aral, and Balkash are the chief receptacles for this water. They are of course salt, and are perceptibly shrinking in volume.

In fact, the whole of Central Asia is undergoing a period of desiccation, probably owing to a decrease in average rainfall due to unknown causes. The remarkable observations of Dr. Sven Hedin in the Tarim basin have established the truth of such a theory.

Much of the water that falls in Arabia and Persia never reaches the sea, owing to the basin-like character of their formation.

The Deccan of India and the great Arabian peninsula besides being true tablelands, and therefore distinct from the other upland regions of Asia, contain within them rocks whose fossils seem to show a connexion with the ancient flora of Australia, South Africa and South America, and suggest extraordinary changes in land distribution since early geological times.

Arabia is separated from Africa by the remarkable rift valley of the Red Sea, which sends out a branch northwards to form the still more curious depression of the Jordan valley, where the surface of the Dead Sea is 1,300 feet below mean sea-level.

(See map of Palestine near the end of this Part.)

## Surface Characteristics of North America.

**A** From Plate 34 it can be seen that the meridian 100° W. divides the continent of North America roughly into two halves—one mountainous the other comparatively low. The great Rocky Mountain system of the west is by no means of a uniform nature. The Pacific coastal ranges and the Rocky Mountains proper may be generally described as a complicated system of folded mountains, with remains of volcanic energy in certain places. Between these two ranges are to be found a typical tableland of horizontally stratified rock denuded into the famous cañons of Colorado, and farther north an equally remarkable plateau consisting of lava of enormous thickness, pierced by the deep gorges of the Snake River.

Between these two plateaus are the Great Basin ranges, the water from which cannot reach the sea.

Between the Rocky Mountains and the low belt of land along the 90th meridian are to be found the great plains of treeless grass land, fairly elevated above sea-level, but by no means absolutely level.

The eastern half of the continent obviously contains low coastal plains of some width bordering Hudson Bay, the Atlantic, and the Gulf of Mexico, the latter coastal strip being joined by the great flood plain of the Mississippi.

The Appalachian system may be taken to include all the mountains which extend parallel to the Atlantic coast, from the mouth of the St. Lawrence to the plains of the Gulf of Mexico.

Generally speaking, this is a system of upheaved and folded sedimentary rocks, with remains of a previously denuded mountain system frequently appearing through them, in the form often of isolated granite blocks. The later stratified rocks contain the coal measures.

North-east of the great lakes there extends the denuded Laurentian plateau of very ancient sedimentary rocks as far as the coast of Labrador.



The entire surface of the northern half of the continent has been largely modified by the great ice-sheet which in comparatively recent geological times extended as far south as the courses of the Missouri and Ohio, reaching the sea where the cities of New York and Vancouver now are.

North of this line the great plains and prairies are covered with glacial drift, often most fertile. As the huge ice-covering retreated, the surface was left in such a condition that the water could not easily find its way to the sea. Hence the vast systems of lakes, the remnants of still larger areas of imperfect drainage. The ease with which railways are made over the level plains, unobstructed by rock ridges, and the magnificent system of inland navigation are among the direct results of this remarkable era.

**B** The Rockies in their system of folds reveal almost every kind of rock from Cambrian to Cretaceous, and are a favourite prospecting ground for miners. Gold, silver, and copper, are the most common minerals, but coal—chiefly lignite—also occurs.

The Colorado cañon (see page 8) is the most remarkable instance of vertical denudation in the world. Here and there the even stratification of the rocks is interrupted by intrusive volcanic flows, often of comparatively recent date. Much of this region is almost uninhabited owing to deficient rainfall. Its chief value seems to lie in the remarkable insight that it has given into the process of valley formation.

The Columbia plateau is in reality a system of valleys filled up by a series of lava flows, often 1,500 feet in thickness, through which the Snake River has cut its remarkable cañon. In one part 4,000 feet of rock have thus been exposed, the lower part naturally consisting of rocks beneath the lava flow.

The Sierra Nevada are largely composed of granite: the highest summits of the Cascade group are volcanic.

The Appalachian system consists of a core of much worn ancient rocks, which once, no doubt, were of considerable elevation. These have been covered up by later deposits, and again raised and denuded into their present series of valleys and ridges. The great harbours of the east coast are generally submerged valleys. The Hudson, Potomac, and St. Lawrence owe their width and depth to this latter circumstance. Hence their navigability and the importance of their great cities.

Along the coast of British Columbia the curious interlacing of land and sea is the result of a sinking of the crust; the fiords are submerged valleys, the islands the remains of mountain ridges. The coasts of Norway and Chile present a remarkable similarity, owing, no doubt, to identical causes. The natural tendency of the winds is to bring abundant rain or snow to these coasts, hence the heavy glaciation in the ice age and the great erosion of the valleys. In many cases the glaciers may have worn away the rock floors below sea-level. Fiords are often found to get deeper as they extend inland.

**C** One of the best known regions in the Rockies is the Yellowstone Park—a vast plateau largely built of lava beds, about the size of Yorkshire, reserved by the Government in a state of nature, as a refuge for wild animals, and a delight for holiday-makers.

It is surrounded by picturesque mountains, and contains famous hot springs and geysers, and the falls and cañon of the Yellowstone River.

It should be noticed that in the Basin ranges there are sometimes very deep depressions—in two instances with their floors below sea-level; one just north of the Gulf of California, cut off from the sea by the delta of the Colorado River; the other almost 200 miles north of this (lat.  $36^{\circ}$  N., long.  $116^{\circ}$  W.).

Amid the Pacific ranges the remarkable rift valley of the Yosemite, with walls of granite 3,000 feet high, is a curious and beautiful natural feature.

A western outlier of the Cascade range is the famous extinct volcanic cone of Mount Shasta, with its snow-fields and glaciers.



From Stereograph Copyright]

[Underwood & Underwood, London and New York.

FIG. 129.—MOUNT SHASTA.

This lies in about latitude  $42^{\circ}$ , about 100 miles from the sea. Locate its position in the map. Near the boundary between what two States does it lie? How far is it from San Francisco? It is an extinct volcano, preserving its conical form, though much worn by watercourses and glaciers. It is over 14,000 feet high. How does it compare in height with Ben Nevis and Mont Blanc? Notice the pine trees common along that part of the coast ranges, and the cut logs in a millpond ready to be sawn up into planks for export. For what purpose are the long poles used? A typical "lumbering" scene. Where else in the world is a similar industry important?

Generally speaking, the Rocky Mountain system has few glaciers south of the Canadian border. Alaska abounds with some of the finest examples. Many of these reach the sea, where they terminate in magnificent cliffs of ice.

The great valley of the Sacramento to the east of San Francisco is an instance of a sinking similar to that of the Yosemite. It has been largely filled up again by lava flows and detritus from the surrounding mountains, and now constitutes the great wheat-growing region of the Pacific slope.

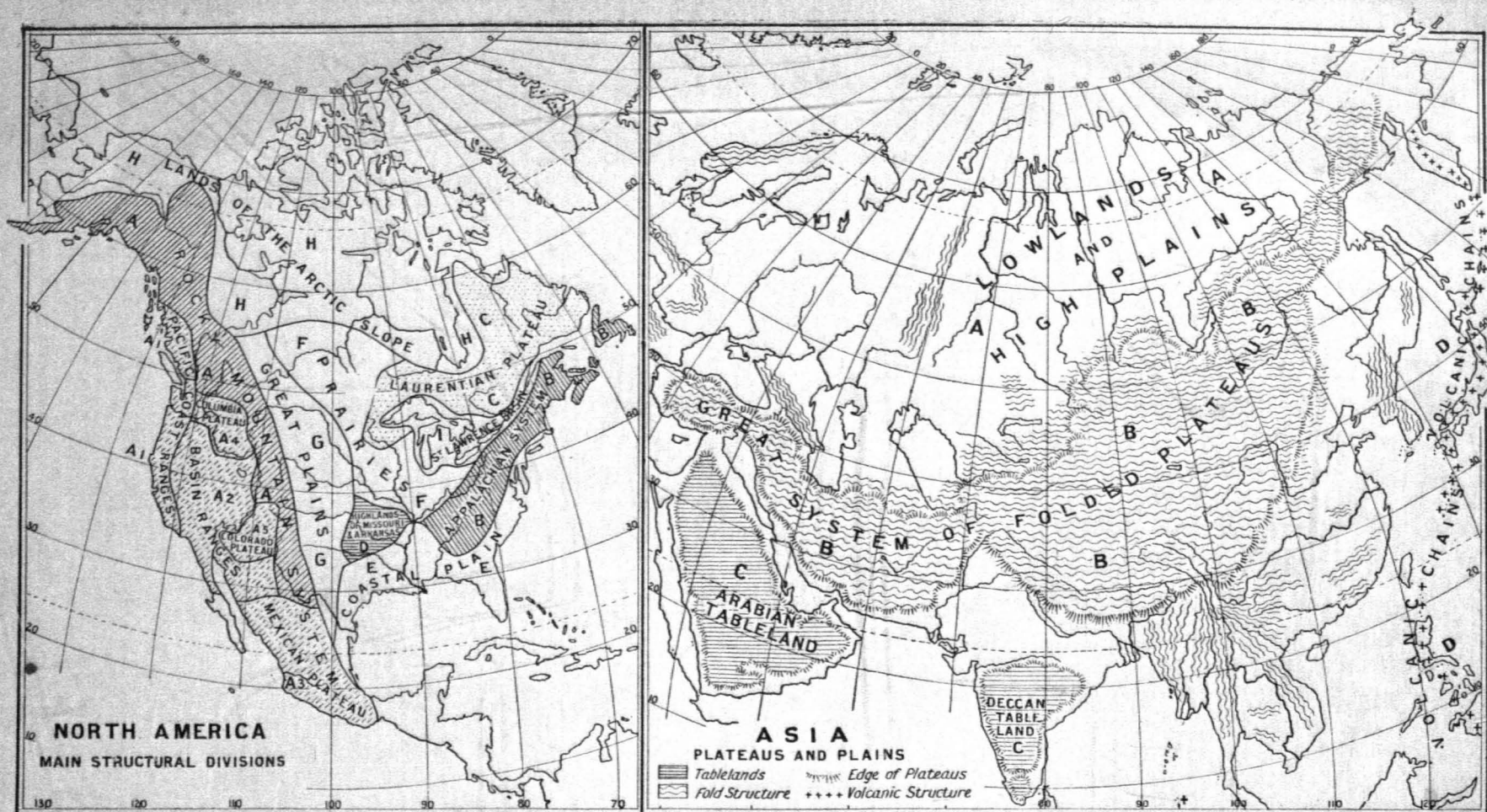


FIG. 130.

### Structural Maps.

**A** The very different structures of Asia and North America have prevented the same method of treatment being adopted in the above maps. The core of Asia consists of the greatest mass of high land in the world, whereas the centre of North America is comparatively low. North America has well-defined mountain systems; in Asia the division between various groups and ranges is by no means simple.

In the map of the North American continent the natural divisions correspond to the previous description. Of course, such definite lines as are here shown do not accurately represent the actual facts. The change from mountain to plain can seldom be as sudden as these would seem to imply.

In the map of Asia the great system of folded plateaus can be divided into three fairly well defined lobes. Their surfaces are by no means flat.

They are all the result of earth folding, and many ridges and valleys are to be found within them. The closer shading shows where the edges of the elevated region are particularly abrupt. It will be noticed that many branch systems of fold-mountains surround the great central plateaus. As would be expected, the earth's surface has been more intensely crumpled against the walls of the central mass.

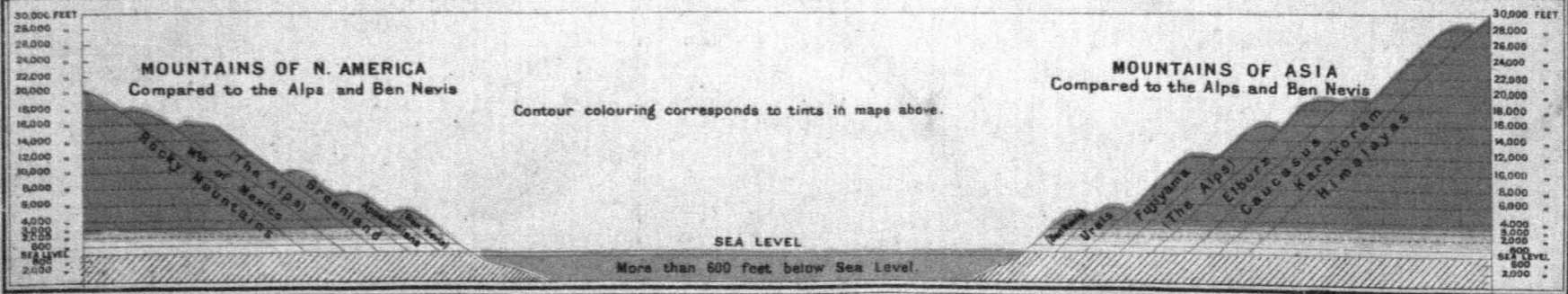
The four natural divisions are indicated by the letters (*A*) Lowlands and High Plains, (*B*) Central Folded Plateaus, (*C*) Tablelands of Arabia and the Deccan, (*D*) The Volcanic Chains.

#### QUESTIONS AND EXERCISES.

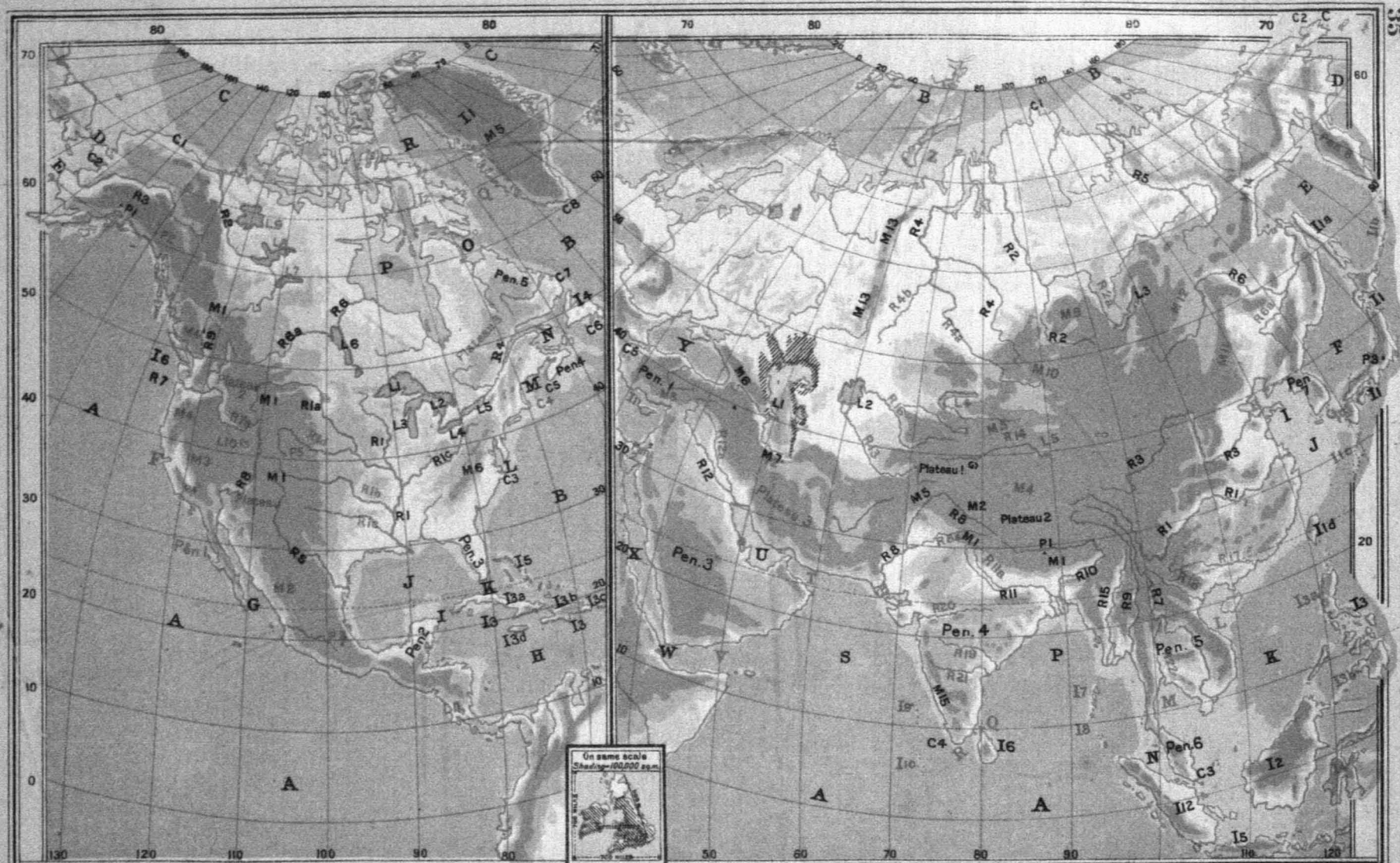
1. Make a tracing of this map of North America, marking in the coast line and natural divisions. Place this over the map on the next page, put the symbols instead of the names, and bring up for use as a test map.
2. Do the same for Asia.



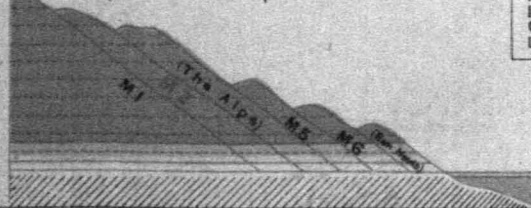
# NORTH AMERICA & ASIA.—Physical.



# NORTH AMERICA & ASIA.—Physical.—Test.



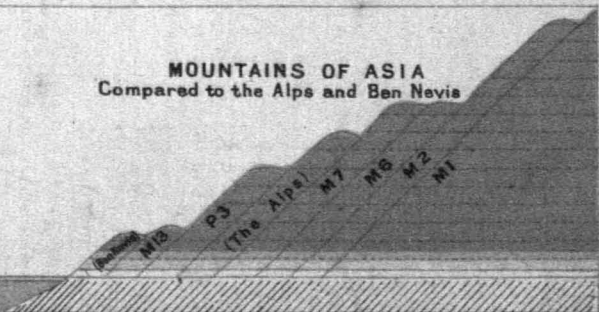
**MOUNTAINS OF N. AMERICA**  
Compared to the Alps and Ben Nevis



Explanation	
M1, M2, etc.	Mountains in order of height
R1, R2, "	Rivers " " length
P1, P2, "	Peaks " " height
Plateau 1, "	Plateaux " " "
A, B, "	Parts of Sea " " "
Pen. 1, "	Peninsulas " " "
I1, I2, "	Islands " " "
C1, C2, "	Capes " " "
L1, L2, "	Inland Waters " " "

In arbitrary order

**MOUNTAINS OF ASIA**  
Compared to the Alps and Ben Nevis





**B** The lowlands and high plains of Siberia in some ways resemble the prairies and great plains of America. The former are often suited for the growth of wheat, the latter, owing to their elevation or lack of rainfall, are often suited only for pasture.

#### QUESTIONS AND EXERCISES.

1. Railways in North America are far more highly developed than in Asia. How far is this due to natural structure?
2. In North America the shaded portion represents mountains, the white part, plains. Write a list of the chief mountain systems and plains, with symbols, according to their proper groups.

**C** In both continents, as would be expected, volcanic activity is most apparent along the Pacific coasts; i.e., where great oceanic depths approach near to high mountains. Wherever there is a comparatively low coast, or a noticeable continental shelf, the signs of volcanic energy are naturally absent. It is easy to imagine how the great series of folds which caused the elevation of Kamchatka, Japan, Sumatra, and Java, have caused fractures along their oceanic border, that sea water has found its way in, and that the steam thus generated has resulted in the violent upheavals so common in those regions, a large proportion of whose surface now consists of ejected materials. Similar phenomena are to be found along the Pacific coasts of America, especially in Mexico and the Western States.

The highlands of Missouri and Arkansas, though of no great elevation, are in marked contrast to their surroundings. They consist of a series of gently tilted strata, worn into very well-defined escarpments, often recalling the scenery of the Alleghanies. Geologists now recognize that both owe their origin to somewhat similar causes. Much of this area is well wooded, in contrast to the treeless prairies to the north.

#### QUESTIONS AND EXERCISES.

1. Account for the shape of Nova Scotia and Southern California. Is the Bay of Fundy caused in the same way as the Gulf of California?
2. Contrast the physical structure of the islands of Asia with those of North America?
3. Discuss the causes of the distribution of volcanic energy in North America and Asia.

#### QUESTIONS AND EXERCISES ON PHYSICAL MAPS.

1. Write a list, with symbols, of the mountains, peaks, rivers, lakes, parts of sea, islands, peninsulas, and capes which are marked in brown in North America. Be ready to repeat from Test Map.
2. Do the same for Asia.
3. Name the chief plains of North America. Describe the surface of Greenland.

4. The lakes of North America are fresh except one. Which is this? The inland waters of Asia are salt except one. Which is this? Explain the reasons.

5. Name (where possible) the extreme points of the mainland of North America and Asia, towards the north, south, east, and west.

6. What contour-line goes through the great plains of North America? Between what contours are the prairies? Most of the basin of the Obi is below what contour-line?

7. Say whether the greater part of each of these seas is deeper or shallower than 600 feet (or 100 fathoms): Sea of Japan, Yellow Sea, Red Sea, Persian Gulf, Hudson Bay, Bering Sea, Gulf of California, Gulf of Mexico.

8. From the two continents name three rivers with deltas, three with wide estuaries. Name the three longest rivers in each continent.

9. Name two rivers in each continent which look easily navigable, two in each which seem too rapid for this purpose.

10. Between what ranges does the Upper Indus flow? Into what sea does the water from Lake Baikal eventually go?

11. Compare Florida with the Korean peninsula as to size, latitude, surface. By what seas are they bounded?

12. Could the British Isles be contained in the Gulf of Mexico? Are Ireland, Ceylon, and Lake Superior roughly the same size?

13. Using the Test Map only, explain the meaning of the colouring. Write down the names in order of height of the mountains of Asia and North America, given in the diagram below the map. Give the height in each case to nearest thousand feet.

14. How much higher is Everest than Ben Nevis; Mount McKinley (the highest point in North America) than the Alps?

**B** 1. Write a list, with symbols, of the mountains, peaks, rivers, lakes, parts of sea, islands, peninsulas, and capes marked in brown or blue, in the maps of North America. Be ready to repeat from the Test Map.

2. Do the same for Asia.

3. Mention two rivers with inland drainage, four lakes which are emptied into the Arctic, an Asiatic desert, a volcano in North America, six Asiatic gulfs marked in blue, six seas north of lat. 60°.

4. Trace the coast line, inland waters and rivers of Asia. Shade in pencil the area of inland drainage. (Most of the Iran and Arabian peninsula can be so treated.)

5. Which islands of the coasts of these continents are divided by deep seas, which by shallow seas, from the mainland?

6. In a voyage from the Bering Strait to the Red Sea, along the coast, what seas, capes, and river mouths would a ship pass in order?

7. Do the same for a voyage right round North America, starting from the west side of the Isthmus of Panama.

**C** 1. Write a list, with symbols, of all the mountains, rivers, lakes, parts of sea, islands, peninsulas, and capes mentioned in the maps of North America. Be ready to repeat from Test Map.

2. Do the same for Asia.

3. Describe any peculiarities in the structure of the Columbia plateau, Colorado plateau, the Arabian peninsula, Kamchatka, Sumatra, and the Red Sea.

4. Name any areas in either continent which are below sea-level.

5. Compare Asia and North America as to facilities for inland navigation and transport.

6. Why are China and Canada comparatively free from earthquakes and volcanic action, as opposed to Japan and Central America?

## Ocean Currents, Temperature, Pressure, Winds, and Rainfall.

A study of the Isothermal Maps on Plate 36 (see Plates 3, 4 and 5, as well) shows the natural resemblance between the conditions in North America and Eurasia. The coasts have comparatively little variation between winter and summer, while the inland regions are hot in summer and intensely cold in winter. In Asia the effects are naturally magnified by its much larger extent.

In both cases an area of high pressure is found in winter, which tends to force the winds outwards; whereas in summer the low pressure in the interior allows rain-bearing winds to enter freely from the oceans. Where the greatest land mass is met by the greatest ocean, it is natural that this tendency should be increased. Hence the marked monsoons of India and South-eastern Asia.

The prevailing south-westerly winds of the North Pacific and North Atlantic bring copious rainfall to the western coasts of North America and Europe, north of lat.  $40^{\circ}$ , and cause a perpetual flow of warm surface-water to these same shores.

In like manner, the air and ocean-currents circling round the low-pressure areas off the eastern coasts of Kamchatka and Greenland bring floating ice and snow and cold storms down along the coasts of Labrador and of Eastern Asia.

The warm condition of the sea off Vancouver Island and the south of England in winter, the frozen mouth of the St. Lawrence, and ice-bound coast off the mouth of the Amur, show clearly how these similar forces work along the same lines of latitude.

South of lat.  $40^{\circ}$ , the north-east trades bring rainfall to the West Indies, the Southern States and Mexico, but pass over Southern California as downward currents bereft of moisture.

In Asia their influence is subservient to the monsoons. In winter-time they are able to affect parts of the Malay peninsula and the eastern coasts of Southern India and Ceylon; but during the rest of the year the strong in-draught of the monsoons towards Central Asia entirely overcomes them, and causes a rainy season from April to November throughout South-eastern Asia.

The great desert tract of Central Asia, Arabia, and

Northern Africa can only be matched in North America by the much smaller deserts in the South-western States, but the same causes are at work in both areas: mountain barriers or great land masses prevent rain-bearing winds from the sea from reaching those inland regions.

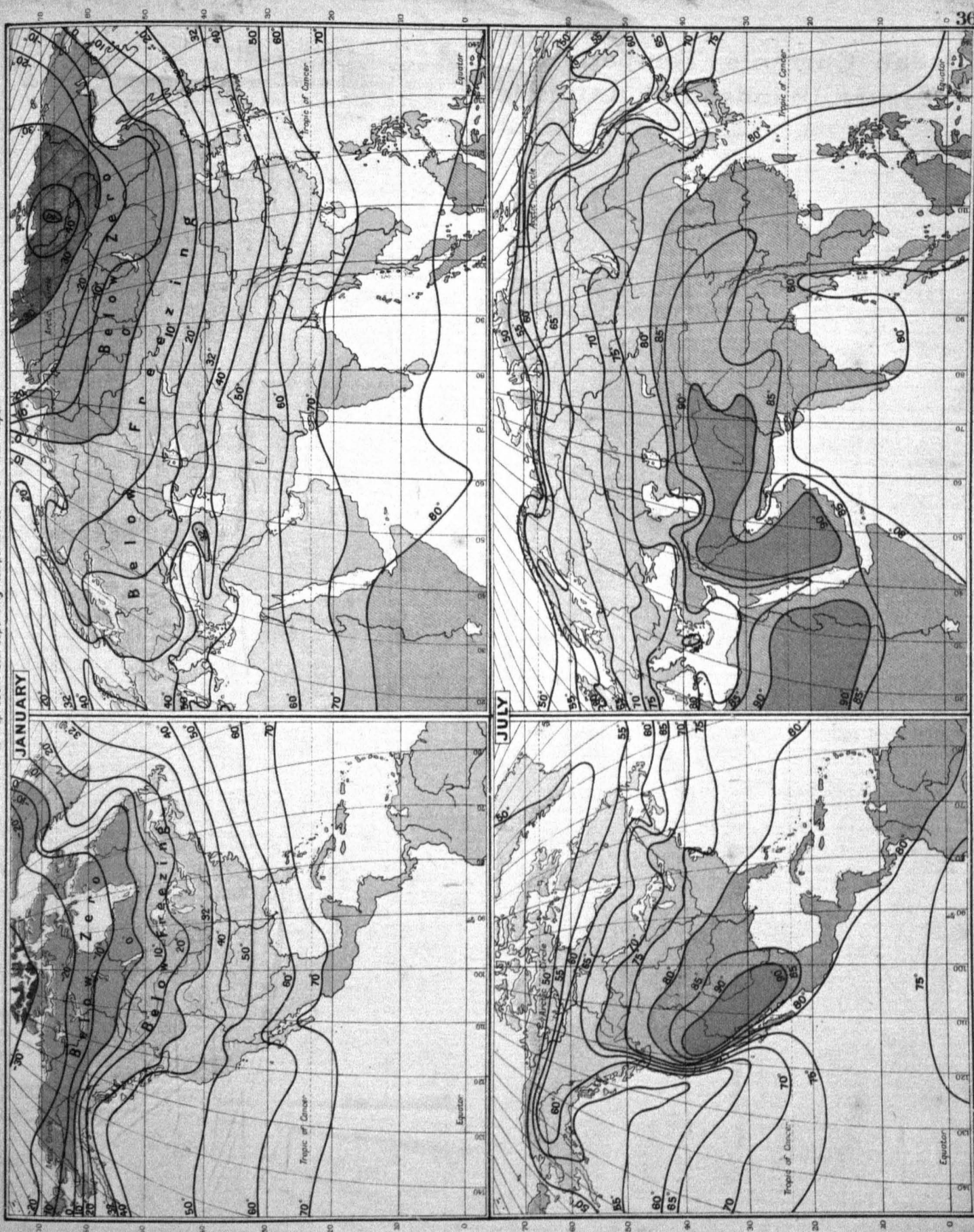
### QUESTIONS AND EXERCISES ON ISOTHERMAL MAPS.

1. In January, what is the difference between the coldest and hottest isotherm (1) in North America, (2) in Asia? Account for the greater range in Asia.
  2. Do the same for July. Why does isotherm  $50^{\circ}$  come so far south between Labrador and Greenland? (See map of Ocean Currents, Part I, Plate 4.)
  3. What isotherms in January and July pass through England, Vancouver Island, the lakes of the St. Lawrence, the south end of the Caspian, Strait of Bab-el-Mandeb, the north of Sumatra, the south of Sakhalin, the delta of the Lena, the extreme north of Europe?
  4. If you allow 1 degree for every 300 feet, what would be the average January and July temperature on the summit of Mount Everest?
  5. Would you expect the St. Lawrence, Hwangho, Amur, Volga, and Danube to be impeded by ice in winter? What seas in North America and Asia are likewise cut off from navigation?
  6. What isotherms are cut by lat.  $40^{\circ}$  N. in these two continents in January and July, in order from west to east?
1. In July, why is Ceylon cooler than the mouth of the Euphrates, Corea than Cyprus, Newfoundland than Klondike?
  2. In July, what causes the irregular bend in isotherm  $70^{\circ}$  in long.  $105^{\circ}$  E., in isotherm  $55^{\circ}$  in long.  $130^{\circ}$  W., in the isotherms between Japan and the mainland?
  3. Why has Asia a greater area of heat in July, and a greater area of cold in January, than North America?
  4. Compare or contrast the range of temperature in England with the range at Lake Baikal, Vancouver Island, Ceylon, and the point where the Arctic circle cuts long.  $130^{\circ}$  E.
  5. Why is the west of the Indian peninsula cooler than the east in summer?
  6. Compare the temperature of the coast of Labrador with that of Western Norway in winter and summer, and account for the difference.
1. Account for the small intervals between the isotherms in the west of North America in July, for the wide intervals in South-eastern Asia at the same period.
  2. Why is the North Pole warmer than parts of Northern Asia in January, the Caspian warmer in July than parts of the Pacific within the tropics?
  3. Judging from the isotherms, why does the high-pressure area in January lie north-east of the centre of the continent and the low-pressure area in July lie to the south-west?



# NORTH AMERICA & ASIA.—ISOTHERMS.

The various tints represent corresponding temperatures in all four maps



Equatorial Scale 1:100,000,000 (1580 miles = 1 inch) 0 500 1000 2000 Statute Miles  
Homolographic Projection.

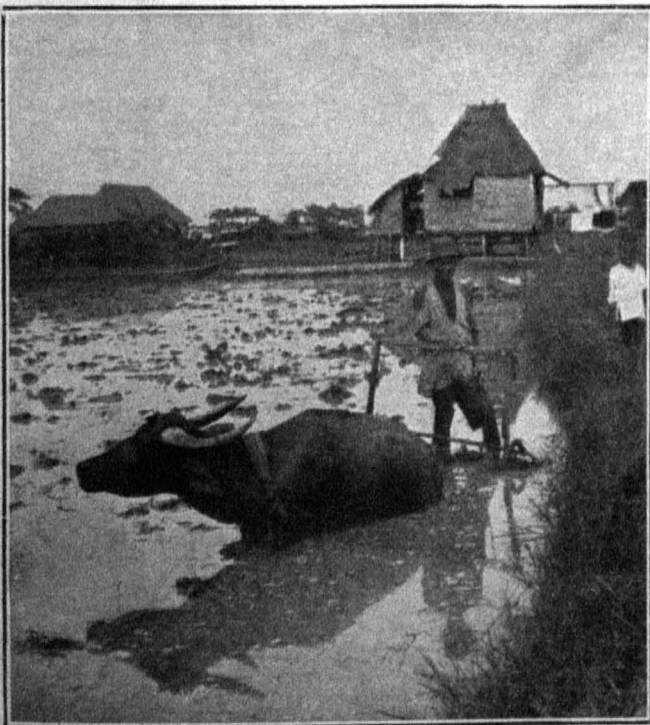
## Vegetation.

**A** Temperature and rainfall are the determining causes of the distribution of plant life, and wherever extreme cold and dryness are absent the land is sure to be covered with luxuriant growth.

Owing to the lesser degree of evaporation in countries of fairly high latitude, less annual rainfall is needed for the support of vegetation; hence the wide belt of firs and pines that extends across Canada, Northern Europe and Siberia. South of this belt in the interior there naturally are to be found open grass-lands, as in the great plains and prairies of North America, or in Southern Siberia. Here the long summer days and rains of mid-summer fulfil the conditions necessary for successful wheat-farming. Where the rainfall is not so reliable there have naturally grown up the great cattle ranches of Canada and the States.

The huge forests of the Pacific slope of North America no doubt found their counterpart in England, France, and Western Europe, before the arrival of axe-wielding men. Even now the hilly districts of these countries are often to be found covered with a natural growth of forest-trees. The timber trade of the Baltic is reproduced in the "lumbering" of the St. Lawrence and of the Pacific coast.

Farther south, the mahogany of Central America corresponds to the teak of Burma and the Western Ghats; the rice and cotton of the Southern States to like crops in the great valleys of India and China; the cigars of Havana to those of Manilla; while the sugar and coffee of the West Indies reappear as the staple productions of the Malay Archipelago.



*From Stereograph Copyright* [Underwood & Underwood, London and New York.]

FIG. 131.—RICE FIELD IN THE PHILIPPINES.

Near Manilla. Give the latitude. Rice requires plenty of heat and moisture. Here is an artificially irrigated field being ploughed by a native with a buffalo. Scenes like this are common in Burma and the deltas of India, where this would be called a "Paddy Field." Notice the raised house.



*From Stereograph Copyright*

[Underwood & Underwood, London and New York.]

FIG. 132.—TOBACCO PLANTATION IN CUBA.

Near Havana. Give latitude. The leaves are being cut and carried off to be dried. Sun-dried leaves are usually more valuable than those dried artificially under cover. Of what race are the workers? What kind of trees are there in the right foreground?

**B** The extreme cold of Northern Asia of course prevents any useful vegetation. Here the ground never thaws more than a few feet downwards. Below is the frozen soil and ice that have preserved so perfectly for thousands of years the remains of the prehistoric mammoth. The great rivers, thawing in their southern courses long before the ice breaks near their mouths, turn the country in summer-time into an impassable swamp. In the terrible north-east portion of the continent travel is possible only in winter-time along the frozen river beds, or the ill-marked tracks that lead to desolate convict settlements, where the average January temperature is more than fifty degrees below zero. In North America somewhat similar conditions produce the barren lands of Northern Canada. The Mackenzie River in spring-time has to struggle for many weeks, like the Obi, to win its way to the ocean, and the gold seekers of the Klondike have to face nearly as great cold as the criminals and political exiles of North-eastern Siberia.

Many parts of the highlands of Asia Minor, Persia, and the Deccan are admirably suited to the growth of wheat, and offer a striking parallel to the wheat area of Central Spain. Only railways are necessary to make Persian and Turkish grain take an important place in the world's market.

**C** A clear instance of the influence of surface on rainfall is found in the Thar desert of N.W. India, over whose low area the moisture-laden monsoons pass without dropping their precious burden.



## Seasonal Variations in Isobars, Winds and Rainfall.

**A** A careful study of the maps will reveal the general resemblance between these two continents in climatic variations.

In winter-time the pressure gets high over the centres of the continents, as shown by the heavier brown isobars; in summer the lighter isobars mark the opposite tendency.

As a rule, therefore, the red arrows which indicate the prevailing winds point from land to sea in the winter, and accordingly the rainfall is slight, as shown by the larger areas of brown at that season.

In summer-time the change of pressure conditions reverses the tendency of the winds, and increases the rainy area in both continents.

Unexpected areas of dryness, or of heavy rainfall, can usually be explained by the surface features.

For the general climatic causes at work throughout the world, reference should be made to Part I, pages 15 to 20.

### QUESTIONS AND EXERCISES.

1. How are differences in pressure indicated on these maps? What fraction of an inch is there between each pair of isobars? Name the highest and lowest isobar marked in Asia at either season, and account for its position.
2. How is rainfall indicated? For what periods is it shown in the two pairs of maps? Compare the rainfall of Borneo and Arabia in winter and summer.
3. How are prevailing winds over the oceans indicated? Why do they point away from the heavy black lines as a rule?
4. What is meant by monsoons? Explain what causes them. What is their effect upon the rainfall of India at various seasons?
5. Account for the rainfall of Ceylon in winter and summer. Why does the north of the island get less in winter than the south? (See Physical Map.)
6. Why is the north-west of Japan wetter in winter than the south-east? What part of Japan receives most rain in summer; and why?
7. Account for the difference in rainfall between the Californian Peninsula and Florida.
8. Trace two outlines of the North American map from Plate 37. Mark in all the Isobars with lines of equal thickness, in one map giving the January Isobars, in the other the July Isobars. Then shade or tint in the whole, so as to get an effect similar to the lower two maps on Plate 25, e.g., leave the area below 29.8 white; shade in pencil the area between 29.8 and 30; put diagonal ink lines over the area between 30 and 30.2; put solid ink on the area above 30.2. Add the wind arrows at the end.
9. Do the same for the Asiatic Map on Plate 37.

**B** It will be noticed that the south-eastern part of the United States receives more rainfall during the winter than would be expected. To account for this, the following reasons may be advanced. The Mississippi valley is low and comparatively warmer than its surroundings. Therefore there is a natural tendency for winds to be drawn up it from the Gulf of Mexico. The north-east trade winds there circle round northwards and eddy back into the influence of the westerly winds of the North Atlantic. That portion of America is within the winter storm area, and hence great variations from the average conditions are common. North-eastern China is somewhat similarly affected.

In the summer-time the rainy area of eastern North America extends right up to Hudson Bay, and Eastern Canada and Newfoundland receive more rain than in winter. Thus the resemblance to the conditions in Eastern Asia, north of Corea, is kept up.

### QUESTIONS AND EXERCISES.

1. If the Gulf of Mexico and the Caribbean Sea were dry land, what would be the result upon the rainfall of the Mississippi valley?
2. What part of India receives fairly abundant rain in winter, and why?
3. Compare the rainfall of Newfoundland and Sakhalin in winter and summer. Account for the greater dryness of the latter in winter-time.
4. Account for the rainy area to the east of the Black Sea.
5. Is it true to say that most regions within 10 degrees of the equator receive ample rainfall? Mention any exceptions, and, if possible, account for them.
6. Does the southern edge of the great plateau of Asia correspond with the change from wet to dry conditions in summer? Is this easy to account for if true?
7. What is the effect of the monsoons on ocean currents? (See p. 18.)
8. Make a tracing of the outlines of North America and Asia from Plate 37. Then sketch in from Plate 5 the areas which have a mean annual rainfall of over 80 inches. Cover these with solid ink shading. In the same way show by pencil shading the areas which have a mean annual average of less than 10 inches.

**C** Throughout the Equatorial regions much of the rainfall is caused by the fact that air is drawn upwards by great heat, and gets cooled as it reaches the upper regions. These are called convectional rains. Marked exceptions to this can be found on the Equatorial east coast of Africa at all seasons, and at the north of South America in winter. It is not easy to fully account for either of these phenomena (see Part V, page 103).

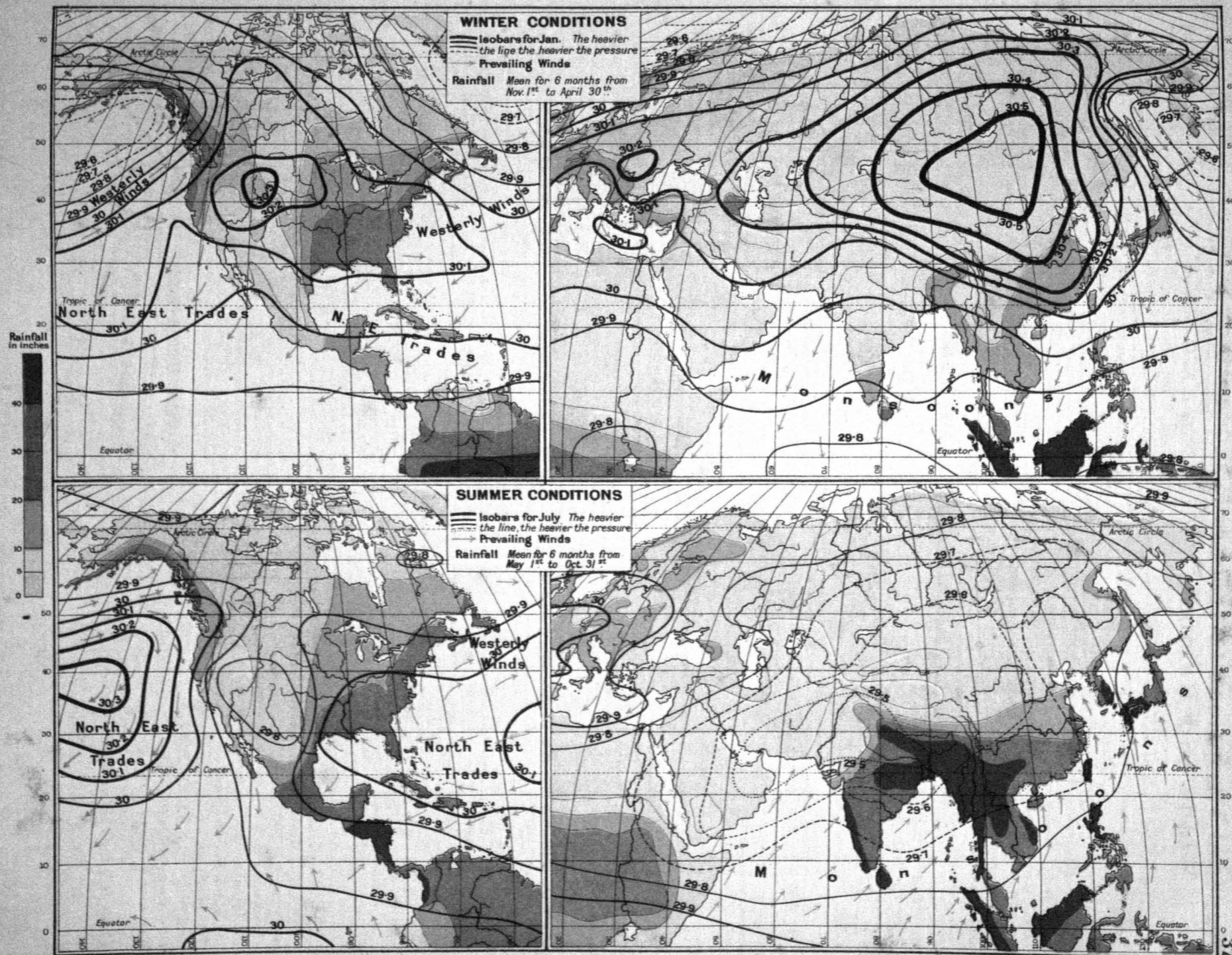
It will be noticed that the Equatorial rainy belt moves N. or S. with the sun, and that, therefore, in summer-time all the regions round Central America receive greater rainfall. Even the south end of the Peninsula of California is affected.

It should be added that the data for these maps are at present insufficient to secure accuracy throughout. Only an approximation to the truth is possible in many regions of the world.

### QUESTIONS AND EXERCISES.

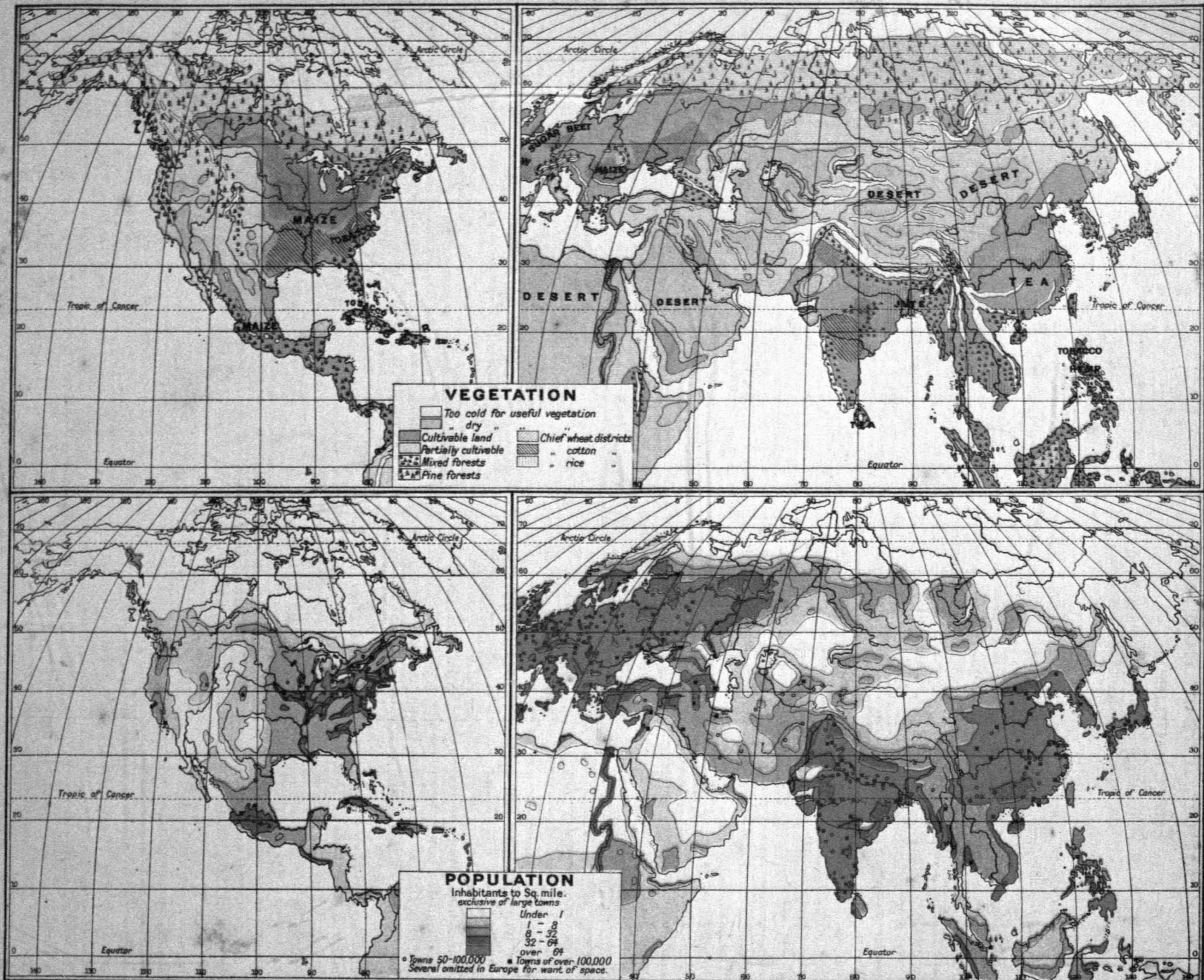
1. What is meant by convectional rains?
2. Account for the extreme dryness of the Tarim basin, the extreme rainfall of Sumatra, the want of rain along the lower Indus, the general dryness of the coasts of the Arctic Ocean.
3. In the Pacific Ocean off the east coast of North America the winds circle round an eddy, clockwise, in summer. In winter they move in the opposite manner. Is this normal? (See Part I, page 18.)
4. How do cold or warm ocean currents affect the rainfall of their adjoining coasts? Illustrate from these maps. (See Plates 4 and 5.)
5. Would you expect the Tarim to freeze in winter? Dr. Sven Hedin on one occasion crossed the great desert to the south of the Tarim, accompanied by camels, laden with ice instead of water. Explain how this is possible in the same latitude as that of Naples.
6. Make a tracing of the outlines of North America and Asia from Plate 37. Then make them into annual rainfall maps, on the same principle as is used on Plate 5.

# NORTH AMERICA & AFRICA.—Isobars, Winds & Rainfall.





# NORTH AMERICA & ASIA.—Vegetation & Population.



## Vegetation, Population and Development.

**A** The Maps on Plate 38 show how very unevenly the inhabitants of Asia and North America are distributed. How far is this due to natural causes?

In Asia, India, China proper and Japan stand out as being fully peopled. These are the monsoon countries, where rain falls at the warm time of year, and so makes agriculture easy, and crops heavy. The winters are comparatively cool and dry, and give the inhabitants a period for rest and recuperation. Thus it is that these countries are thickly peopled with an agricultural population, whose wants are generally few and easily satisfied.

In North America the population is far thicker in the south-eastern part than elsewhere. Here too, most of the rain comes during the summer season, owing to similar causes. The ease of producing foodstuffs is not, however, the only, or even the chief, factor in the distribution of population in the North American continent.

The fact that the eastern coast looks out towards the comparatively narrow Atlantic, is no doubt the reason why European settlers first made that shore their home. The process at first was by no means fast. About a hundred years after Columbus, the first permanent settlement appeared. A hundred years later the interior of the continent began to be opened up. Only in the last fifty years has really fast progress been made. The direction of natural waterways, the building of railways, and the discovery and exploitation of coal and oil and precious metals, have influenced the course of development even more than natural fertility.

The foregoing conditions are of course the chief determining factors upon the kind of life led by the inhabitants. While temperature and rainfall set limits to natural food supplies, both animal and vegetable, the arrangement of mountain and plain is largely responsible for the distribution of population, and often, too, for national boundaries. Again, in discussing the causes of a country's development, the importance of mineral regions and of the character and history of the inhabitants must not be lost sight of.

If Asia and North America are looked at generally, it may be said that the former has had a long history, the latter a short one. The Asiatics have developed most highly where the conditions necessary for the growth of vegetable food have been favourable, as in India and China; in America the distribution of coal and iron and gold has proved an even greater stimulus to a speedy growth.

It would be hard to find greater contrasts than are to be seen in the prevailing characteristics of the inhabitants of these great continents. The placid Oriental, often highly cultured and with great artistic development, stands opposed to the restless, money-making type that is so common in the States.

The results of these different temperaments can be strikingly seen by comparing a railway map of the Eastern States with a similar map of China, or the Broadway, New York, with a street in Peking. The great centres of population in Asia are to be found in the monsoon countries, in the Ganges valley, and the plains of China; in North America the districts round the great seaports or the coal and oil fields of Pennsylvania will be seen to

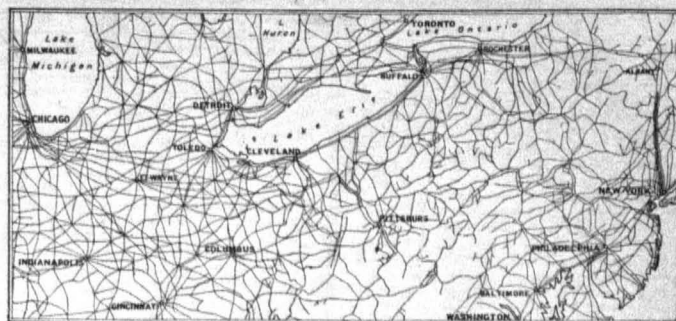


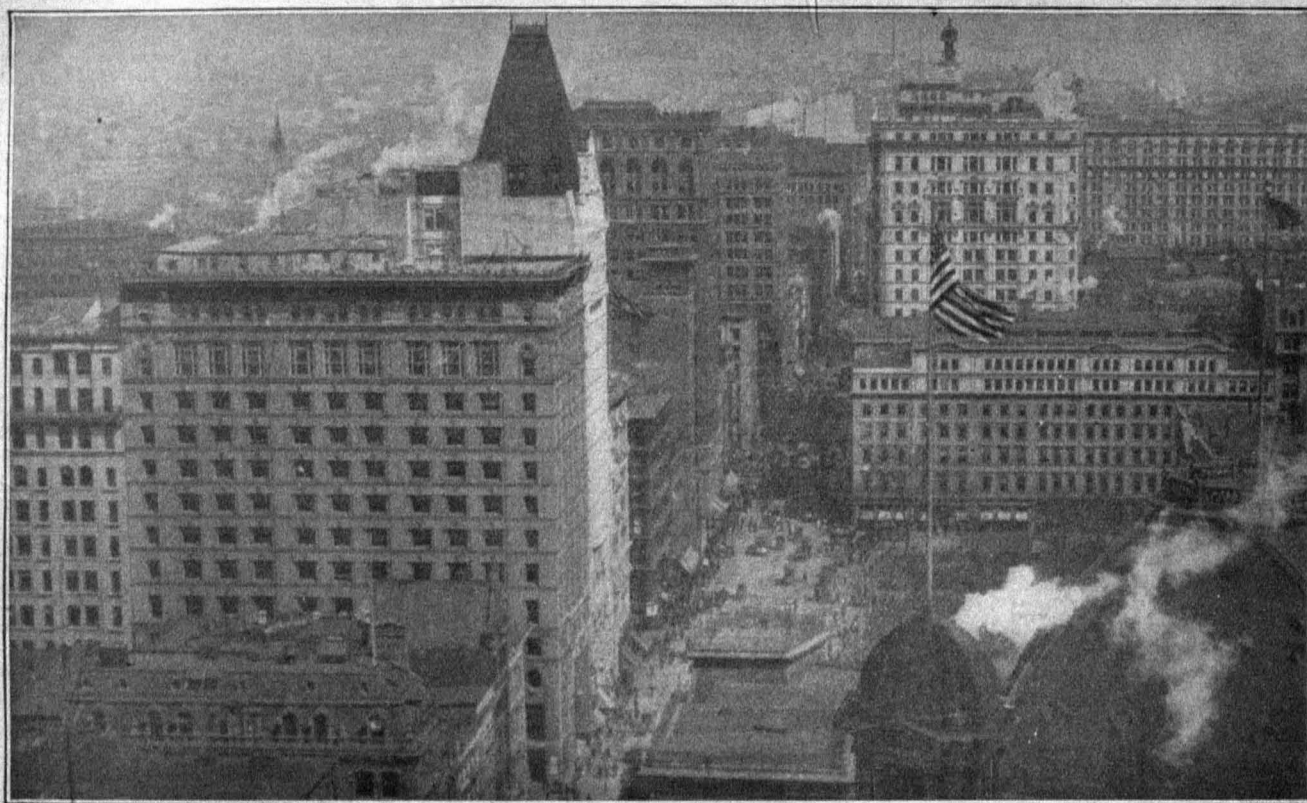
FIG. 133.—RAILWAYS BETWEEN CHICAGO AND NEW YORK.

be most thickly peopled. A Hindu labourer can support life for a month on the same amount of money that a New York artisan frequently expends on a single meal.

### QUESTIONS AND EXERCISES.

- A**
  1. What are the chief wheat-producing regions of North America and Asia? What conditions are necessary for its successful growth?
  2. Where are the chief cotton-producing regions in Asia, Africa (as far as shown), and North America? Explain the natural conditions necessary for its growth.
  3. Answer the same question as to rice.
  4. In what countries are large supplies of sugar, tobacco, tea and maize produced? Explain how natural conditions determine the localities.
  5. What are the leading vegetable products of the monsoon countries? Why are they so thickly populated?
  6. Does the fertile area on these maps correspond closely with the highly populated regions? Notice any exceptions, and account for them.
  7. Account for the distribution of the various tree-covered areas in these maps. How do the trees of Northern Asia differ from the forests of Borneo?
- B**
  1. Pick out the part of Canada where population has not yet filled a rich cultivable area. What causes have hindered its peopling?
  2. How do you account for the comparatively rich vegetation and high population along the rivers which run into the Sea of Aral?
  3. Why are India and China divided by a belt of comparatively thinly peopled country?
  4. Mention any parts where the excessive growth of tropical forest prevents a high population.
  5. Account for the various regions of vegetation along the west coast of North America, from Alaska to Panama.
  6. Population is gradually creeping westwards over Canada, eastwards over Siberia. Are similar causes at work?
  7. What are the most desolate regions of Asia and North America? Account for these from the preceding maps.
  8. How many towns of over 100,000 inhabitants are there (a) in North America, (b) in India?
- C**
  1. Compare the Trans-Siberian Railway with the Canadian Pacific as regards the kind of country which it traverses, its political and commercial value, and the results hitherto achieved.
  2. In Corea, population and vegetation are obviously dependent upon each other. How are these controlled by the configuration of the surface, by temperature, and rainfall?
  3. Compare the Rainfall maps with the Vegetation maps, and find instances where vegetation flourishes in spite of want of rain. How can it?
  4. Over most of India vegetation dries up during the winter. Why is this? In what parts would you expect greenness all the year round? (See Rainfall maps.)
  5. From Ceylon supplies of tea come at all seasons, as opposed to the seasonal production of China and Assam. Account for this. (More than nine-tenths of the tea consumed in the United Kingdom comes from the Indian Empire and Ceylon.)
  6. Jute is a tough fibre plant used for making sacks, ropes, carpets, etc. Name an important district for its growth, and a town in Great Britain where it is largely manufactured. (See page 43.)





*From Stereograph Copyright*

FIG. 134.—STREET IN NEW YORK.

*[Underwood & Underwood, London and New York.]*

Notice the high buildings, made necessary by the great value of land, owing to the fact that New York is built practically on an island. Compare this with the type of building in Peking, which is situated on a great plain with plenty of room for expansion.

## Races and Religions of Asia.

**A** The dominant races and religions of the world have either had their origin in the great Asiatic continent or have there first become important.

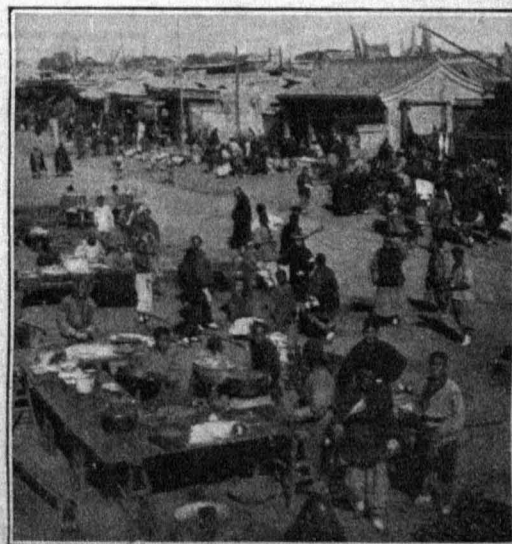
The Caucasian, or White race, though originating probably in Northern Africa, spread in early times over much of Western Asia, and formed some of the most famous civilised nations of antiquity. It has now spread over most of Europe, North and South America, and Australasia, and is by far the most numerous as well as the most powerful of the great divisions of mankind.

The Mongolian, or Yellow race, apparently starting from the highlands of Central Asia, has spread over the eastern half of that continent. The Chinese Empire, Burma, Siam and the Japanese Empire are all chiefly peopled by this race.

The Malayan, or Brown race, flourishes in many of the island regions of the Pacific.

All the great religions, which have a belief in one God, have taken their origin in Asia, and in every case have been identified with various branches of the great Caucasian race. Thus, from Judaea, Christianity has spread over the whole of Europe and America. From Arabia, Mohammedanism has forced its way over Northern Africa and the south-western quarter of Asia. From India, Buddhism has expanded over almost the entire south-western portion of the continent, and, though originally springing from a Caucasian origin, now has most of its

adherents among the Mongolian peoples. More individuals profess Buddhism than any other religion in the world.



*From Stereograph Copyright*

*[Underwood & Underwood, London and New York.]*

FIG. 135.—STREET IN PEKING.

Notice the Chinese type of roof, the absence of wheeled traffic (except wheel barrows), the primitive open-air market, the general want of hurry.



From Stereograph Copyright]

FIG. 136.—A STREET IN TOKIO.

[Underwood &amp; Underwood, London and New York.

Locate the town in the map, and give its latitude. What is its out-port? Compare this with the street scenes in Peking and New York on page 82. Notice the physical characteristics of the Japanese, who are short but strong. (The average height of Japanese infantry is just over 5 ft.). This is a very common method of carrying weights in China and Japan. Notice the style of architecture, suited to resist rain, sun, and earthquake. The telegraph wire indicates the spread of modern inventions over the east. Notice the ideographic method of naming the shops.

**B** The Caucasian race may be conveniently divided into three parts. (1) The Aryan, or Indo-European branch, which embraces the Kelts, Romans, Greeks, Teutons, Slavs and Hindus. All the great European nations are thus derived. (2) The Semitic branch, which includes the Jews, Arabs, and many of the peoples of Northern Africa. (3) The Hamitic branch, of which the Egyptians are the only famous nation.

As to the spread of the great religions of Asia, it may be said that Christianity took five centuries to spread over Europe; that Mohammedanism quickly forced its way by conquest over Northern Africa and into Spain in one direction, through Asia Minor and on to the Danube valley in another, and as far as the valley of the Indus toward the East. Though beaten back from Spain and Hungary, it has retained its power elsewhere.

**C** Buddhism arose in India about 550 B.C., in antagonism to the ancient religion of Brahmanism. Though it has influenced the older creed, it has never become established as the leading religion of India, two-thirds of whose inhabitants can be classed as adherents of various corrupted forms of Brahmanistic beliefs. In Burma it embraces nine-tenths of the inhabitants. In China the lower classes, in so far as they have any religion at all apart from ancestor worship, may be looked upon as chiefly Buddhists, while the upper and official classes are largely followers of Confucius, whose high moral teaching was contemporaneous with the origin of Buddhism in India.

Japan is covered with Buddhist temples, and can be classed very generally as a Buddhist nation, though all religions are tolerated.



## Geographical Dates.

A	B	C
1400 B.C.-330 B.C. Jewish, Phoenician, Assyrian, and Persian civilisations predominant in Western Asia.	650 B.C. onwards. Chinese and Japanese civilisations in the East.	557 B.C. Birth of Confucius.
300 B.C. Conquests of Alexander, introduction of Greek influence.		60 A.D. onwards. Christianity spreads to Asia Minor.
		604 A.D. Rise of Mohammedanism.
1500 A.D. onwards. Dutch, Portuguese, British, and French in Southern Asia.	1497. Discovery of sea route to India.	
	1550 A.D. onwards. Gradual spread of Russia over Siberia.	
1757. Battle of Plassey. British power established in India.		1842. First treaty ports opened in China.
		1868. Opening of Japan to foreign commerce.
		1905. Russo-Japanese War ended.

**A** China proper and Japan are dealt with later, and so there are few details about these countries on Plate 39. The Indian Empire is more fully treated in Part VI.

## QUESTIONS AND EXERCISES.

1. Write a list, with symbols, of the chief political divisions of Asia (marked in brown), grouping the British, Dutch, French, and Russian possessions separately. Mention the chief town in each, where given. Do the same for the divisions of the Chinese Empire. Be ready to repeat from Test Map.
2. Write a list, with symbols, of the towns marked in brown. Be ready to repeat from Test Map.
3. From what parts do railways go to Tashkent, Vladivostok, and Hankau?
4. On or near what rivers are Karachi, Shanghai, and Rangoon?
5. Give a list, with symbols, of the chief ports of Asia, adding in what countries they are, in each case. Be ready to repeat from Test Map.
6. What countries of Asia are wholly or partially within the tropics? What islands are cut by the equator?



From Stereograph Copyright]

[Underwood &amp; Underwood, London and New York.

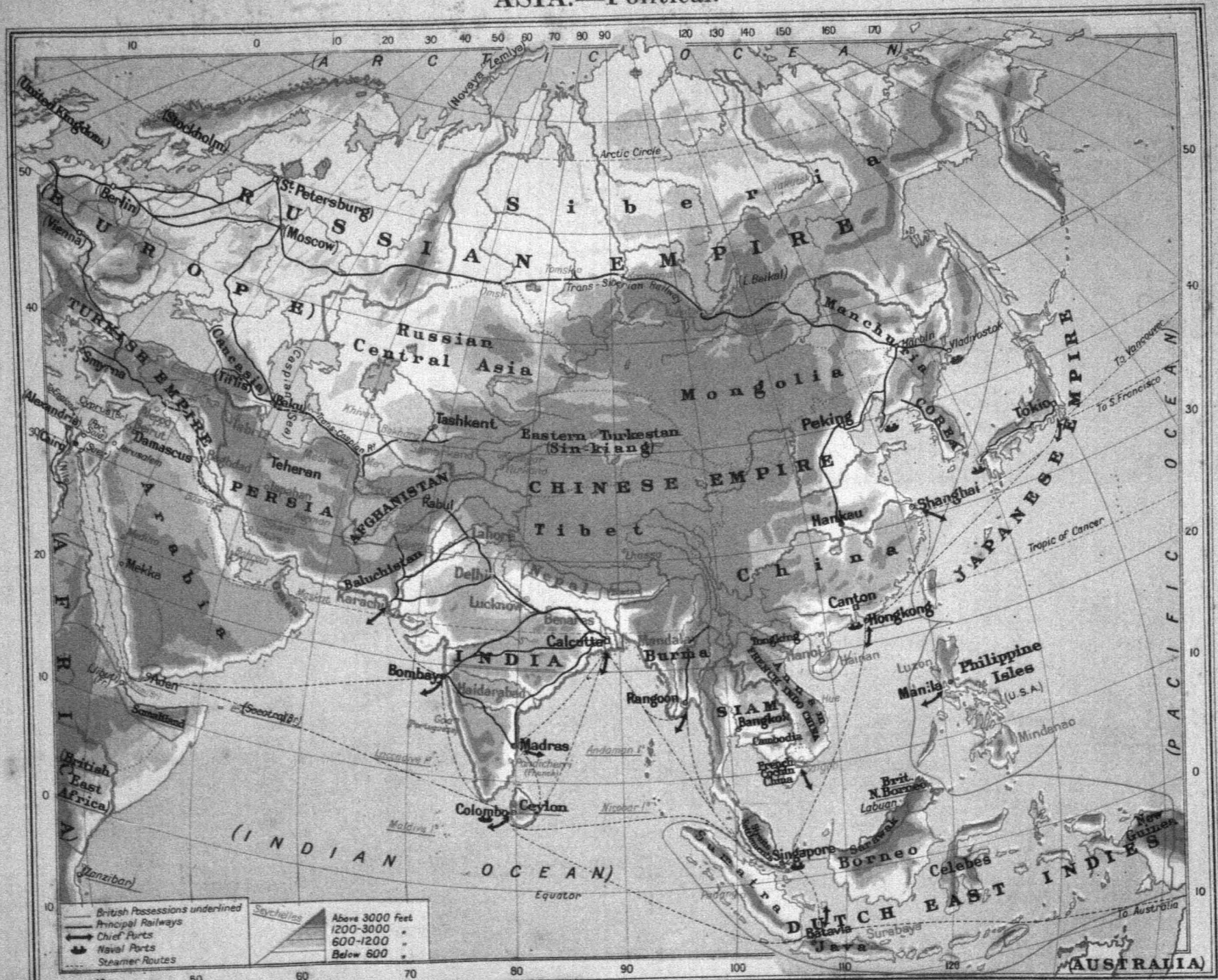
FIG. 137.—A CHINESE MANDARIN.

The view was taken in the garden belonging to the official. His wife, daughter and man-servant are visible. Notice the bamboo fence, and the garments worn by men and women. Silk, padded with cotton-wool, is used instead of wool for warmth. Notice the type of countenance,—wide nostrils, narrow eyes, high cheek bones, and square appearance of the face. Felt shoes with thick felt soles are worn, as is usual in China. Notice the long nails, considered a sign of high position, as no manual labour can be then done. Special nail-cases are sometimes worn to protect fine specimens. The typical Chinaman is genial, honest, business-like, and fond of home. All these qualities seem to belong to the subject of the picture.

1. Make a list, with symbols, of all the political divisions here mentioned, grouping them according to the countries to which they belong. Be ready to repeat from Test Map.
2. Make a list, with symbols, of the towns marked in brown or blue, grouping them by countries. Be ready to repeat from Test Map.
3. Into what parts is Borneo divided, and what countries have a share in it?
4. What places would be touched at by a steamer (a) from Suez to Shanghai, (b) from Karachi to Tokio (i.e. Yokohama)?
5. To what places do steamer routes go from Calcutta, from Yokohama?
6. In a train journey from Madras via Calcutta to Karachi, what places would you pass?

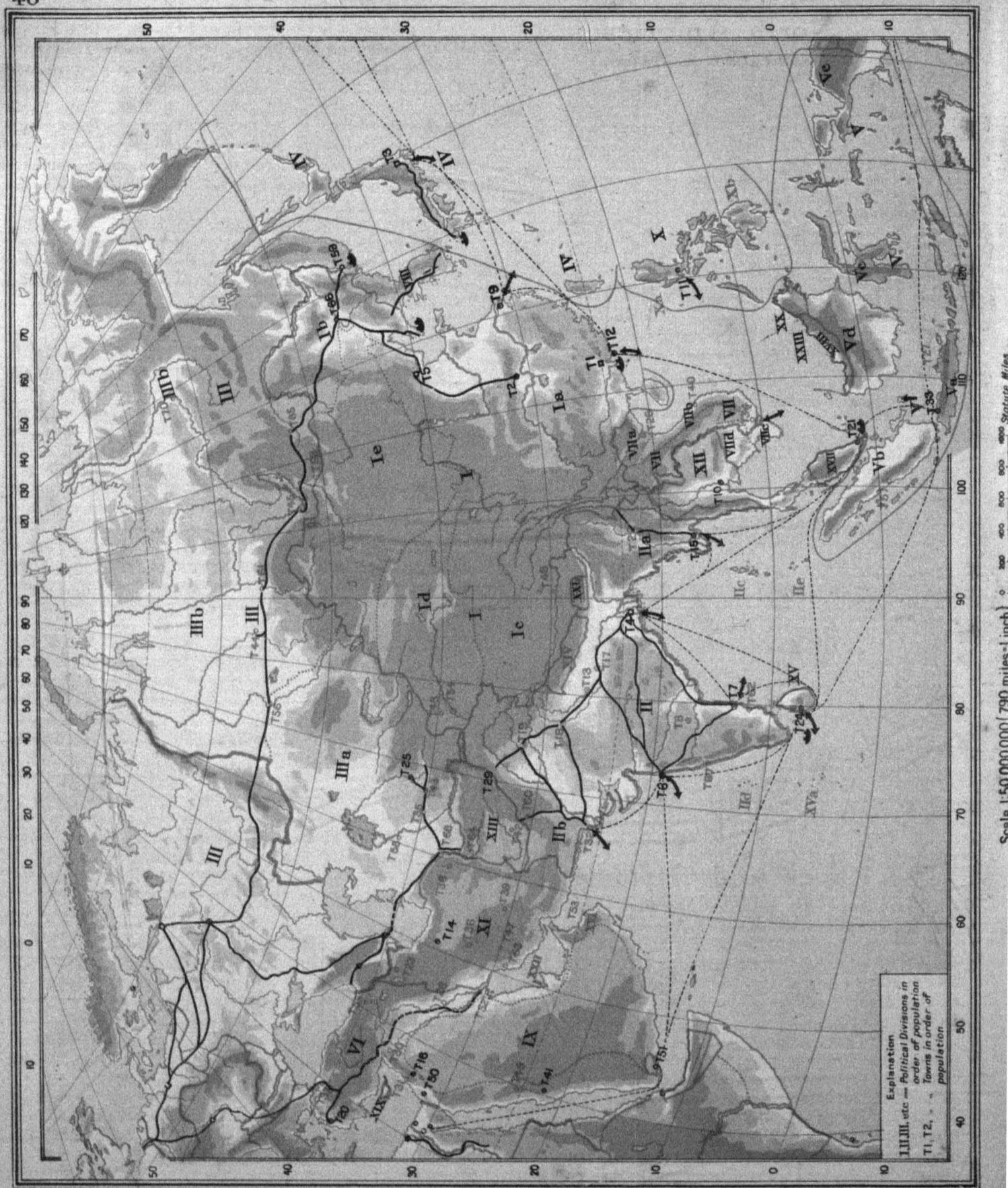
1. Write a list, with symbols, of all political divisions, including islands, saying to what countries they belong. Write down the names of all the towns in each division, with their symbols. Be ready to repeat from Test Map.
2. In a journey by train from Hankau to Berlin, what towns and river valleys would you pass in order?
3. Discuss the results, commercial and political, of a railway through Asia Minor to the Persian Gulf.
4. Write down, with symbols, nine rather small islands, or groups of islands, belonging to Great Britain in this map.
5. Say what Russian and British railways reach the borders of Afghanistan. What is the significance of this? What are the three towns in Afghanistan to which they point?

# ASIA.—Political.



Scale 1:50,000,000 (790 miles = 1 inch) 0 200 400 600 800 1000 Statute Miles  
(Modified Conical Projection)





## North America.

### Geographical Dates.

A	B	C
<b>1492.</b> Discovery of West Indies by Columbus.		
<b>1497.</b> Discovery of mainland of N. America by Cabot.		
<b>1500-1600.</b> Spanish conquest and colonisation in W. Indies, Mexico, and Florida.		
<b>1605-1763.</b> British and French colonisations in North America.		<b>1609.</b> Virginia founded, first British colony.
<b>1763.</b> End of Seven Years War. Canada secured for Great Britain.		
<b>1783.</b> Independence of American colonies in New England, etc.	<b>1778.</b> Cook's voyage	<b>1789.</b> George Washington first President of U.S.A.
	<b>1790-5.</b> Vancouver's voyage.	
	<b>1803.</b> Louisiana bought by U.S.A. from France.	<b>1820.</b> Monroe doctrine declared.
	<b>1821.</b> Florida bought from Spain by U.S.A.	
	<b>1845-53.</b> SW. of U.S.A. acquired from Mexico.	
<b>1867.</b> Dominion of Canada formed.	<b>1867.</b> Alaska bought from Russia by U.S.A.	<b>1867.</b> Modern Mexican Republic begun.
<b>1898.</b> Cuba and Porto Rico controlled by U.S.A. after war with Spain.		

## Races and History.

**A** It may be said that the first hundred years after 1492 were chiefly noticeable for discoveries, the second hundred for genuine colonisation by France and England of the eastern coast from the St. Lawrence to Florida, the last hundred for the growth of the great Republic of the United States, and of the Dominion of Canada.

When Europeans first came to the continent, they found a race of simple savages spread over most of the continent. Their descendants are now inaccurately called "Indians," the name given to them by the early colonists, who expected to find India across the Atlantic. Where Mexico now is, the Spaniards came across a much more civilised race, the remains of whose remarkable architecture are still noticeable features of that country.

As a result of historical causes, most of the United States and Canada is peopled by English-speaking Europeans.

An exception is the Province of Quebec, where French is still a common language. Mexico is peopled partly by Spanish-speaking Europeans, and partly by a mixed race. The native "Indians" have dwindled to insignificant proportions everywhere, except in Mexico. Throughout the Southern States, on the other hand, the descendants of African negroes, originally introduced as slaves to work the plantations, are rapidly increasing in numbers, and are becoming a serious inconvenience to American politics.

Britain, France and Spain have been the leading European nations in the civilisation of the continent. Only the first of these nations has retained any considerable territory which is politically attached to the mother country.

**B** It is important to realize how much later the western part of the continent was discovered, and occupied by Europeans, than the eastern.

Though the Pacific coast had been partially explored by earlier Spanish sailors, it was not until the voyages of Cook and Vancouver that any detailed knowledge of that sea-board was acquired by Europeans. The number of European inhabitants of the Pacific slope remained small, until the discovery of gold about 1850 brought a rush of population to California and British Columbia.

The States for the first twenty years after the War of Independence did not extend west of the line of the Mississippi-Missouri, and did not expand to their present limits in the south-west until nearly another fifty years later.

Alaska was thought by many to be a useless country, when the United States bought it from Russia for about £1,500,000 in 1867. Since then it has proved its commercial worth by the development of the sealing industry in the islands of the Bering Sea, and of the gold mines of the coast and of the Klondike region, which extends into this territory.

The opening out of the Yukon valley, as a result of the discovery of gold, has given a high value to the strip of island-studded coast which extends far southwards towards British Columbia. Again the development of the wheat-fields of the north-west of Canada has made the harbours of that coast of value as possible termini for future railways across the mountains to the Pacific.

**C** The names in a map of North America in a reference atlas are themselves almost sufficient to show the areas occupied by various races at different times. While native names appear throughout the continent, Spanish ones predominate in the south, English everywhere north of Mexico, while French is often to be found in the place-names of the Mississippi basin (the old Louisiana) and along the St. Lawrence.

The history of Mexico is worth considering. From its conquest by Cortez, in 1521, it remained Spanish for exactly 300 years, until 1821, when the long struggle for freedom was successful. After a period of unrest, during which for two short spaces it was an Empire, Mexico finally became a fixed and prosperous Republic in 1867; but not until much of its territory had been taken from it, as a result of a war with the United States in 1847.



**A** In the map on the Plate 41 comparatively few details will be found for the United States and Canada, as the former are treated more fully in the following pages, while Canada is specially dealt with in Part VI. Central America and the West Indies belong to Part V. There remains then—

## Mexico.

### Structure, Climate and Products.

Judging from the map, it is obviously of high average elevation. Two parallel mountain-folds extend from north-west to south-east, from the border of the United States to the Isthmus of Tehuantepec. Between them is a high plateau of peculiar construction (averaging about 7,000 feet in altitude). For the most part it is the result of a filling up of earlier valleys, partly with detritus from the surrounding mountains, but still more noticeably by volcanic debris. The highest mountains in Mexico are active or recently extinct volcanoes.

The climate naturally varies more according to altitude than to latitude, though the great difference between north and south must not be neglected. The Mexicans recognize three zones:—

- (1) The Hot zone, extending from sea-level up to about 3,000 feet, largely covered with dense tropical jungle, with palms, rubber-trees, and mahogany. Coffee is here the most promising cultivated plant.
- (2) The Temperate zone, from 3,000 to 5,000 feet, with vegetation gradually changing from the palms and orchids of the tropics to the evergreen oaks of Southern Europe.
- (3) The Cold zone, above 7,000 feet, where oaks gradually give way to pines, forests of which extend up to 10,000 feet.

The rainfall of Mexico, as is clearly brought out in the map on Plate 37, comes almost entirely in the summer months, when the north-east trades are well to the north, and the lower barometer of the land areas draws in winds from the sea.

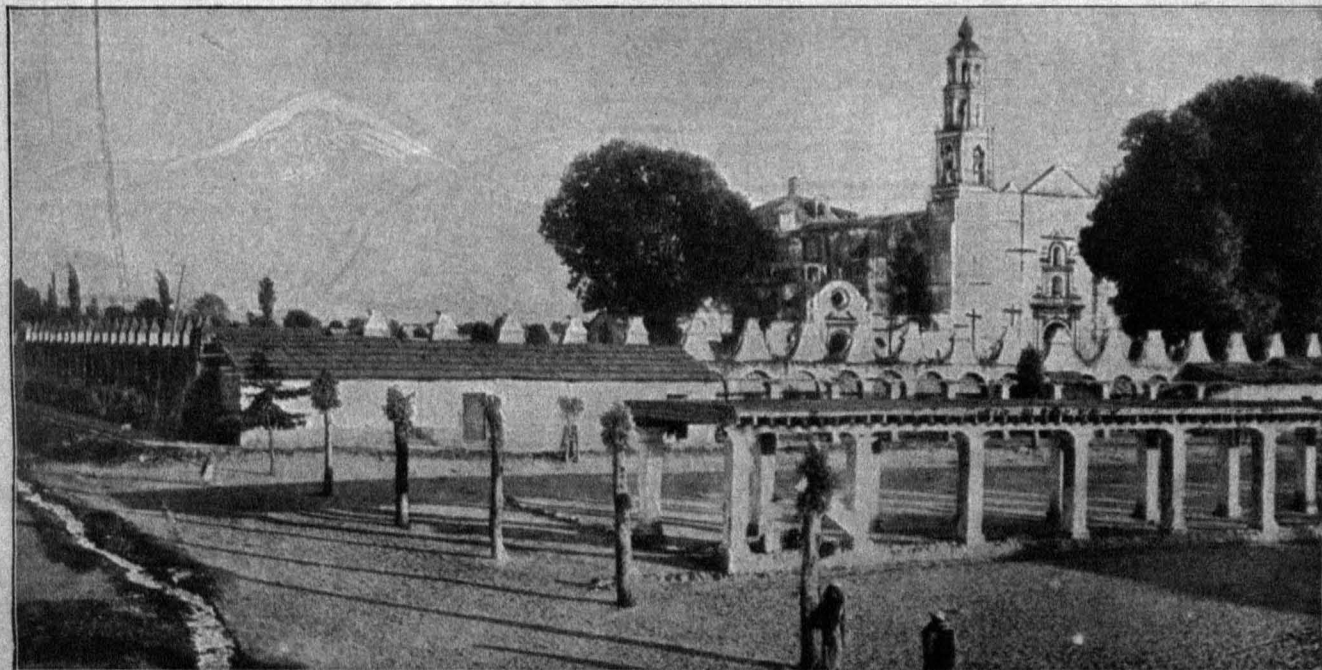
There is also a marked decrease of rain from south to north. Hence, in Northern Mexico trees give way to open grass country, admirably suited for the rearing of sheep, cattle, and horses—the home of the Mexican “cow-boy.”

The unequal seasonal distribution of rain causes the rivers to vary greatly in volume, and makes irrigation of supreme importance to successful agriculture in many parts of the country.

Mexico has immense mineral wealth, and in the production of silver, copper and lead takes a high place in the world.

### QUESTIONS AND EXERCISES.

1. Between what latitudes does Mexico lie? Does the tropic divide it into two nearly equal parts?
2. Mexico city is about 7,000 feet above the sea. Allow 1 degree for each 300 feet, and compare its temperature in July and January with that of Vera Cruz, New York, and London.
3. When is the rainy season in Mexico? How does the north compare with the south in the amount received?
4. What parts of Mexico are comparatively low? Would you expect Yucatan to receive more or less rain than the eastern slope of the plateau?
5. What countries, rivers, or seas form the boundaries of Mexico?
6. Name four big towns in other continents which are in approximately (within 5 degrees) the same latitude as Mexico city, either north or south of the equator.
7. Compare the position, as to latitude, of the Euphrates, Ganges, Yangtse, and Orange rivers, with that of the Rio Grande del Norte. Do any of these suffer from seasonal drought in the same way as the Mexican river?



Copyright

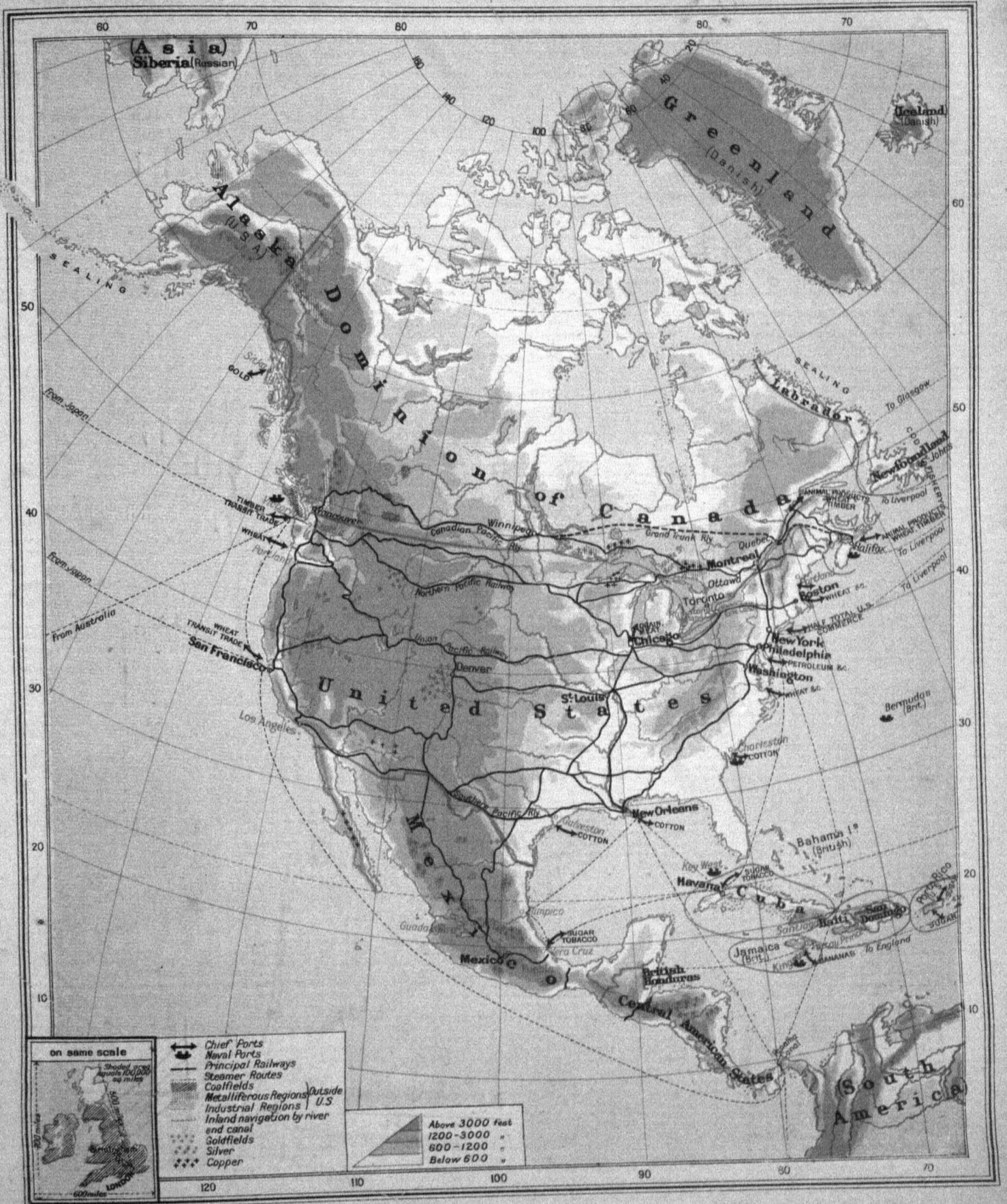
FIG. 138.—A MEXICAN VOLCANO.

[Photokrom Co., Ltd.]

This is one of the highest mountains in Mexico (Popocatepetl). It is just south of the capital. Give its latitude and longitude. Judging from the vegetation in which zone was the photograph taken? The mountain is nearly 18,000 feet high. Compare this with Mont Blanco, the Himalayas, and Ben Nevis. Notice the snow, even during the summer, within the tropics. The buildings show the influence of Spanish Roman Catholic architecture. The view was taken looking south. What time of day was it, judging from the shadows? Near what hour does the sun set at the equator?

# NORTH AMERICA.—Political.

41



Scale 1:40,000,000 (631 miles = 1 inch) 0 200 400 600 800 Statute Miles

Lambert's Equivalent, Azimuthal Projection.



## NORTH AMERICA.—Political.—Test.



**B** The mountainous peninsula of Lower California seems to be continued by the range that runs along the coast to the south-west of the line which joins Mexico city and Guadalajara.

There is obviously a very deep depression between it and the mainland, probably the result of a sinking of the earth's crust between two parallel faults.

The rainfall is somewhat unevenly distributed, owing to the configuration of the country. Most of the rain is naturally wrung from the clouds as they ascend the mountain slopes from the sea. As they drop slightly into the central plateau, less moisture is to be expected. Thus the twenty-five inches of annual fall at Mexico city contrast with over 100 inches at several points along the eastern slopes of the plateau. Wheat, not unexpectedly, becomes an important crop in the drier parts above the hot zone.

In Yucatan especially, and in many other parts, the American aloe yields sisal-hemp, a tough fibre of great commercial value. From the same plant is made by fermentation the national drink of Mexico, "pulque," the cheapness of which leads to much misery among the lower classes.

The hot zone also produces successfully, for export, oranges, bananas, cocoa and sugar.

#### QUESTIONS AND EXERCISES.

1. What are the two peninsulas of Mexico? Compare them as to latitude, surface, rainfall, and natural products.
2. Write down, with symbols, all names mentioned in brown or blue, in Mexico, and be ready to repeat from the Test Map.
3. A railway has been completed across the Isthmus of Tehuantepec. How far is this likely to compete with other inter-oceanic routes?

**C** As the highest peaks of Mexico are found within the tropics, there are few regions of perpetual snow. It is only above 15,000 feet that the conditions are favourable. Glaciers are found on only one mountain in Mexico. The rivers, therefore, gain practically nothing from such a source, as opposed to the Alpine rivers of Europe.

As a result of the structure of Mexico, communication between the capital and the coasts has presented great difficulties. Only recently have railways at great cost been built up the steep slopes of the plateau. Railway development on the plateau has been less difficult, as the various lines which come southwards from the States testify. These are mainly through routes to the capital, and have to traverse much arid and non-productive country near the northern frontier. By their means, much trade is taken overland, to the detriment of oceanic commerce with Great Britain.

#### QUESTIONS AND EXERCISES.

1. Compare Mexico with the Iberian peninsula as to surface, climate, products and commercial progress.
2. Write out a list, with symbols, of all names in Mexico. Be ready to repeat from Test Map.
3. Discuss the difficulties offered to communications in Mexico. How do these affect the competing trades of the United Kingdom and the States? What inter-oceanic routes are there in Mexico?

## Political Divisions, Communications, etc.

**A** It will be noticed that in the map on Plate 41 the chief localities for gold, silver and copper are marked throughout the continent, that coal-fields, metalliferous and industrial regions are put in only if outside the States, as there is a special map to show that area later.

Only the leading through railways are inserted. In Canada, the Grand Trunk extension from Quebec to Winnipeg is in course of construction (1906).

As silver-producing countries, Mexico and the States lead the market. Canada, with her rich supplies of gold in the Klondike and British Columbia, is rivalled only by the United States, South Africa and Australasia, as a producer of that metal.

The United States provide half the copper used in the world, and, as to lead, share with Spain the first place.

#### QUESTIONS AND EXERCISES.

1. Write a list, with symbols, of all political divisions and towns, marked in brown. Be ready to repeat from Test Map.
2. To what countries are Alaska, Jamaica, Porto Rico, Bahama Islands, and Bermudas attached?
3. What part of British North America, though on the mainland, does not belong to the Dominion of Canada?
4. Name four British naval stations, and two in United States. (N.B.—The naval stations in Canada are not now kept fully equipped, but would be easily re-established in case of need.)
5. Name the most characteristic exports from Halifax, Vancouver, Boston, Philadelphia, New Orleans, San Francisco, and Havana.
6. Name four inter-oceanic railways in Canada and the States, in order, from north to south. Name the important towns on each.
7. In what river basins are Chicago, St. Louis, Montreal, Winnipeg, Denver?
8. In what parts of the continent are the precious metals chiefly found?
9. In what parts of the continent, outside the States, are there coalfields?
10. In the all-British route from Liverpool to Japan what places in Canada would be passed through in winter-time? What variation would be likely in summer?
11. Compare the latitude of the most southerly point of Canada with that of London and Naples; the latitude of the most southerly point in the States with that of Cairo and Calcutta.
12. Between what degrees of latitude and longitude are Canada and the United States respectively contained?
13. Compare roughly the distances between New York and Chicago, and London and Edinburgh; the size of Lake Superior and of Ireland, of Alaska and of the British Isles.

**B** 1. What canals are there marked in connexion with the great lakes? Say in each case what difficulties they surmount. What kind of traffic would you expect to find on them?

2. Write a list, with their symbols, of all names of countries and towns in brown or blue. Be ready to repeat from the Test Map.
3. What places would a traveller pass in a journey (a) from Washington to San Francisco via Southern Pacific; (b) from New York to Vancouver via Canadian Pacific; (c) from Vancouver to Philadelphia via Northern Pacific?
4. To what places are sea routes marked from New Orleans, San Francisco, and New York?

**C** 1. Write a list, with symbols, of all towns in the map, and be ready to repeat from the Test Map.

2. What ports export (1) cotton, (2) wheat, (3) timber, (4) sugar, (5) tobacco?
3. When it is noon at Greenwich, what time is it at Charleston, New Orleans, Mexico City?
4. Taking lat. 40° as the most suitable for all purposes, as a rule, can you think of any country in the world so favourably situated as the United States?



## The United States.

**A** From the preceding pages and the general maps of the continent, the surface features, structure, climate, and natural vegetation of the United States can be studied. In the map on the next page, the distribution of minerals, and some of the leading artificial lines of communication by rail and canal are shown.

On these data it ought to be possible to a large extent to account for the distribution of population, the position of the great towns and ports, and the localisation of certain trades and industries. As raw material is more cheaply transported to the fuel or source of energy than vice versa, nearly all the manufacturing centres must be on or near coalfields, or have natural water-power close at hand. Most of the coal of North America, as can be seen from the map, lies between the Mississippi-Missouri and the Atlantic. Far the most important coalfields lie around Pittsburg, and as large supplies of petroleum and natural gas are found near, this town has become the centre of the iron industry.

Local supplies of ore are largely supplemented by imported ores, chiefly from the shores of Lake Superior, whence there is easy water-carriage by lake and canal to the centre of the coalfield.

Next to Pennsylvania and Ohio comes Illinois as a producer of coal and iron. Copper, though not indicated on the map, is one of the leading products of the States. The supply of this metal is not only sufficient to meet the enormous home demand, but also to feed a large export.

The rich mines of California and Alaska make the United States one of the leading gold-producing countries in the world. In the extraction of silver, the States easily lead among the nations—Colorado, Nevada and Montana being the richest districts.

Almost all along the coastal strip between New York and Portland, there is abundant water-power available, and hence there have grown up a large number of towns engaged in almost every kind of manufacture. The cotton manufactures of Massachusetts are perhaps the most noticeable. Here, as in Lancashire, a naturally humid atmosphere is specially suited for the spinning and weaving of the raw material. In dry seasons auxiliary steam-power is of course freely used.

If this map is compared with the Vegetation Map on Plate 38, it is not difficult to account for the great concentration of population and of great towns on each side of latitude 40° between the Missouri and the sea.

The wheat and maize of the central states have to be brought to the great manufacturing centres, or exported to foreign countries. Hence the growth of great distributing towns such as Chicago, St. Paul and Minneapolis, and St. Louis. The huge meat trade of Chicago and Cincinnati depends almost entirely upon the swine and cattle fed upon these grains, especially maize.

The great ports of the Atlantic coast are nearly all concentrated in this belt, that is, between the productive areas and Europe. Their exact position can usually be easily accounted for by their physical surroundings. Nearly all the deep inlets which penetrate towards the west have great towns at the farthest limits of ocean navigation, where safe harbours can be found. The relative growth of these towns has depended upon their comparative distance from great producing regions in-

land, the natural avenues across the Appalachians, and in a lesser degree upon their comparative distance from Europe. The fact that the Hudson River is deep and navigable for steamers as far as Albany has been the chief cause for the pre-eminence of New York, which deals with nearly half of the entire foreign trade of the country. This great submerged valley not only gives easy access across the mountains to the great lakes and the West, but opens up a direct line to Montreal, the commercial centre of Canada.

Baltimore is the natural port for rail-borne wheat from St. Louis, the great collecting place for this commodity. Philadelphia of course gets a large share of the traffic to and from the great manufacturing area immediately to the West. When the St. Lawrence is ice-blocked Boston's trade is increased by much lake traffic, though the manufactures of her immediate neighbourhood are her chief support. When it is remembered that the natural products of the South are entirely different from those of the North, it is easy to understand the enormous traffic which must go by rail and river along the Mississippi valley. Though railways are rapidly diminishing the number of river steamers, yet the mere existence of this cheaper form of transport has a wonderful influence in keeping down the cost of freight.

Minneapolis and St. Paul, at the head of river navigation, with water-power at hand, in the midst of a great wheat country, have perforce become important flour producers, and the collecting towns for the traffic of the South.

Chicago, where the great lakes reach farthest south, with easy country between it and the Mississippi basin, at the point where great lines of rail must converge from east and west, has, of necessity, become the largest lake-port in the world.

The ocean port of the Mississippi is New Orleans—100 miles from the sea, at the most convenient place for the transshipment of goods from river to ocean steamer. From here, naturally, much raw cotton is sent to Europe, while the fruits of the West Indies are sent up the river to the great cities of the North.

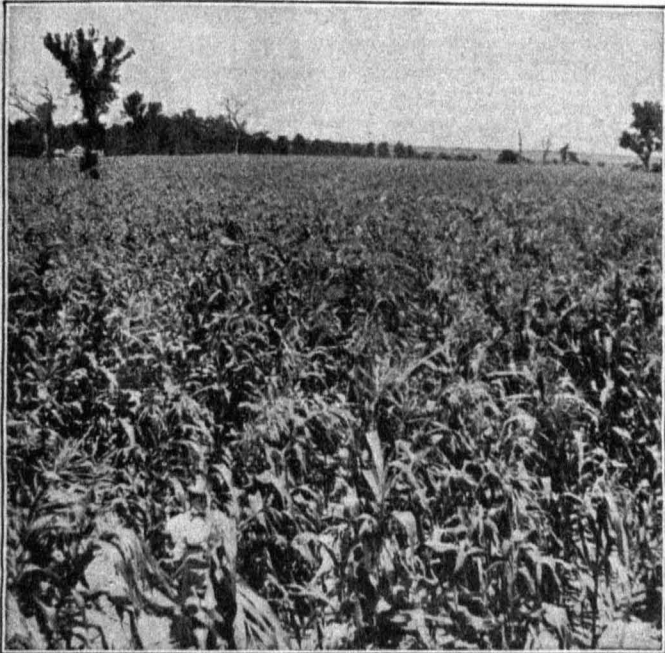
**B** Wherever narrow necks of land intervene between the great lakes there must, of necessity, be a crossing of land and water routes, and at these points towns are sure to grow up.

As the lakes are not all on the same level, the falling water is usually rapid, and was not navigable until canals were constructed. These natural falls have now been used for water-power, especially at Saulte St. Marie (pronounced Soo) and Niagara.

A comparison between the Climatic Maps on Plates 36 and 37 and the Structure Map on page 76, makes it easy to see how the products of North America arrange themselves in belts from east to west.

Between the Appalachians and the sea, the coastal plain is well watered, and produces trees on the slopes, or where the land is naturally too sandy for agriculture. Wherever the soil is of clay or marl, farming is highly developed. As the climate gets warmer, the grains and orchards of the North give way in turn to the tobacco of Virginia and the cotton of the Carolinas and Georgia. Great trading ports and manufacturing cities are common, especially in the North, for the reasons explained above.

The Appalachian belt of older rocks is rich in coal and iron and, especially in the North, supports great manufacturing centres. Its lower portions are often richly cultivated, its uplands naturally thinly populated, especially about latitude  $36^{\circ}$ . Eastward of this region, the level prairies, with their rich soil, hot summers and lesser rainfall are covered by wheat and maize. Farther South the coastal plain along the Gulf is again a great cotton-growing country.



From Stereograph Copyright] [Underwood & Underwood, London and New York.  
FIG. 139.—AN AMERICAN MAIZE FIELD.

This place lies in latitude  $39^{\circ}$  S., longitude  $95^{\circ}$  W. In what State is it? The maize is in flower. What is the other common name of the seeds in this country? How can you judge of the height of the plants?

As the rainfall decreases and the elevation increases, the country becomes less and less suitable for the plough, and wheat and maize and cotton gradually give way to pasture-land. Hence the ranching of the great plains.

The Rocky Mountains, on their eastern slope, have large areas covered by pine forest, especially to the north. In Canada, all their lower portions are so covered, and the belt of trees of course becomes more vigorous on the Pacific slope, where it extends as far south as the border of Mexico. In those mountain regions minerals again become of importance.

In the South-western states the elevated Columbia and Colorado plateaus and the Basin ranges are often deficient in rainfall, and are therefore treeless and barren, except in favoured places. This dryness is especially noticeable in the South.

The lower valley of the Columbia river is naturally of great fertility, and gives to San Francisco a great export of wheat.

The gold of California made water a necessity, and when once this had been brought by artificial channels from the hills, it enabled the soil to become fertile. Now the fruits and wines of California have proved of more lasting value than her gold.

The tree-covered Pacific ranges have caused the great timber trade of Portland and Seattle.



From Stereograph Copyright] [Underwood & Underwood, London and New York.

FIG. 140.—IN AN AMERICAN COTTON FIELD.

This scene is in latitude  $32^{\circ}$  S., longitude  $83^{\circ}$  W.; in what State is it? Of what race are the workers? The white fluff encloses the seed. The longer the fibres are in this "cotton-wool," the more valuable is it, usually. Why is this?

In using the map on Plate 43, care must be taken as to the inferences to be drawn from the existence of regions rich in iron ore and coal. Coal varies enormously in quality, as well as accessibility; and it is only where really good coal can be easily worked that great industrial centres have sprung up. Iron ore, even if good, cannot be worked at a profit unless it can be cheaply transported to coal. Again, districts far inland, or removed from means of transport, cannot develop the manufacture of heavy goods.

It would be as impossible as useless to represent all the railways of Southern Canada and of the States. Only the most important lines have been inserted.

The leading exports were graphically shown on the preceding map. They are here omitted for want of space.

### Organisation of the States.

Each state is practically self-governing with a Senate, House of Representatives, and a Governor—all elected. In most states, all men over twenty-one years of age have a vote.

The Confederate States, as to their outside policy and general government, are under Congress, which consists of a Senate (two members sent by each state), and a House of Representatives, whose members are apportioned to each state, according to population. They are elected by all who hold the franchise in each state. The list below gives the states in order of population. New York State has thirty-seven representatives, while six states have only one—out of a total of 386.



Outside this map there lie the possessions of Hawaii, Porto Rico, the Philippines, and Alaska, none of which yet count as states.

The District of Columbia (D.C.) practically corresponds to the City of Washington. It is used as the seat of government, and within it no citizen has a vote for any purpose.

The abbreviations given below are worth learning, as they are commonly used in postal addresses. The actual populations are inserted only for reference, and must not be learnt.

The District of Columbia would come between North Dakota and Utah by order of population.

	NAME OF STATE.	ABBREVIATION.	POPULATION IN 1900. In thousands.
I	New York	N. Y.	7,269
II	Pennsylvania	Pa.	6,302
III	Illinois	Ill.	4,822
IV	Ohio	O.	4,158
V	Missouri	Mo.	3,107
VI	Texas	Tex.	3,049
VII	Massachusetts	Mass.	2,805
VIII	Indiana	Ind.	2,516
IX	Michigan	Mich.	2,421
X	Iowa	Iowa	2,232
XI	Georgia	Ga.	2,216
XII	Kentucky	Ky.	2,147
XIII	Wisconsin	Wis.	2,069
XIV	Tennessee	Tenn.	2,021
XV	N. Carolina	N. C.	1,894
XVI	New Jersey	N. J.	1,884
XVII	Virginia	Va.	1,854
XVIII	Alabama	Ala.	1,829
XIX	Minnesota	Minn.	1,751
XX	Mississippi	Miss.	1,551
XXI	California	Cal.	1,485
XXII	Kansas	Kans.	1,470
XXIII	Louisiana	La.	1,382
XXIV	S. Carolina	S. C.	1,340
XXV	Arkansas	Ark.	1,312
XXVI	Maryland	Md.	1,188
XXVII	Nebraska	Nebr.	1,066
XXVIII	W. Virginia	W. Va.	959
XXIX	Connecticut	Conn.	908
XXX	Maine	Me.	694
XXXI	Colorado	Col.	540
XXXII	Florida	Fla.	526
XXXIII	Washington	Wash.	518
XXXIV	Rhode Island	R. I.	429
XXXV	Oregon	Ore.	414
XXXVI	New Hampshire	N. H.	412
XXXVII	South Dakota	S. Dak.	402
XXXVIII	Oklahoma	Ok.	398
XXXIX	Sequoyah	Seq. (Indian Terr.)	392
XL	Vermont	Vt.	344
XLI	North Dakota	N. Dak.	319
XLII	Utah	U.	277
XLIII	Montana	Mont.	243
XLIV	New Mexico	N. M.	195
XLV	Delaware	Del.	185
XLVI	Idaho	Id.	162
XLVII	Arizona	Ariz.	123
XLVIII	Wyoming	Wy.	93
XLIX	Nevada	Nev.	42

#### QUESTIONS AND EXERCISES.

1. Write a list, with symbols, of all towns mentioned in brown in the United States. Be ready to repeat from Test Map.
2. Where are the Alleghany plateau and Chesapeake Bay? What port is at the head of the latter?
3. Account for the importance of St. Louis, Chicago, Pittsburg, Philadelphia and New Orleans.
4. Name the five most populous cities in the United States; the five most populous states.

**B** 1. Write a list, with symbols, of towns mentioned in brown or blue in the United States. Be ready to repeat from Test Map.

2. Where are the Yellowstone Park, Delaware Bay, Delaware River?

3. Account for the importance of Cleveland, Buffalo, Minneapolis, and Louisville.

**C** 1. Write a list, with symbols, of all the towns mentioned in the States. Be ready to repeat from Test Map.

2. Find in the map the White Mountains, Adirondack Mountains, Lake Champlain, Long Island, Blue Ridge, and the Black Mountains. Be ready to locate these on the Test Map.

3. Write a list of the North Atlantic States, with their symbols (i.e. the nine states north of lat. 40° and east of long. 80°, including N. J.). Add any towns mentioned in each. Be ready to repeat from Test map.

4. Do the same for the South Atlantic States (i.e. the states south of Pennsylvania near the ocean, including W. Va.).

5. Do the same for North Central States (i.e. the twelve states which lie chiefly north of lat. 37° and between the Atlantic states and long. 104°, including Kentucky).

6. Do the same for the South Central States (i.e. the nine states which lie between the North Central States and the Gulf of Mexico).

7. Do the same for the Western States (i.e. the eleven remaining states west of long. 104°).

8. Write a list, with symbols, of the states bordering the Atlantic, in order from north to south (fourteen, including Pa.). Be ready to repeat from Test Map.

9. Do the same for (a) the four Gulf States (from east to west), (b) the three Pacific States (from south to north), and (c) the twelve states which border Canada (from west to east).

10. Follow the Mississippi-Missouri from the Gulf to the southern border of North Dakota, and say what states would be on the east and west bank in order. Be ready to do this from the Test Map.

11. Pick out the state with largest area, with smallest area. How many states have a greater population than London (6,500,000); how many than Paris (2,700,000)?



From Stereograph Copyright [Underwood & Underwood, London and New York.]

FIG. 141.—A CUBAN SUGAR FIELD.

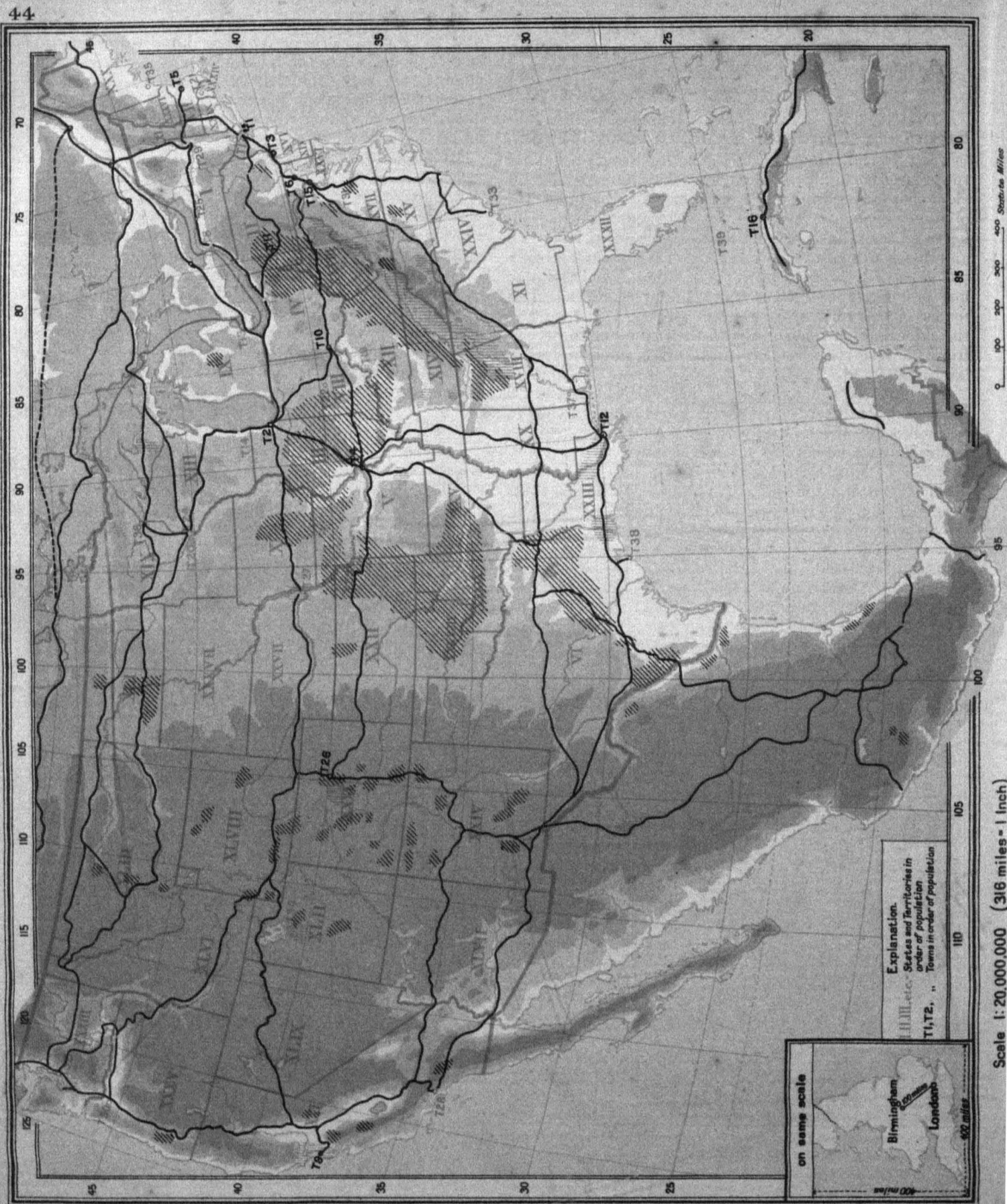
Near Havana. What is the latitude? Of what race are the natives? Whence did they originally come? The plant resembles a thick reed. The stems, of about one inch in diameter, are cut off near the ground, stripped of their leaves, and taken to the sugar-mill for treatment. The workers are here sitting on the cut-off leaves. In the background can be seen the standing plants.

# UNITED STATES.





# UNITED STATES.—Test.



## China, Korea, and Japan.

**A** The map on Plate 45 is designed to show the important areas of China proper and Japan proper, and their chief products—vegetable and mineral.

### Structure, Climate, Products and Trade.

The physical colouring shows that, generally speaking, the greater part of these countries is mountainous. China alone has any considerable plains. The basin of the middle Yangtse is divided from the great plains of the north by a mountain barrier that extends from Tibet east and then south-east to the river east of Hankau. Throughout most of its course this range is difficult to cross, and has prevented easy communication between the great towns of inland China. Geologically also, it separates the older rocks of the north, with their true coal measures, from the new rocks to the south, with inferior coal of later age.

The great trunk railway, which will eventually be continued southwards to Canton, surmounts its eastern extremity by a comparatively easy pass, and helps to make Hankau one of the greatest commercial centres of China.

The Climatic maps on Plate 37 indicate that all these countries are well within the monsoon area; that is, they receive most of their rain during the summer months. Thus it is that summer crops flourish, and the land is able to bear a very heavy population, largely dependent upon agriculture. Irrigation is not necessary in most districts, though its value is fully understood. The chief exception is for rice crops everywhere, and for the peculiarly porous but fertile soil of Northren China.



*From Stereograph Copyright*

*[Underwood & Underwood, London and New York.]*

FIG. 142.—TEA PICKING IN JAPAN.

Notice the Japanese characters on the headdress, etc. The young shoots of the tea shrub makes the best tea. These are dried and rolled for the market. Notice how the leaves open out in the teapot. Japan is subject to frequent earthquakes. Does this account for the style of architecture? What inference as to the rainfall would you gather from the tree-covered slopes?

In Southern China the characteristic crops may be said to be rice on the lower ground and tea on the hill slopes, though almost all the products of warm, temperate climates are to be found in the land cultivated by the industrious Chinese husbandmen.

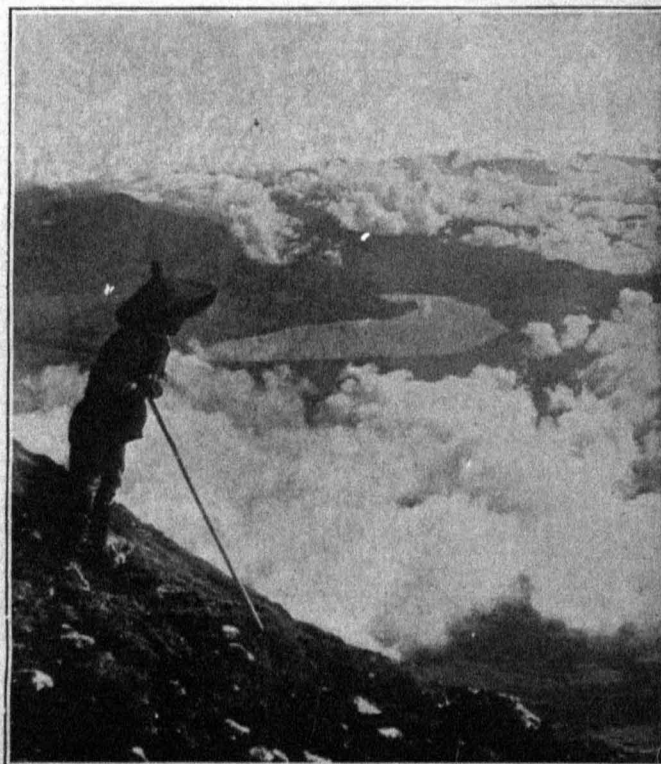
In Northern China, cotton and wheat are the leading crops.

Mulberry trees are grown almost everywhere to feed silk-worms.

The export of silk in its raw and manufactured state is far the most valuable item of China's foreign trade, three times more so than the value of exported tea. In Japan, also, the silk trade is of great importance.

Coal is widely distributed over China, but is only just beginning to be worked on a large scale on scientific principles. The coalfield to the north-east of the great bend of the Hwangho is probably the richest in the world. It is of enormous extent, its seams are of great thickness and good quality, are near the surface—often on it—and are not disturbed by faults or folds. As excellent iron ore is found in the same district, the possibilities of industrial development here seem almost boundless.

Corea and Japan resemble each other in their mountainous surface, though the former has rather more low-land, especially on the east. Both have ample rainfall, and are capable of producing very prolific crops, wherever the character of the surface allows. Japan, with



*From Stereograph Copyright*

*[Underwood & Underwood, London and New York.]*

FIG. 143.—ABOVE THE CLOUDS IN JAPAN.

View taken from the summit of Fujiyama looking north-east. The Japanese pilgrim stands upon the cinder slope of the crater. The day is clear and windless. The water-vapour near the surface has condensed into clouds, owing to the colder layer of air, caused by peculiar conditions, near the earth. The sun's heat is gradually dissipating the clouds. Such a view is common in mountainous countries, when the barometer is high and the weather clear and cold. Notice the typical mountainous scenery of Japan, the shape of the lake, the signs of erosion by water-courses, and the peculiar hat of the climber (showing the heat of the sun).



her forty-five millions of inhabitants, has already utilized to a large extent her fertile land, amounting to less than one-third of the total area. Corea awaits development, and will, no doubt, soon be overrun by Japanese colonists.

As in much of China, rice and beans are the staple crops of Corea; rice, tea and silk are the leading products of Japan.

Valuable coal mines are worked in both the north and south of Japan, and, together with her natural water-power, have enabled great textile and steel industries to grow up. Japan is thus fast becoming a manufacturing country, as opposed to China, where agriculture and trade are the leading occupations.

In all these countries, roads are generally bad or non-existent. The Japanese have partially overcome the difficulties of inland transport by means of railways, but their mountainous country is against them. In China, railways are just beginning to show their enormous value. Both countries make every use of their rivers or seas as means of carriage.

Nearly all the towns owe their importance to their position in rich agricultural centres, of which they act as the markets, or to their being the natural outlets of great river valleys to the sea.

Thus Canton is the natural trading focus of the rich river delta upon which it stands, while Hongkong acts as the ocean port for traffic which is collected and distributed by coasting steamers and junks from the whole of Southern China. Hankau, at the junction of waterways, amid a rich agricultural region, is the natural collecting centre of the enormous river traffic of the Yangtse basin. The trunk railway, from north to south, will of course increase its importance. For this great valley, Shanghai is the ocean port, the nearest safe harbour to the somewhat difficult river mouth.

Tientsin, similarly, is the port of the northern plains, though not able to admit large steamers owing to lack of water. Peking's position is important, more from strategical reasons.

Osaka, Tokio and Kioto stand upon the richest plains of Japan. The latter for more than a thousand years was the capital. Tokio cannot be reached by large ships, and hence Yokohama has become its out-port.

**B** Much of Northern China is covered with the peculiar "loess" formation. This consists of a deep mantle of material apparently blown, in the form of dust, from the deserts of the interior. It is rich in lime, and easily weathers both horizontally and vertically. This results often in very remarkable scenery. Even the valleys in the mountainous middle course of the Hwangho are partially filled by this peculiar deposit. It is most fertile, provided that it has plenty of moisture. Being very porous, it requires irrigation in a dry season.

The upper Yangtse, in the district around Chungking and right up to Yunnan, is also favoured by a peculiarly rich soil, red in colour, the product of the local rock. Wherever this is found, cultivation is possible high up the mountain sides, and the population is remarkably dense for such elevated and remote regions. Chungking, a treaty port, is the natural outlet for the trade of this district down the Yangtse.

Of Chinese rivers, by far the most valuable as a means of communication is the Yangtse, which is navigable for ocean steamers as far as Hankau, for river steamers as far as Ichang. Then there are 400 miles of difficult navigation up to Chungking, where once more the great river and its tributaries are free of interruptions for long distances. The great rapids of the Yangtse gorges have been passed by small steamers, but nearly all the traffic is hauled up in junks at great toil and risk. Railways will eventually, no doubt, partially solve the difficulty.

The Hwangho, even in its lower course, is difficult to navigate, owing to its uncertain course. It is liable to great floods, and often causes widespread destruction. As lately as 1888 it entered the Yellow Sea along the dotted line shown in the map. Above the point where it bends to the north it runs through deep gorges, where navigation is impossible. Singan, however, stands on a navigable tributary, and is one of the most energetic trading centres of China.

The Sikiang is navigable for junk traffic along most of its course, though rapids are not absent.

The Imperial Canal is still in good condition south of the Hwangho, and permits of boats which do not draw more than five feet.

From east to west, then, there are some natural means of transport. From north to south the deficiency must be filled by railways.

The competition for China's trade is, of course, keen among European nations, the United States and Japan. The United Kingdom still leads, and the trade that passes through Hongkong is almost as great as that of any other single port in the world. France hopes to get a large share of the commerce of Southern China, the United Kingdom of the Yangtse basin, Germany of the rich and populous district around Kiau-chau, while the United States and Japan are active at every trading centre.

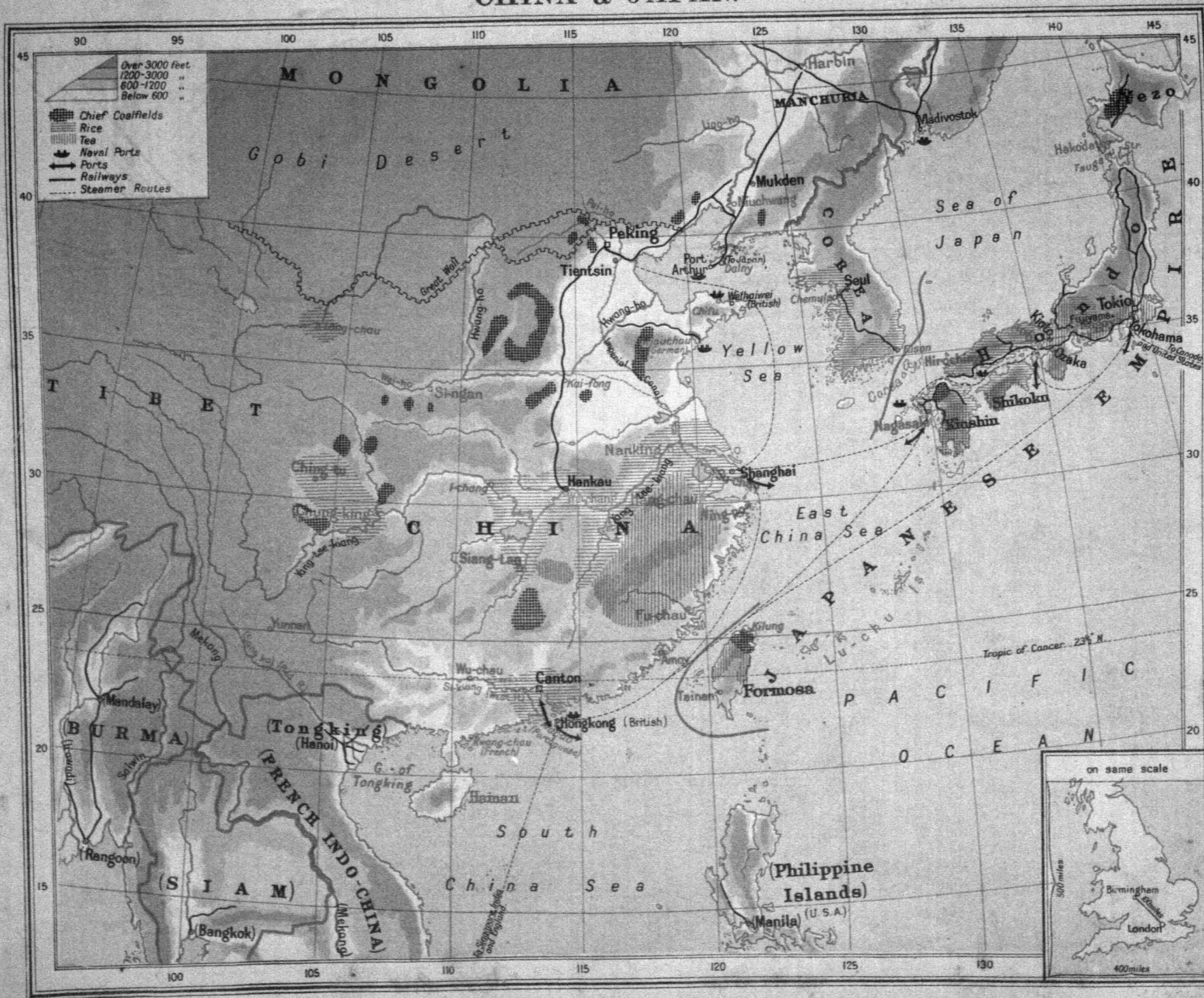
**C** China is rich in great towns, whose names are unfamiliar to Western ears, but their importance is certain to become great in the near future, when railways have been more fully developed. Hitherto the corrupt governing officials have naturally been opposed to trade innovations. As a whole, however, it is untrue to say that the Chinese are hostile to Western improvements. They are born traders and honest business men, and are rapidly making use of scientific knowledge acquired in Europe and Japan.

At Siangtan, in the centre of the most exclusive part of China, is to be found a city larger than Birmingham, with a fully installed system of electric light and trams, and yet hardly known to Europeans. Its position on a natural trade route from the Yangtse to the Sikiang is easy to account for, and it will no doubt be on one of the great railway lines of the future, leading to Wuchang.

Ching-tu is the centre of the rich red-earth region of the upper Yangtse; Yunnan, on a high but fairly fertile plateau, is famous for its tea and minerals, and its trade is the object of much rivalry between Burma and Tongking, from both of which countries railways are projected. Singan, besides standing on a fertile plain, commands the great road which leads westward to the upper Hwangho and the Interior.

Wuchang is of importance for exactly the same reasons

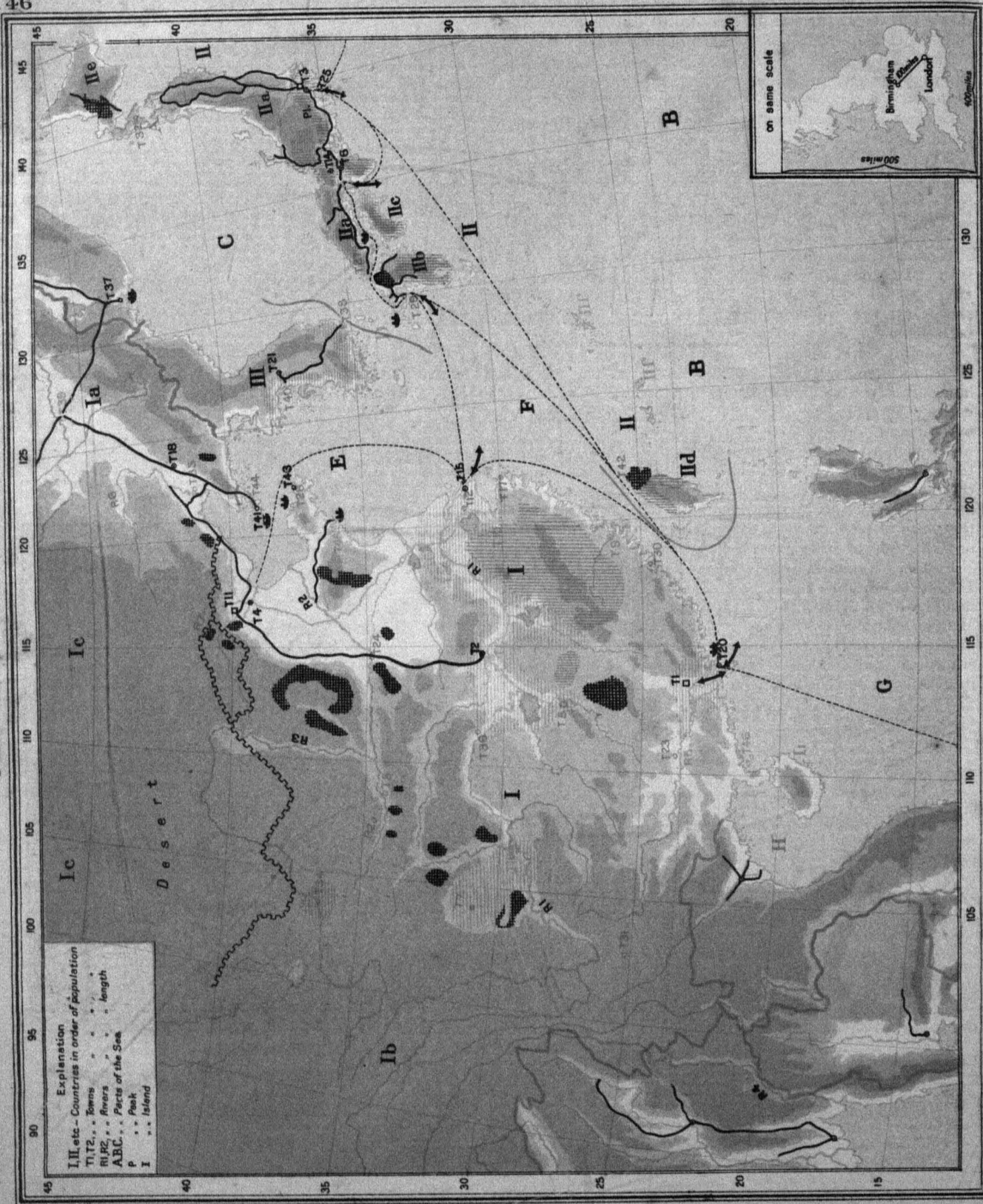
# CHINA & JAPAN.





# CHINA & JAPAN.—Test.

46



Scale 1:20,000,000 (316 miles = 1 inch) 0 100 200 300 400 Statute Miles

as Hankau, while Nanking holds a similar position lower down the river. It was the capital of China during the fourteenth century. It has silk manufactures.

Harbin, the natural meeting-place of rail and river, has rapidly become the chief trading town of Northern Manchuria.

Suchau is in a similar position to Nanking, and also manufactures silk.

Amoy and Ningpo, as treaty ports, are important for the same reasons as Fuchau. The treaty port of Niuchwang, some miles from the river port of that name, is the natural outlet for the considerable trade of the Liao river basin.

Kobe is the second port in Japan, and shares the rich trade of Osaka and the "Inland Sea" which lies between Hondo and Shikoku. Nagoya is in the centre of the greatest rice district of the Empire, on the railway between the modern and ancient capital.

Chemulpo and Fusan are the obvious ports for Corea. Hiroshima and Nagasaki, owing to their fine natural harbours, have become great naval stations. The latter being near coal, has developed shipbuilding, as well as other manufactures.

Throughout Japan, and in many parts of China, cultivation is so intense as to leave no room for pastures. Hence there is a great dearth of horses, cattle and sheep. Milk and butter are rare luxuries, padded cotton clothes take the place of wool, meat is little eaten, and few Chinamen or Japanese can ride a horse.

Formosa, taken by Japan from China after the war of 1895, is mountainous and forest-covered on the east, with much rich low-lying alluvial soil to the west. Uncivilized Malays inhabit the former region; industrious Chinese produce much rice and sugar in the latter. Japanese enterprise and good government are rapidly developing its resources, which include coal to the north.

#### QUESTIONS AND EXERCISES.

- A** 1. What is the meaning of the physical colouring? How are the chief rice and tea districts indicated?
2. Mention any noticeable lowland areas. What rivers drain them?
3. Make a list of all names, printed in brown, with their symbols. Arrange towns according to their countries. Be ready to repeat from Test Map.
4. Name the two chief ports of China, and the leading one in Japan.
5. What are the chief products, vegetable and mineral, of these countries? What districts are richest?
6. Mention two British naval stations in China. With what ports has Hongkong got direct steamer communication?
7. Allowing 70 miles for a degree, how far in a straight line is it roughly from Peking to Hongkong, from Vladivostok to Nagasaki?
8. Compare in size Formosa and Wales, Corea and England, the Japanese Empire and the British Isles.
9. Corea reaches farther south than the extreme south of Europe. Why is its climate different from that of Southern Italy?

- B** 1. Write a list of all names in brown or blue, with symbols. Arrange towns by their countries. Be ready to repeat from Test Map.
2. What are the four most populous towns in this map?

Account for the importance of Wuchang, Kobe, Harbin, Chungking.

3. What four European nations hold territory on the coasts of China? Compare their commercial importance.

4. Compare the population of China (400,000,000) and Japan (45,000,000) with that of the United Kingdom (43,000,000), the United States (80,000,000), and the Russian Empire (141,000,000), by means of a diagram on squared paper, as on page 40.

5. Why is it that the China trade is so valuable? What obstacles are there in the way? What is its future development likely to be?

6. Peking corresponds with Naples in latitude, the mouth of the Yangtse with the mouth of the Nile. Account for the great difference in climate between these places.

1. Write a list of all names, with symbols. Be ready to repeat these from the Test Map.

**C** 2. Give an account of the communications of China and Japan.

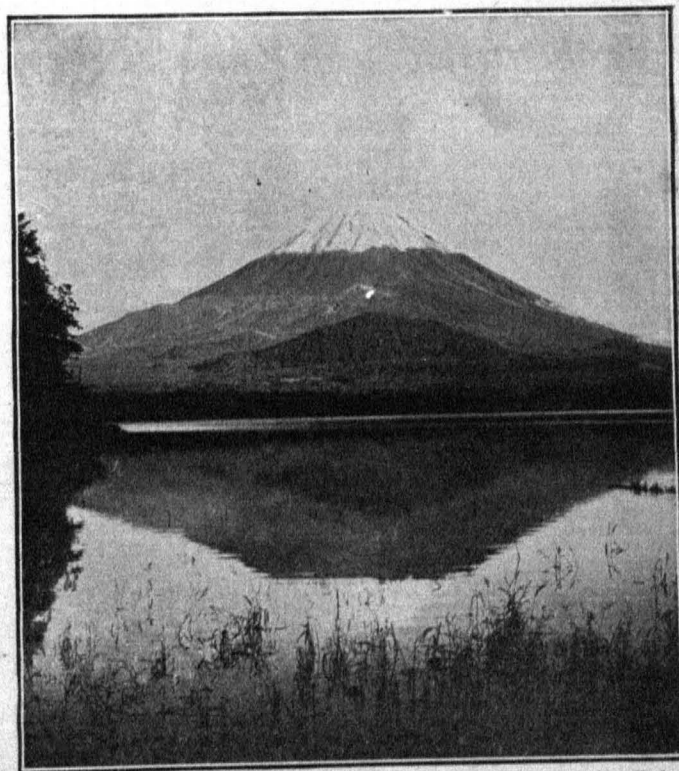
3. What do you know of the "Loess" and "Red-earth" regions of China?

4. Account, as fully as you can, for the importance of Kaifong, Ichang, Nagasaki, and Siangtan.

5. Name all the ports and naval stations in China, Corea, and Japan. Which of these belong to European Powers?

6. Give some account of Formosa, its features, products, inhabitants, history, and trade.

7. Compare the January and July temperatures of London and Peking, of Tokio and Moscow (Plates 12, 25, and 36). Account for the differences.



From Stereograph Copyright

(Underwood & Underwood, London and New York.)

FIG. 144.—THE SACRED MOUNTAIN OF JAPAN.

Fuji-yama (or Fuji-san) is a perfect volcanic cone over 12,000 feet high. Notice the even snow line, a clear proof of the decrease of temperature owing to elevation, the cinder slopes and lava flows, overgrown by trees on the lower parts of the mountain. Is this a lake or the sea? Locate the mountain in the map, and give its latitude. Between what two towns is it situated? This hill is frequently depicted on Japanese screens and paintings.



## Palestine.

### Size, Position in the World.

#### QUESTIONS.

- A** 1. How far is it, roughly, from Jerusalem to Tyre, from south end of the Dead Sea to Mount Hermon, from Joppa due east to the Jordan, from Dan to Beersheba?
2. How many degrees nearer the equator is Jerusalem than London; than Naples?
3. At the present time, what country borders Palestine on the south-west; what on the east?
4. If you went due east from the Dead Sea, to what great river would you first come? If you went due south, to what sea would you come?
5. These maps are on a rather larger scale than the maps of England, Scotland, and Ireland (Plates 16 and 18). Compare the following as to area (say whether they are about equal, or if one is obviously greater than the other): The Roman Province and Yorkshire; Palestine (within the tribal divisions) and Wales; the distance from Dublin to Belfast, and the distance from Jerusalem to Damascus.

### Surface.

The Physical Map shows five well-marked divisions of the land between west and east, between the sea and the desert: the Maritime Plain, the Low Hills, the Central Range, the Jordan Valley and the Eastern Range.

Great diversity of surface within a small space is a characteristic.

There is no instance elsewhere of such a remarkable depression below sea-level as the Jordan valley—a curious rift in the earth's crust, that may be looked upon as an extension northwards of the great hollow filled by the Red Sea.

**B** Limestone is the prevailing rock throughout the mountainous parts; hence the frequent allusion to caves in Hebrew history. The Central range is uneven and broken in the midst by the Plain of Esdraelon. The eastern mountains present a high wall towards the Jordan valley, and then continue eastwards as a fairly level plateau, and gradually merge into the elevated Arabian desert. In many parts volcanic rocks come through the limestone. Trachonitis is perhaps the most conspicuous example. It is a broken mass of black basalt.

**C** The Yarmuk and Jabbok obviously have worn deep trenches out of the eastern plateau.

To the north the mountains rise high round Hermon, and serve as a collecting place for the waters which feed the Jordan and the rivers of Damascus.

### Climate.

**A** It would be hard to choose any small area where the influence of surface on climate is better illustrated than in Palestine.

Generally speaking, the winds come from the north in summer, and therefore bring little moisture. In the winter the winds come from the west and south-west chiefly, and naturally bring moisture from the sea. Its distribution is determined by the arrangement of hills and plains. The beginning of the wet season and its end are referred to in the Bible as "the former and the latter rains." The rains of autumn enable the farmer to sow his seed, the spring rains bring it to maturity.

The western slopes of the Central range and the Maritime plain are naturally exposed most to the influence of the sea, and enjoy a fresh and healthy climate. Mount Carmel first feels the rains, and is a mass of verdure in the spring. From its summit Elijah, after the long drought,



Copyright]

[Photochrom Co., Ltd.

FIG. 145.—ON THE FERTILE COASTAL PLAIN.

What sea is visible? Do you notice any evidence of Mohammedan architecture? In the foreground can be seen orange bushes and palm trees. Compare this vegetation with that of the adjoining view. Over most of Palestine the buildings have flat roofs: here most of them have ordinary roofs to resist the greater rainfall. In biblical times flat roofs were common; hence the frequent allusions to "on the house top." This is in about latitude 32° N. What are the ancient and modern names of the town?

watched for the clouds coming out of the west. Sharon and Phoenicia have been proverbial for their fertility.

The limestone uplands of Judaea are breezy and do not retain moisture, and have been throughout history the abode of a freedom-loving shepherd race. Hence the frequent metaphors from pastoral life in the Christian teaching.

West of Judaea, the eastern descent towards Jordan faces away from the sea, and is naturally dry and desert. The great trough of Jordan receives little rain, and depends for its fertility chiefly upon irrigation. It has an almost tropical climate. The western slopes of the eastern plateau receive most of what moisture remains in the west winds, and contribute many streams to the Jordan. Gilead and Bashan were thus able to support a forest growth in ancient times.

As the rain gradually gets less and less, so the sheep pastures of Moab and the north-east slowly merge into the desert plains of Arabia.

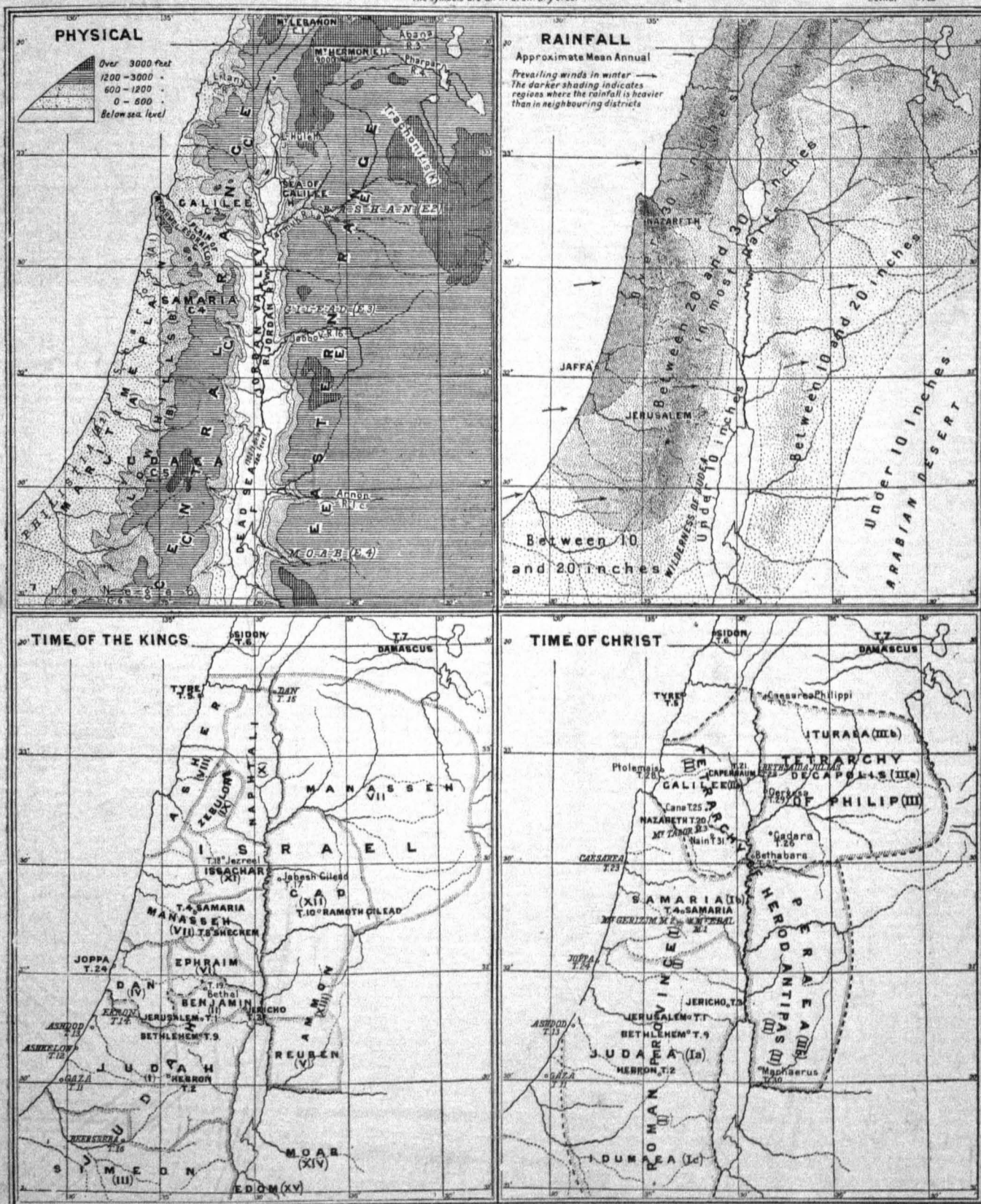
Owing to the very few meteorological stations in Palestine, the data for constructing an accurate Rainfall map do not exist. The map opposite gives an approximate idea of the mean annual rainfall. At Jerusalem accurate observations have been taken for forty years, at a height of 2,500 feet. The average fall there has thus been determined to be twenty-six inches, almost the same as in London. Its monthly distribution, however, has been very different. The five months of May, June, July, August and September do not get an average between them of even half an inch. December, January, February and March, taken together, get a mean of over 21½ inches. Summer then is practically rainless.

**B** The Annual Isotherms in the lowest map on Plate 3, show that Palestine lies in the belt between 64° and 80°. Local differences of level and exposure of course greatly modify the heat in various places. In Jerusalem, for instance, at 2,500 feet, the average for the last twenty years works out at a little

## PALESTINE

The symbols are all in arbitrary order

HEBRON - brown names  
 ASHDOD - blue  
 Bethel - red



Scale 1:2,500,000 (39½ miles - inch) 0 10 20 30 40 50 Statute Miles

FIG. 146.





From Stereograph Copyright]

[Underwood & Underwood, London and New York.

FIG. 147.—THE WILDERNESS OF JUDAEA.

Locate this in the Rainfall Map, and say why there is such scanty vegetation. The shrubs visible have hard leaves, so that evaporation is not easy, and long roots suited for their surroundings. Compare the usual garden plants of Great Britain; why cannot they resist drought as a rule? Notice the effect of watercourses. How does a covering of vegetation resist denudation? From the uplands of Judaea, with their sheep pastures, a traveller in a few miles can find himself in an absolute wilderness, and by continuing eastward can easily within the day reach the rich tropical vegetation of the irrigated plains of Jericho.

over  $62^{\circ}$ ; the month of August averages about  $76^{\circ}$ , of January about  $45^{\circ}$ . Compare these temperatures with the seasonal averages in the British Isles (Plate 12).

At Jerusalem the air is seldom below  $32^{\circ}$ , or above  $100^{\circ}$ .

At Jericho, 1,200 feet below sea-level, what average would you expect for the year, for the months of August and January, allowing  $1^{\circ}$  for each 300 feet? Greater heat, however, is actually experienced there owing to its peculiar position.

#### QUESTIONS AND EXERCISES.

**6.** Make a tracing of the Physical Map, marking with **A** horizontal lines in ink the land below sea-level, shading in pencil all parts over 1,500 feet, and putting in the symbols, for your section, instead of names. Use as test map.

**7.** What towns are above 1,500 feet; what below sea-level? (Place the above tracing over the lower two maps in turn.)

**8.** What is the difference in level between Mount Hermon and surface of the Dead Sea, between Joppa and Hebron?

**9.** Why does Carmel receive more rain than Jericho, Mount Hermon than Moab?

**10.** Make a tracing of Palestine in the time of the kings, marking by dotted lines all tribal divisions. Put symbols instead of names for these divisions and for the towns in your section (printed in heavy type), and bring up as a test map.

**11.** Do the same for Palestine in the time of Christ. Put political divisions instead of tribal divisions.

**1.** Make a tracing of the Physical Map (as in Question

**B** A 6), filling in all symbols for your sections (A and B), to be used as a test map.

**2.** Contrast the rainfall of the west and east of Judaea, of Moab and Phoenicia. Account for the differences.

**3** and **4.** Repeat questions A 10 and 11, with the symbols for your two sections.

**1.** Make a tracing of the Physical Map (as above), filling **C** in all the symbols, to be used as a test map.

**2.** Make sections on squared paper, allowing one-tenth of an inch for each 500 feet vertically, due east and west, across the map (i.) through Mount Hermon and (ii.) through Hebron.

**3.** The mean monthly falls of rain in Jerusalem are: Jan., 6.4 inches; Feb., 5.1; March, 4.1; April, 1.5; May, .3; June, 0.0; July, 0.0; Aug., 0.0; Sept., 0.0; Oct., .4; Nov., 2.4; Dec., 5.7. Show this graphically by a curve on squared paper.

**4.** Similarly, the mean monthly temperature of the air at Jerusalem has been determined: Jan.,  $45^{\circ}$ ; Feb.,  $48^{\circ}$ ; March,  $54^{\circ}$ ; April,  $61^{\circ}$ ; May,  $67^{\circ}$ ; June,  $73^{\circ}$ ; July,  $76^{\circ}$ ; Aug.,  $76^{\circ}$ ; Sept.,  $73^{\circ}$ ; Oct.,  $69^{\circ}$ ; Nov.,  $58^{\circ}$ ; Dec.,  $50^{\circ}$ . Show the result graphically.

**5.** Compare the mean annual temperatures of Jerusalem, London, Bombay, and Buenos Ayres (Plate 3). Compare the Jan. and July temperatures of Jerusalem and London (Plate 12).

**6** and **7.** Repeat questions A 10 and 11, with all symbols.



Copyright]

FIG. 148.—BEIRUT.

[Photochrom Co., Ltd.

This is in about latitude  $34^{\circ}$  N., so just outside the map. Beirut is the natural seaport for Damascus, to which it is now joined by rail. Notice the vegetation, the style of architecture, the snow-covered mountains of Lebanon in the background, about 8,000 feet high. This view is typical of an eastern Mediterranean seaport. Is the harbour entirely natural? How does the rainfall here compare with that at Jerusalem and Damascus?

## Notes on Countries without Special Maps.

(The Indian Empire is dealt with in Part VI. Its position in Asia and physical conditions may have been gathered from this part.)

**A** **Turkey-in-Asia** may be divided into (1) the plateau of Anatolia extending from the Ægean through Asia Minor to the confines of Persia; (2) the valleys of the Euphrates and Tigris, or Mesopotamia; (3) the mountainous district of Syria between this and the Mediterranean, and (4) the strip of Arabia along the Red Sea.

**B** The high plateau of Anatolia is generally treeless and somewhat bleak, with hot summers and cold winters, well suited in many parts for the growth of wheat. The coast districts to the north and south are naturally milder and are tree-covered.

The western slope towards the Ægean is often extremely fertile, and has a typical Mediterranean climate. Smyrna, its port, is rich and flourishing and does a great trade, especially in figs, raisins, and carpets. The native wool from the plateau is specially suitable for Turkey carpets.

Mesopotamia has lost much of its ancient fertility, which depended largely upon irrigation. Modern engineering would soon restore this, but capital is shy of Turkish provinces. Even now, the trade of Baghdad, the chief collecting town on the Tigris, and Basra, the ocean port, is not inconsiderable. How much hotter is Baghdad than London in July? (See Plates 36 and 12.)

Syria, including Palestine, which has been previously dealt with, is also a country that has not recovered from the ravages of centuries. Gradually it may regain its lost fertility. At present its agricultural population export wheat and fruits, but the trade is insignificant. The ancient city of Damascus, on its fertile plain, irrigated by the streams from Hermon, has Beirut as its port. It is a collecting place for desert produce.

Turkish Arabia is chiefly famous for its sacred Mohammedan cities of Mecca and Medina. Its southern portion has a fairly good climate, and is celebrated for its production of coffee.

**C** **Independent Arabia** consists of the plateau in the interior and the sultanate of Oman on the Persian Gulf.

The district of Nejd in the centre is by no means hopeless desert. It is the true home of the Arab and is famous for its breeds of horses and camels.

Oman is chiefly mountainous, and has close commercial and political relations with India.

**A** **Persia** can be seen from the map to be almost entirely an elevated country. Generally speaking, it is deficient in rainfall, and irrigation is necessary as a rule for agriculture. It has no great rivers. Along the Caspian Sea the greater rainfall causes a forest growth.

**B** Tobacco and wheat are characteristic agricultural products. Silk is largely produced in the north. The most valuable export consists of hand-made carpets.

**C** Politically, Persia is of great international importance. Russia is eager to get an outlet on the Persian Gulf, almost the whole trade of which is now in the hands of Great Britain. Germany also has

ambitions in this direction. The Anatolian railways are being built by German capital, and when the railway is completed from the Bosphorus to the Gulf, it will no doubt become a great trade route, and may do away with the British monopoly.

**Afghanistan** is of political rather than commercial interest, as a buffer state between the Russian and British Empires. The Trans-Caspian railway of the former gives an ominous dip towards Herat on the north, while the British strategical line through the Bolan Pass and Quetta aims straight at Kandahar, the centre where all roads meet. Most of the invasions of India have taken place by way of Kabul and the Khaibar Pass. Is any of this country below 3,000 feet? Would you here expect great extremes of temperature?

**A** **Russian Central Asia** consists largely of steppes and deserts. It is gradually getting more and more arid. The sea of Aral is shrinking. The rivers which rise in the mountainous district of the south-east are used fully for irrigation, and make fertile the country round Bokhara and Tashkent.

**B** **Bokhara** is a separate state, governed by an Amir, under Russian protection. Cotton is its most valuable product.

**A** **Siberia**, west of the Yenesei, is a vast level plain, well suited for wheat-growing in the south-west. The Trans-Siberian railway has now brought much of its naturally fertile land into actual occupation by Russian immigrants. East of the Yenesei, the country becomes much more broken. In the extreme east the volcanoes of Kamchatka are nearly as high as Mont Blanc.

**B** The mineral resources of Siberia are considerable, but owing to its remoteness, only the precious metals can be successfully worked. Fairly large amounts of gold and silver are found in the region to the east of Lake Baikal and along the upper courses of the Ob and Yenesei in the Sayan mountains.

### Tropical South-East Asia.

**A** **Siam and French Indo-China** may be regarded as monsoon countries, with the rainy season in summer. They are largely covered with forests and produce a certain quantity of teak for export. Most of the low ground is devoted to rice culture, upon which is based the trade of Siam and Cambodia. The large population of Tongking consumes all the rice that it produces.

**B** The French possessions have been enlarged at the expense of Siam. The Mekong valley, however, is by no means as important as it appears at first sight. Its mouth is difficult for navigation, and most of its course is too rapid for use by cargo-carrying vessels. The Menam is of far greater value, and in its valley is concentrated a dense Siamese population, who cultivate rice and tobacco as leading crops.

**C** The teak forests of these countries are of great potential value, but can be worked at a profit only when near rivers, by which the timber can be floated down to a port.

**A** **The Malay Archipelago**, with the exception of the Philippines, is chiefly within five degrees of the equator, where there is no distinct rainy season, but fairly heavy rainfall throughout the year. All these islands are covered by a dense forest growth, are largely volcanic, and produce, besides timber and rubber from



their forests, valuable supplies of coffee, sugar, tobacco and tea.

Java is by far the most important commercially. Her large population is well governed by the Dutch, in whose hands is the great bulk of her large export trade.

The northern island of the Philippines is much the most valuable, and produces the celebrated tobacco and hemp which take their name from Manilla.

(The Straits Settlements and British Borneo are treated specially in Part VI.)

**B** Sumatra, in spite of its size, is not of great commercial value, largely owing to its unhealthy climate. Its population is only one-seventh that of Java. Its trade and industries are similar to those in that island, but only in tobacco-growing does Sumatra rival Java.

Tin is a very abundant mineral in these regions, and the rich veins of the Malay Peninsula re-appear in the islands between Sumatra and Borneo, and are worked with commercial success.

**C** The Physical Map shows that most of these islands rest upon a submarine plateau and seem to belong closely to the mainland of Asia. The animals and plants found in Sumatra, Borneo, Java, and in a lesser degree the Philippines, are, as a rule, similar to those of the neighbouring continent. Between Celebes and Borneo, however, a deep strait intervenes, and south-east of this line—called Wallace's line, after the great naturalist of that name—the plants and animals have a distinct resemblance to those of Australia. The elephants, woodpeckers and pheasants of the islands to the north-east, are not found in Celebes, where the eucalyptus tree, birds of paradise, and pouched animals, are exactly the same as are to be found in Australia and New Guinea.

Here then is the true dividing line between Asia and Australasia.

#### REVISION QUESTIONS.

**A** 1. Compare China proper with the United States east of long. 100° as to extent, position in the world, climate, waterways and natural products. Do similar natural conditions prevail in the two regions?

2. Into what political divisions is North America divided? What is the chief town of each?

3. Account for the difference in climate and rainfall between the west of British Columbia and Labrador.

4. How does the most southerly point of Canada compare in latitude with London, Lisbon, and Athens?

5. Compare the Amur and the St. Lawrence as to position, size, and navigability.

6. For what reasons do you suppose have North America and Asia been treated together in this book?

7. Give the chief political divisions of the mainland of Asia, with the capital of each, where possible.

8. What parts of Asia and North America are most densely peopled? Account for the facts.

9. Write down the chief Asiatic islands belonging to Japan, England, U.S.A. and Holland.

10. Compare Asia and North America with the other continents as to area.

11. Write a list of the rivers of Asia, starting from the north-west corner, going round the coast in order.

12. Do the same for North America.

13. Compare the mountains of Asia and North America as to their extent and height, with the great mountain systems of Africa, Australasia and Europe.

14. Mention the five chief ports of each continent, and say what kind of trade they carry on.

15. Use the Trade Chart at the end of Part II, and say what are the leading exports of Asiatic produce to Great Britain.

16. Where are the chief coal-fields of these two continents, and how far are they developed?

17. If you went by sea from London via the Suez Canal to Yokohama, and then journeyed back to Liverpool via Canada, say what towns would probably be passed.

18. What countries in these two continents are partially within the tropics, and what partially inside the Arctic Circle?

**B** 1. Mention the driest and wettest parts of these continents, and give natural reasons for the facts.

2. Account, as fully as you can, for the importance of Karachi, Pittsburg, New York, Montreal, St. Louis, Shanghai, Yokohama and Rangoon.

3. Mention the chief naval stations in Asia and North America belonging to Britain. Explain the strategical importance of each.

4. Compare the parts of Asia and North America north of lat. 50° as to surface, climate, natural products and state of development.

5. What parts of these two continents produce the largest supplies of tea, rice, wheat, opium, jute, tobacco? Show how similar conditions in both continents lead to similar natural products.

6. Follow the coast of Asia from Suez to Vladivostok, and say in order what places and countries belong to European Powers.

7. Compare Sakhalin and Ireland as to latitude, and explain why their climates and products are so different.

8. What river valleys would a traveller cross in order on a railway journey from Moscow to Vladivostok?

9. Give some account of the waterways of China.

10. How far is it true to say that Asia was the starting point for the chief civilisations and religions of the world?

11. Describe the influence of elevation upon the climate and products of Mexico.

12. From what regions in these continents are large supplies of gold, copper, and tin derived?

13. Contrast the appearance of New York and Peking. How far are these differences due to geographical considerations?

14. Where are the great manufacturing regions of North America? What natural causes have led to their development?

15. Give some account of the climate and products of Java and Cuba. How far are the similarities to be accounted for by natural causes?

16. Look at the map of the North Polar regions near the end of Part I, and say what countries are cut by lat. 70° N.

17. From the same map calculate the distance between Quebec and Lake Baikal via the North Pole; similarly between the Sea of Aral and Great Slave Lake.

18. Give an account of the physical characteristics of Palestine. How have these influenced the climate and vegetation in various parts?

**C** 1. If you travelled by the shortest possible route (i.e. a great circle) from London to San Francisco, and from London to Peking, describe what regions would be passed through on each journey.

2. Compare Japan and the British Isles as to their size, population, climate and geographical position. How far have geographical considerations led to similarities in their political development?

3. How could means of communication between India and Europe be improved? What physical or political difficulties are there for connecting railways to contend with?

4. Explain fully the causes of the monsoons of India and China, and their results upon rainfall and vegetation.

5. Mention the chief trading centres of Asia and North America, and show how geographical considerations have determined their growth.

6. What influence have ocean currents upon the climates of these continents?

7. What evidences are there in these continents of an Ice Age? What results upon the modern development of North America has the previous great ice-sheet produced?

8. What differences in seasonal climates are there between the eastern and western slopes of Japan? Explain the reasons.

9. Give some account of Persia, and of its commercial and political importance.

10. Describe the structure of Arabia, the Deccan, the Yosemite valley, the cañon of the Colorado River, Java, the plains of the lower Hwangho.

## CONTENTS OF PART V.

## (Fifth Term).

	PAGE		PAGE
Position on Globe, and Size . . . . .	99	Industries, Communications and Trade, Political	
Surface and Structure, with Physical Maps and Test	99-101	Map and Test . . . . .	108, 109
Temperatures, Isobars, Winds and Rainfall, with		Africa—	
Maps . . . . .	102, 103	Dates and History . . . . .	110
Vegetation and Population, Races of People, with		Industries, Communications and Trade, Political	
Maps . . . . .	104-106	Map and Test . . . . .	111-113
Central and South America—		Egypt . . . . .	113, 114
Dates and History . . . . .	107	Revision Questions . . . . .	115

(NOTE.—It is recommended to revise Plates 8 and 9 with the questions on page 29, at the beginning of each term.)

## Position on the Globe and Comparative Size.

**A** look at Plate 47 will at once show that South America and Africa are the two tropical continents. The equator runs through almost the centre of Africa, and cuts South America near the mouth of the Amazon. Both continents have by far the greater proportion of their area within the tropics. Africa, however, has a considerable area north of Cancer, while South America has none. To partially counterbalance this disadvantage, the southern portions of the Argentine Republic and Chile reach much nearer the Antarctic circle than does the Cape.

Great oceans or wide seas encircle almost the whole of both continents, the north-east of Africa being the only real exception, as the Red Sea is too narrow to have much climatic influence. The coast lines of both are, generally speaking, without indentations, and as a rule good harbours are scarce, in contrast to the eastern coast of North America or the much-indented Europe.

Many map projections fail to do justice to the huge bulk of Africa, but on Plate 8 the relative areas of land masses can be easily compared.

### QUESTIONS AND EXERCISES.

1. Estimate by number of degrees the extreme lengths of South America and Africa (1 degree = 70 miles).
2. Compare the width of Africa along lat. 10° N. (1 degree = 68 miles) with that of South America along lat. 5° S. (1 degree = 69 miles).

3. Compare the areas of the two continents in millions of square miles. How many of the units of area (100,000 sq. miles) are there in each? (See Plate 1, and Fig. 58.)

4. How many times greater than the area of the British Isles is the area of Africa?

5. Write down names of three great towns about lat. 35° S., each in a different continent.

6. Mention three great river basins, and three big islands, cut by the equator.

7. Compare the position with regard to the equator of New Orleans and Cairo, Khartoum and Jamaica, London and Cape Horn, the Zambesi and the Parana, Panama and Aden, Cape Town and Gibraltar.

## Surface Characteristics and Structure.

In the general arrangement of mountain and plain South America will be found to resemble North America but to offer many contrasts to Africa. Both the Americas have a great system of fold-mountains extending from north to south, roughly parallel to their western coasts; both have wide river plains in their centres; both have mountain blocks or ranges to the east. The Laurentian highlands correspond to the tablelands of Guiana and Southern Venezuela, the Appalachians to the mountains of Brazil. Africa, on the other hand, has no real mountain range except the Atlas, which is closely related with the Eurasian systems. Nearly the whole of the continent, south-east of a diagonal line from north-east to south-west cutting the continent into two halves, consists of a great tableland, descending in terraces to the sea. In



many places it is rifted and broken into rugged country, as in Abyssinia and Northern Natal; its monotony is sometimes relieved by such volcanic peaks as are found in the region of the Great Lakes, but, generally speaking, the narrow coast strip is bordered inland by the escarpments of the rocks that form the great central tableland, whose surface extends without great irregularities toward the interior.

North-west of the diagonal dividing line the Great Sahara takes up most of the area. It will be noticed that quite a high ridge of mountains extends from north-west to south-east across its centre. Only in parts is it a level desert. Hardly anywhere does its surface sink near sea-level. It resembles in many respects the interior of Western Australia.

**B** The two masses of high ground in Brazil and Guiana are each composed of a core of very ancient rocks, which are overlaid by newer sandstones, and in the south by coal-bearing strata. There has been very little disturbance since very early times, and therefore the more recent rocks lie generally in their original horizontal layers. Denudation has often been great, and rivers have cut out deep valleys, but the remaining high ground is generally of a characteristic flat-topped nature, similar to the table mountains so common in South Africa.

In several of these rock formations precious stones and minerals occur, and have become famous in both regions ever since the search for the mythical El Dorado of the sixteenth century.

The Central Lowlands are naturally divided into two regions:—

- (1) South of the Rio de la Plata, between the Andes and the Atlantic, are the two low plateaus of the Pampas region and Patagonia, of comparatively recent origin, covered over by glacial drift and blown sand, undisturbed by earth-folds, but in places pierced by basaltic flows.
- (2) The rest of the low-lying area consists of great river basins, much of which is covered by alluvial soil brought down from the surrounding mountains. Their soils are therefore naturally productive. The main streams have a remarkably slight slope, and inland navigation is therefore generally easy. The junction of the Marañon and Ucayali, for instance, although nearly 2,000 miles up the Amazon, is less than 400 feet above sea-level.

Between the Parana-Paraguay and the Andes there lies a more elevated region, the "Gran Chaco," which recalls the "Great Plains" of North America; and between this basin and that of the Amazon the "Mato Grosso" may be considered as a western and lower extension of the Brazilian tableland. The Andes, as far north as their narrow neck (about lat. 4° S.), consist generally of a double range, the older and more abrupt facing the Pacific, the newer and less steep looking east over the Central Lowlands. Between these two well-defined systems of folds are to be found many extensive plateaus, the most noticeable being in Bolivia, with an inland drainage of its own.

Toward the south, where glaciation has naturally been more active, the western range has been broken up into the fiords and islands of Southern Chile.

North of the dividing neck the chain becomes more complex, and finally spreads out into four branches, the western one extending to the Isthmus of Panama, the eastern forming the boundary of the Orinoco basin and curving out to sea as a partially submerged ridge, which can be traced in the Lesser Antilles, Porto Rico, Haiti, and Cuba.

The interior portions of the Andes are generally of very ancient rock, as is usual in such great folded systems. This is flanked by various uptilted and folded sedimentary rocks of various ages, and hence minerals of almost all kinds occur at different parts of the range, the silver of Peru, the gold and coal of Chile, being of value commercially.

Africa, as far as is known, is of comparatively simple geological formation. With the exception of the Atlas, which is a folded mountain chain of a similar age to the cretaceous rocks of Europe, the whole of the continent consists of an ancient mass of rock overlaid by beds of intermediate age—sandstones being the most characteristic—which have not suffered much disturbance. True mountain ranges are therefore almost entirely absent. The south-eastern half is largely an elevated tableland with flat-topped summits, except where there are volcanic intrusions. This usually extends almost to the coast, leaving narrow plains only between it and the sea. Its edges are usually higher than the interior, and therefore there is no decided watershed for rivers. Those which rise on the interior slope either have to break their way out, as the Congo, through unnavigable gorges, or do not get to the sea at all. Their value as a means of communication is thereby much lowered.

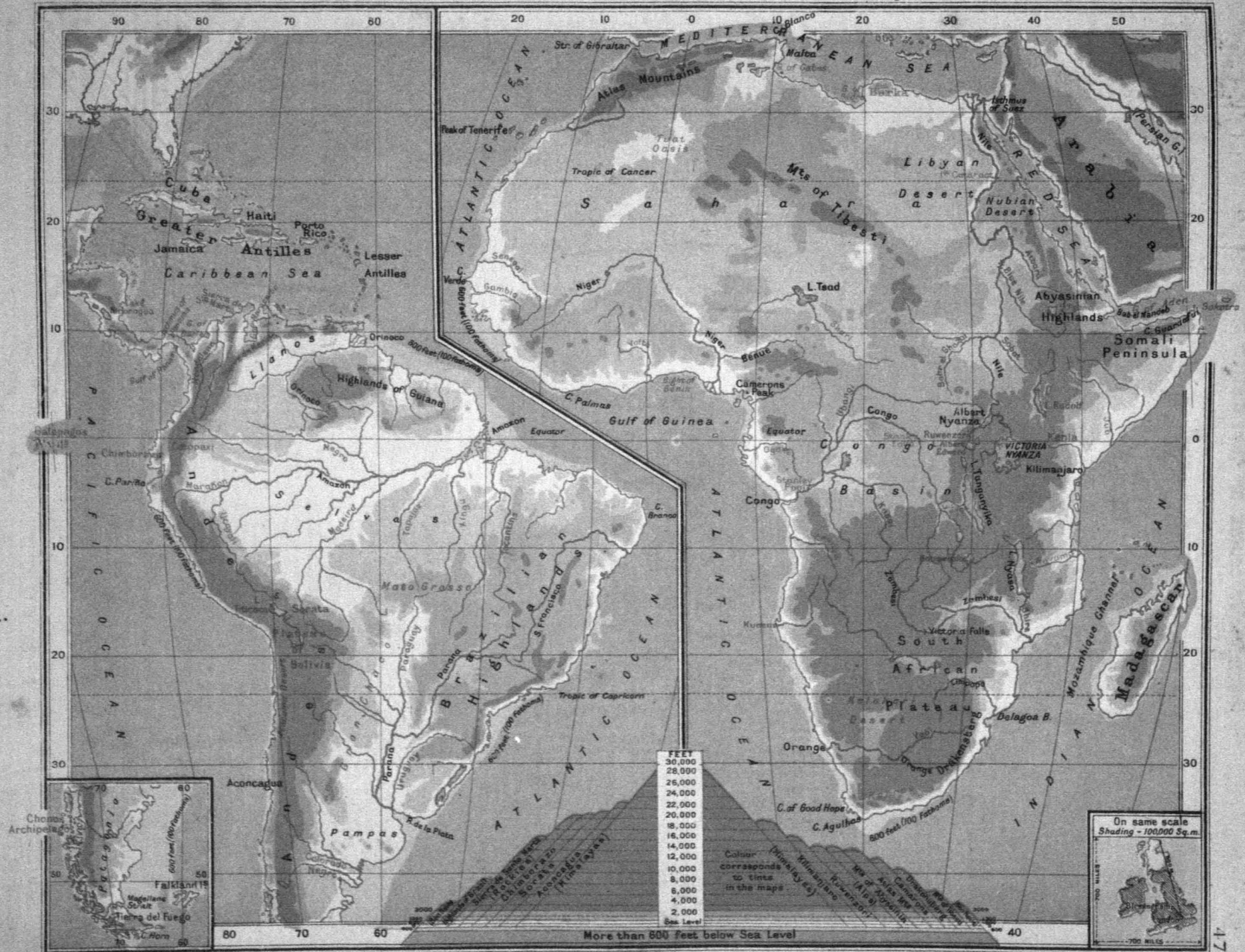
**C** Both continents are remarkably poor in islands. In Africa there are scarcely any of importance which stand upon the continental shelf. Madagascar is obviously quite separate, and has plants and animals of its own.

Toward the south of South America there are considerable remains of the continent now appearing in the form of islands. Even the Falklands are joined to the rather wide submerged plateau which extends to the east of Patagonia.

Volcanoes are, not unnaturally, common near the western border of South America, especially along the interior edges of the Bolivian Andes and in Ecuador. Much of the area of the central American States is also occupied by volcanic heights. These re-appear at intervals along the island chains of the West Indies.

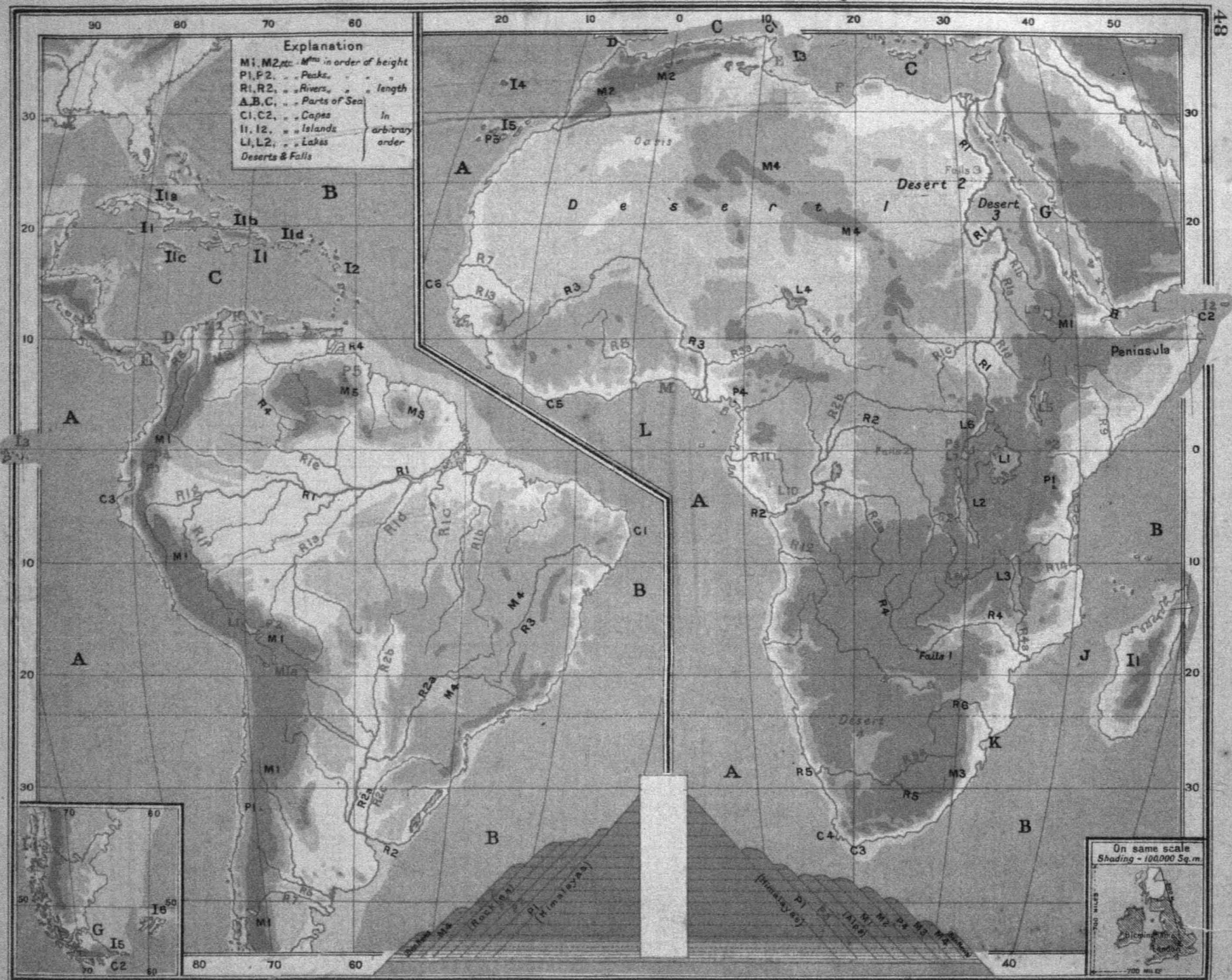
In Africa volcanic energy has not had great effects. Near the west coast, the Canary and Cape Verde Islands, and the peak of the Camerons, are well known but isolated examples. Elsewhere the only noticeable instances are to be found along the remarkable rift valleys which extend southward from the Red Sea. The eastern rift is marked by Lake Rudolf and continues southward, its line being shown by the extinct craters of Kenia and Kilimanjaro. The western rift valley is occupied by Lakes Albert, Edward and Tanganyika, and at its eastern border stands out the great

# CENTRAL & S. AMERICA & AFRICA.—Physical.





**CENTRAL & S. AMERICA & AFRICA.—Physical.—Test.**



mountain mass of Ruwenzori, probably largely of volcanic origin. There are few examples of similar recent eruptive rocks so far away from the oceans. (See Plate 1.)

#### QUESTIONS AND EXERCISES.

1. What is the exact meaning of the various tints on land and sea?
  2. Very little of Africa is under 600 feet; a great deal of South America. Is this true? If so, explain exactly where these low-lying regions are.
  3. Write a list, with symbols, of the rivers, mountains, peaks, islands, parts of sea, lakes, and capes, which are marked in brown on the map of South America, and be ready to repeat from Test Map. On what principle are the symbols arranged?
  4. Do the same for Africa.
  5. What isthmus joins Africa to Asia? Where are the Pampas, Selvas, and Llanos? Name two deserts in Africa and a peninsula (marked in brown).
  6. In a voyage right round Africa, starting from Gibraltar eastwards, what river mouths, capes and parts of sea would a vessel pass in order? (Only mention brown names.)
  7. Repeat the above for South America, starting east from Isthmus of Panama.
  8. What great river systems or lakes are crossed by the equator in each continent?
  9. How do the following lie as regards the tropics:—Madagascar, the river Nile, the Niger, the Parana, Cape Agulhas, Aconcagua?
  10. Write down to the nearest thousand feet, the heights of Aconcagua, Kilimanjaro, Highlands of Brazil and Abyssinia, and Ben Nevis. (From the diagram below maps.)
  11. Name the great lakes of Africa. Say into what great river each is eventually drained, and into what seas.
  12. Make a tracing of the outlines of these two continents from Plate 47. Fill in all parts of river courses which flow at a lower level than 600 feet. Which continent has the best system of inland navigation?
  13. Make a tracing, in black ink, of the outline of Africa, from Plate 47, with the point where the equator is cut by longitude 20° E., near the centre of your sheet. Call this point X. On the same sheet trace, in red ink, the outline of South America from Plate 47, so that the point of intersection of latitude 20° S. with longitude 60° W. falls on the point X. Then on the same sheet trace, in blue ink, the outline of Asia from Plate 39, so that the point of intersection of latitude 40° with longitude 90° falls on the point X. These maps are all on the same scale, though not on similar projections. The comparative areas will be fairly accurate.
  14. Compare these two continents, as to the shape of their coast lines, with Europe and North America. What results on climate and trade follow from such features?
  15. Judging from Plate 1, which continent has the largest area (1) over 600 feet, (2) over 12,000 feet, (3) under 600 feet? Has South America got more land over 12,000 feet than Africa?
- B**
1. Write a list, with symbols, of the rivers, mountains, peaks, islands, parts of sea, lakes and capes, which are marked in brown or blue, in the map of South America, and be ready to repeat from Test Map.
  2. Do the same for Africa.
  3. What latitude passes near the centre of the Kalahari Desert. Atacama Desert, Plateau of Bolivia, Galapagos Islands, Gran Chaco, and Mato Grosso?
  4. Name a lake in South America and Africa from which there is no outlet, the two longest rivers in each continent, the highest peak in each, and the waterfall on the Congo.
  5. Compare the rivers of South America and Africa as regards navigability.
  6. Describe the geological structure of Africa. Why is there no coal in the Atlas region?
  7. Into what natural divisions can South America be divided? Describe the structure of the various mountain groups.
  8. Compare the Andes to the Rocky Mountain system, as to length, structure, and contained plateaus.
  9. Compare the surface features of the two Americas, and Africa.
  10. South America and Africa have few indentations. Com-

pare them, in this respect, with the other continents. How does this characteristic act upon their climate and trade?

11. Make a tracing, in black ink, of the outline of South America from Plate 52, and mark in all the parts of the river courses which are below the 600 feet contour. On the same sheet do the same for North America from Plate 41, all in red ink. Then superimpose a tracing of Africa from Plate 54, in blue ink, with the rivers treated in the same way. Compare the facilities for inland navigation of these continents. Why are the lakes of North America much more useful commercially than those of Africa? Which of the great rivers in these continents have deltas at their mouths?

- C**
1. Write a list, with symbols, of all rivers, mountains, peaks, islands, parts of sea, lakes and capes, marked in South America. Be ready to repeat from Test Map.
  2. Do the same for Africa.
  3. What is the difference in time between Valparaiso, Cape Town, C. Gardafui, and London?
  4. Name an African peninsula in the Mediterranean, an oasis in the Sahara, an archipelago off Chile, any falls in African rivers.
  5. Does the Congo look navigable from Stanley Pool to Stanley Falls? Does the Nile look navigable south of the junction of the Blue Nile?
  6. Which rivers of Africa have deltas? Is the Congo one? How is navigation from the sea affected by the nature of their mouths?
  7. Repeat from the Test Map all the mountains named in the diagrams below the map.
  8. Compare the Sahara with the other great deserts of the world as to size and surface. Are similar causes at work in all the cases mentioned?
  9. Trace the outlines of each of these continents, dividing off the various river basins by dotted lines. Shade in pencil the areas with inland drainage.
  10. How many degrees, roughly, nearer the South Pole is Cape Horn than Cape Agulhas? How many degrees nearer the North Pole is Cape Blanco in Africa, than the extreme north of South America?
  11. Do you consider that eventually Africa or South America will be of the greater use to mankind? Give reasons throughout.
  12. If the whole of Africa were moved 30 degrees further north, what differences would you expect in its climate, supposing that its relative position in regard to oceans and other continents remained the same?

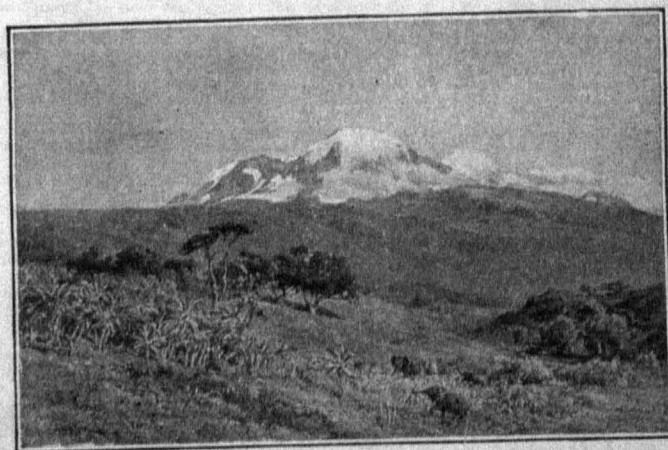


FIG. 149.—MOUNT KILIMANJARO.

View taken from S.W. of the summit, at the upper limit of tree-growth, between 9,000 and 10,000 feet. The dark trees in the centre are of the heath tribe. Notice the elephants, and the amount of snow visible. Glaciers are here found almost on the equator. How high is the summit? Give its latitude. In what country was the sketch made? The whole mass is the result of volcanic energy. Compare the height of this mountain with that of Mont Blanc and Ben Nevis. Allowing 1° for every 300 feet, give the approximate average temperature on the summit.



## Comparative Temperatures.

**A** The next three pages of maps show how the climates of these two continents compare with each other, and the effect of rainfall and other conditions upon natural vegetation.

Throughout, the relation of the continents to the equator must not be forgotten. For instance, south of the equator January is the hottest month and corresponds to midsummer.

Isotherms and isobars are given, corrected to sea-level, or as they would be if the surface were perfectly flat. A rise of 300 feet makes about a degree of difference in heat; of 1,000 feet rather more than an inch in pressure. These differences in temperature are of great importance in considering the possibilities of European colonisation in tropical lands, but maps constructed on the principle here adopted are of greater value in determining the causes of prevailing winds and rainfall.

If a comparison is made between Africa and South America as to temperature, it will be at once seen that the former has far larger areas of great heat than the latter, and this for three reasons:—

- (1) Its greater size and width diminish the moderating influence of the oceans.
- (2) Its comparatively close connexion with Eurasia prevents any sea-influence from penetrating from the north-east.
- (3) Much more of its surface is within the tropics.

No area in Africa has an average for the winter month of less than 45°, whereas a considerable part of South America reaches far enough south to experience this.

The peculiar curves of the isotherms along the south-eastern coasts of these continents are caused by the influence of cold ocean-currents, which flow from the southern ocean. Their direction is described and accounted for in Part I. (See map on Plate 4.)

The variation in temperature at any given place in these continents between the January and July averages is never great, owing to the proximity of the equator or the sea. The greatest range is naturally to be found along that part of Africa outside the tropics which faces Eurasia. Why is this?

### QUESTIONS AND EXERCISES.

- A** 1. During what month is the average temperature greatest in South Africa, Tierra del Fuego, the Nile delta, and Jamaica?
2. At what intervals of heat are the isotherms shown? What colours indicate comparative heat and coolness?
3. Account for the great heat over North Africa in July.
4. What is the cause of the northward curve of the Isotherms off the south-west coasts of Africa and South America?
5. Compare the temperature of the Cape of Good Hope and London in July and January.
6. What isotherms in these maps are crossed by lat. 30° S. and by the equator, in January and July? Write them in order from W to E.
7. What is the difference between the average temperatures of Cape Horn and Cuba in January and July, and between the extreme north and south points of Africa?
8. What is the difference between average July and January temperature at the mouth of the Nile, the Straits of Gibraltar,

the mouth of the Congo, the Cape of Good Hope, the mouth of the La Plata, the point on the east coast of South America where the tropic passes?

9. Why is it that the isotherms over the land areas of both continents south of the equator dip towards the south in January?

**B** 1. From the Isothermal maps of Europe (Plate 25) compare the July and January temperatures of Moscow, Cape Town, Brest, and Monte Video. Account for similarities or differences.

2. Why are the east coasts of both continents warmer than the west coasts, if compared at points on the same latitudes?

3. In a voyage from the south of Italy, via the Suez Canal to Cape Town, what isotherms would be passed by a steamer in January and July? Can you account for the great heat in the Red Sea in July?

4. During what month would the voyage from India be most comfortable?

5. Compare the temperatures experienced in Madagascar and Ireland in January and July.

**C** 1. The centre of equatorial Africa is hotter in January than in July. Can you account for this fact?

2. Why are there so few isotherms marked in the maps of South America north of the equator?

3. Would the area inside the 85° line in South America in January be actually hotter than the eastern margin of the similar area in South Africa if due allowance is made for elevation?

4. Why does the Red Sea have more influence upon the isotherms in July than in January?

## Other Elements of Climate.

**A** The mere seasonal distribution of heat would be but a poor clue to the climate of any place, but it has such a great influence upon the other elements of climate, as indicated on Plate 37, that it is necessary to realise it first. On Plate 37 will be found the seasonal variations of the barometer, which control the prevailing winds, and so the rainfall. A reference to the general causes of high and low-pressure, as shown on page 15, will bring out the fact that the equatorial regions lie in a comparatively low-pressure belt, between the high-pressure areas on either side near the tropics. All these belts together move north and south according to the seasons. Between the high-pressure belts and the equator is the region of the trade winds. How far these pressure areas, and therefore the prevailing winds, are modified by the arrangement of land and sea and the distribution of temperature can well be seen by a comparison of these three pages of maps (Plates 34, 36, and 37).

Within the latitudes here dealt with, it can be noticed that during the winter month (that is, January if north of the equator, July if south) the comparative temperatures over land and sea have a tendency to follow the parallels of latitude, and therefore the interruptions of the high-pressure belts are less noticeable.

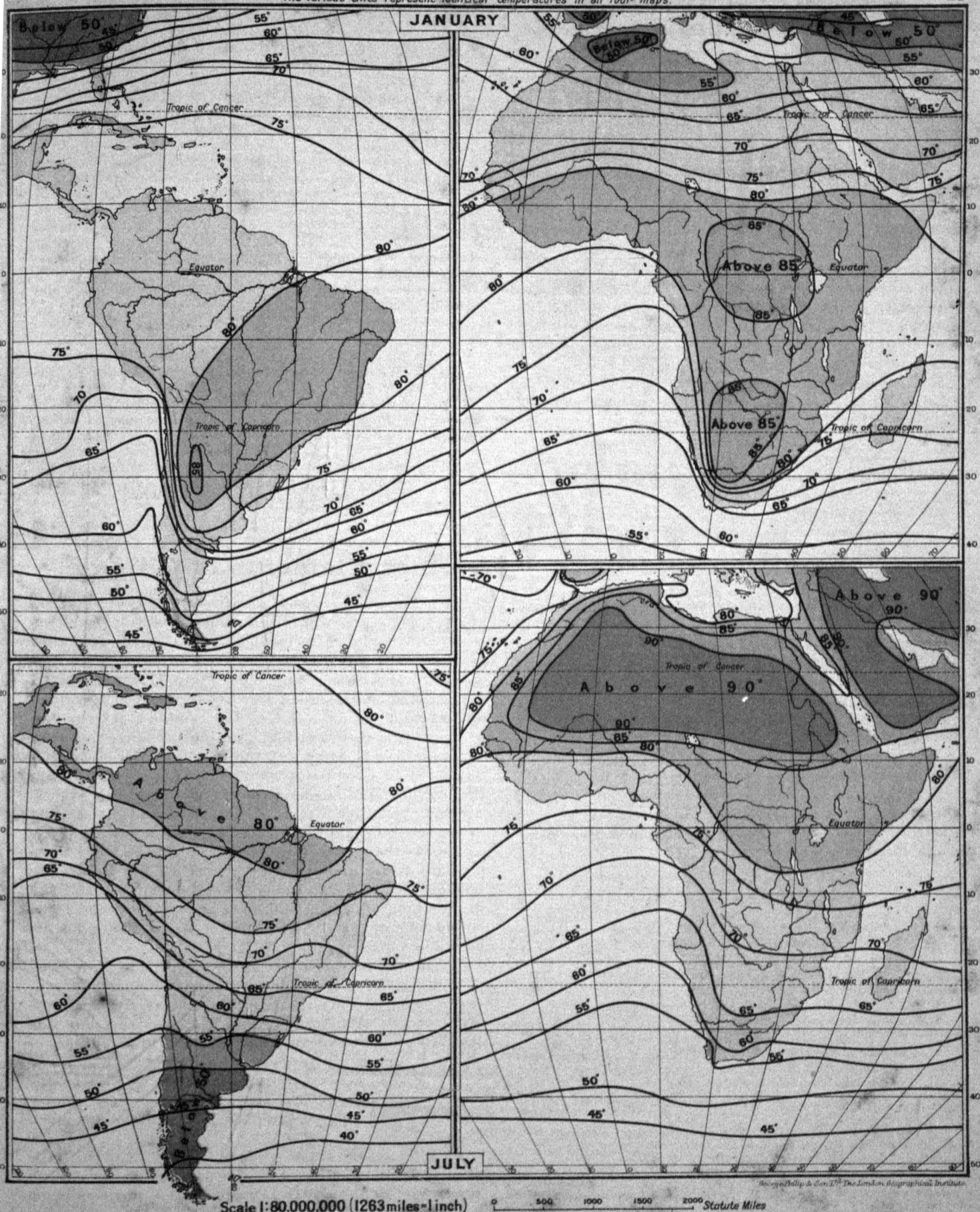
On the other hand, during the summer months the reverse is the case, as the land gets heated more quickly than the sea, and therefore the interruptions are much greater.

As a result, the trade winds are drawn more in to the interior of the continents during the summer season on either side of the equator, owing to the pressure being

# CENTRAL & S. AMERICA & AFRICA.—Isotherms.

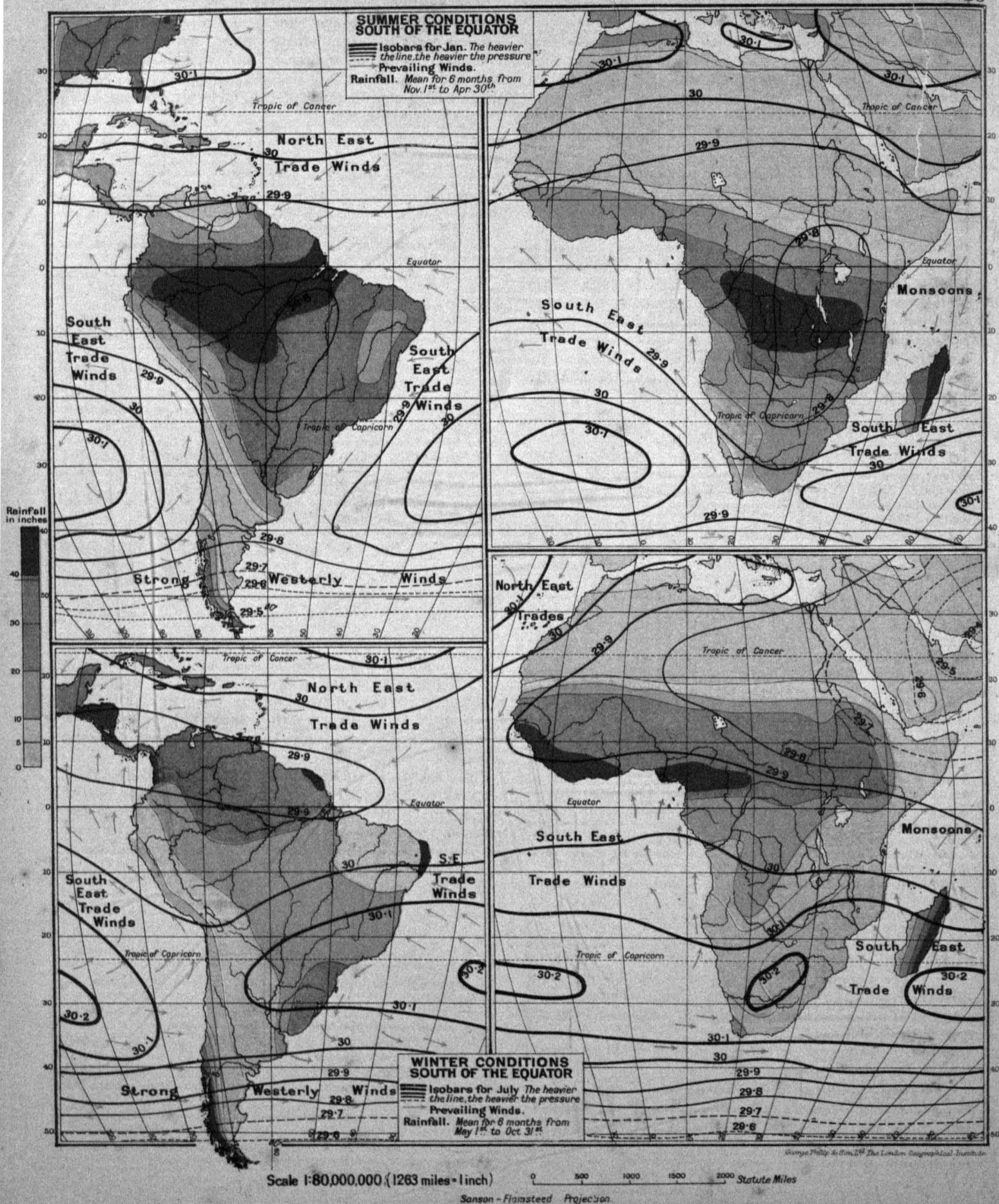
The various tints represent identical temperatures in all four maps.

49





# CENTRAL & S. AMERICA & AFRICA.—Isobars, Winds & Rainfall. 50



comparatively less inland, and therefore the rainfall at those periods is greater.

The great difference in climate between the east and west sides of continents is beautifully illustrated in these maps, especially in the southern half of South America, where the chain of the Andes accentuates the differences. Here, owing to ocean currents caused ultimately by the rotation of the earth from west to east, the western coast is colder than the eastern.

North of lat.  $35^{\circ}$  S. it receives very little rain, as the south-east trade winds have deposited their moisture before they cross the Andes, and any winds which may blow from the Pacific do not hold much water vapour, owing to the cold current along the coast. South of lat.  $35^{\circ}$  the west coast receives much rain and the east hardly any, owing to the fact that this is south of the high-pressure belt, and so in the region of the strong westerly winds. These naturally extend their influence farther north as the sun moves north in July, and therefore the rainy belt also extends along that coast. For the same reason, the extreme south-west corner of Africa gets rain in winter.

#### QUESTIONS AND EXERCISES.

1. In Plate 50, how are differences in pressure indicated? What part of an inch in pressure is there between each isobar marked? What is the highest pressure marked, and the lowest, on any of the four maps? For what periods do the isobars represent the average pressure?
2. What amount of rainfall do the various tints indicate, and for what periods?
3. What is the midsummer month at the Cape, in London, at Cape Horn, in Cuba?
4. In the lower map of Africa, why are the isobars regular in the south, irregular in the north? Account for the low pressure shown in the north-east corner.
5. At what season is the difference in pressure along the tropical high-pressure belts greatest as between land and sea? What influence does this have upon rainfall? Illustrate from South America.
6. Why does the Cape of Good Hope get rain in July and not in January, whereas on the south-east coast the opposite is the case?
7. Why is the north-east of Africa comparatively rainless?
8. Account for the fact that in lat.  $30^{\circ}$  S. the east coast of South America gets rain, while the west does not. Is there a similar set of conditions in South Africa, in similar latitudes?
9. In Africa and South America in January there is an area of comparatively low pressure south of the equator. Account for this, and explain what influence it has upon the rainfall.
10. Which rivers of Africa would you expect to carry much water, which little, comparatively?
11. Why does the Nile receive no tributaries north of the Atbara?

**B** The tendency for winds to rotate round areas of high pressure must not be forgotten. South of the equator the movement is in the opposite direction to that of the hands of a clock, a tendency well illustrated in the Southern Pacific and Southern Atlantic, especially in January. This accentuates the dryness off the south-west coast of Africa and of South America within the same latitudes.

The great similarity in the distribution of rainfall over the southern halves of these continents, where the surroundings are similar, is noteworthy. The difference caused by the nearness of Eurasia to Africa is also remarkable, but quite as would be expected.

The peculiar dry patch to the north of South America in the northern summer can be partially explained by a reference to the Temperature Map. At that time the comparatively cool and heavy air over the land repels the trade winds, in just the same way that the Somali peninsula seems to push off the moisture-bearing winds from the Arabian Sea.

#### QUESTIONS AND EXERCISES.

1. What is meant by cyclonic and anticyclonic areas? In what way do the winds rotate in these, north and south of the equator? Illustrate from these maps.
2. Account fully for the existence of the Atacama desert, and the rainless region of South-west Africa.
3. Along the equator there is generally a rainy belt at all seasons. There are one or two exceptions in this map. Can you account for them?
4. The trade winds do not as a rule bring so much rainfall as the prevailing south-westerly winds in the northern hemisphere. Why is this?
5. Trace the outlines of these four maps in the same relative positions as on Plate 50. Mark in all the isobars. Shade in with crossed lines in ink all the areas with pressure over 30.2 inches, with diagonal ink lines the areas between 30 and 30.2, with diagonal pencil lines the areas between 29.8 and 30, and leave white the areas below 29.8.
6. What is the influence of ocean currents along the south-west coast of South America on pressure and rainfall? Is there a similar set of conditions in South-west Africa?
7. Account for the lack of rain in Somaliland and the extreme north of South America, in the upper two maps.
8. Between what dates does the Nile basin receive most water? At Cairo, high Nile is in September, low Nile in April. Account for this.
9. Give the period of high water in the rivers Orange, Zambesi, Niger, and Parana.

**C** The influence of convectional rains near the equator is well seen in these maps. The area of greatest rainfall over both continents is greatest just south of the equator in the top two maps, just north of it in the lower two, as would be expected, according to the position of the sun at the different seasons.

The data for the construction of these maps are naturally not very complete. Therefore scientific exactness cannot be expected. However, a general approximation to the truth has been attained. It is interesting to notice how the feeders of all the great rivers come from the rainy regions.

#### QUESTIONS AND EXERCISES.

1. Why is the rainfall over the West Indies and Central America greater in the lower map than the upper?
2. Account for the distribution of rainfall over Madagascar at various seasons.
3. In what parts of these continents do convectional rains have most influence? At what season, and why?
4. Why is it impossible to get full data upon which to construct these maps?
5. Would you expect to find the climatic conditions in Australia as a whole the same as those of South Africa south of lat.  $10^{\circ}$  S.? If so, why?
6. Compare the climatic conditions in the basins of the Congo and Amazon.
7. Compare the direction of the tributaries of the great rivers of these continents, and account for it in each case.



## Vegetation and Population.

**A** Natural vegetation must depend upon the distribution of heat and moisture and a dense population generally is found where it is easy to grow vegetable food. In these continents such causes and effects are very manifest. The artificial influences of civilisation have not made any large exceptions to the natural distribution of human beings.

The areas which have little natural rainfall, especially in these hot continents, are usually deserts. They are interrupted by oases, which nearly always occur in depressions, where the scanty rainfall generally collects and forms springs or wells.

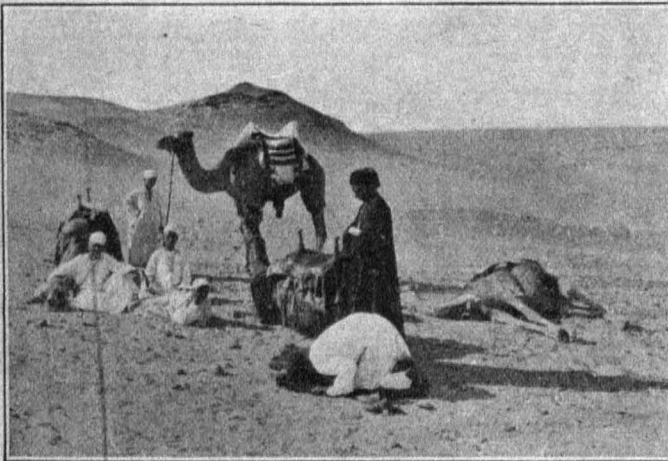


FIG. 150.—IN THE LIBYAN DESERT.

The result of heat without moisture. Blown sand covers everything, and wears away the rocks. A desert is not often level. Notice the feet of the camels. They are helpless on a muddy surface. These Mohammedans are looking towards Mecca to pray. In what direction are they looking: east or west? Is the time of day before or after noon? Contrast the methods of prayer used by Mohammedans and Christians; notice the headgear and shoes.

Along the Nile valley the extensive irrigation works make Egypt one of the richest agricultural countries in the world, and hence there is a heavy population along the river valley. Wherever water can be made to flow perennially on to the land, almost every kind of crop can be grown. There is practically no idle season. The land which bears sugar or rice in the hot season produces wheat or other grain in the cooler winter months.

The desert of South-west Africa has little population except where copper is found, as indicated in the map. The Atacama desert in South America has rich supplies of nitrate, a natural salt which remains in the ground where there is no rainfall to wash it out, and hence is partially populated.

In Africa, most of the cultivable and partially cultivable land is occupied by a fairly dense native population; even the great tropical forests of the Congo are not deserted. In South America, on the other hand, large tracts of the Amazon basin are not inhabited, owing to the peculiar conditions. The surface is very level and low-lying and the rainfall is immense, so that the country is usually flooded. Huge forest trees grow with their roots submerged for much of the year; these are again

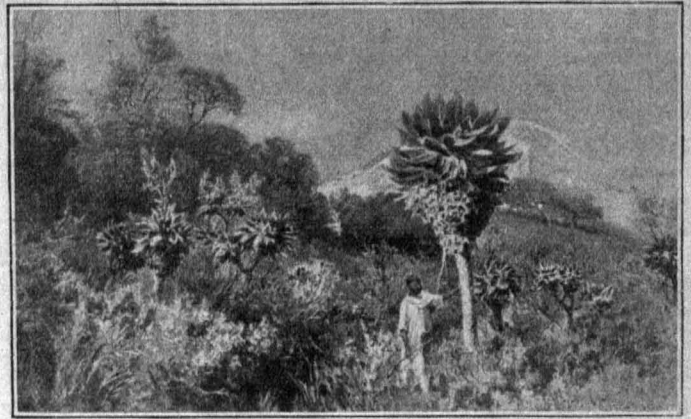


FIG. 151.—ON THE SLOPES OF KILIMANJARO.

As the higher ground is reached, the dry African steppe gives way to a great zone of dripping forest, caused by the condensation of vapour against the more elevated regions. The above sketch was made near the upper limit of trees (at about 9,000 feet). Most of the vegetation here seen is of the heath tribe, which is able to resist great extremes of temperature. The peculiar tree-like plant in the foreground is matched by a similar species found in the tropical Andes.

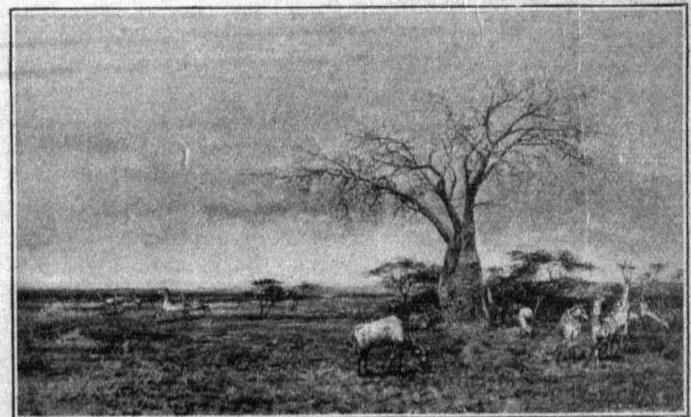


FIG. 152.—AN EAST AFRICAN STEPPE.

A common type of scenery wherever the rainfall is insufficient to support a forest growth. Heavy dews at night keep enough grass for numerous wild animals. Notice the antelope, zebras, giraffes, and ostriches in the picture. Such trees as are found are all adapted to resist great evaporation, and have few leaves, and hard bark. The large tree in the foreground is a baobab. How does it differ in appearance from a normal tree?

covered with creepers and parasitic plants, all struggling upward to the light, so that it is impossible for permanent human abodes to exist.

The other region of little population in the south is capable of producing cattle and sheep, and may one day be the home of numerous ranching settlers.

The conditions between the Altas Mountains and the sea are naturally favourable to life, and have from early times been peopled by invading nations.

The intense population of the Niger delta is partially to be explained by historical reasons, but is chiefly due to the fact that, though there is plenty of rainfall, it is just outside the equatorial belt of almost perpetual downpour, and therefore has a comparatively cool and dry season, corresponding to our winter and spring, which is favourable to human life in those latitudes.

**B** Most of the high ground in the Andean system is capable of bearing a moderate population, owing to the existence of many fertile river valleys. The elevation is favourable, as long as it is within the tropics. Of course, the highest parts of the range cannot be inhabited, but these regions are too limited to indicate in the map, except in the southern part of the Bolivian plateau.

The upper valley of the Magdalena is a good example of a well-peopled upland district within the tropics. This was originally, no doubt, caused largely by the existence of plentiful mineral wealth.

South America is, as a whole, perhaps the least developed of any continent. There is not even a large native population in the interior, as in Africa, and therefore it is only where some special attractions exist that the interior districts of South America have been even partially peopled.

### Races of People.

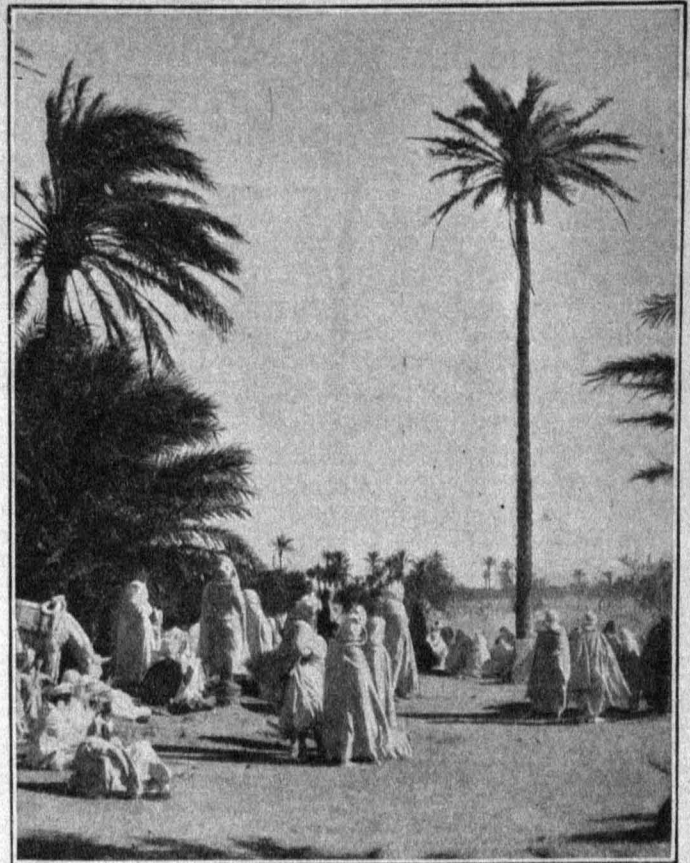
In South America there are three main divisions in the inhabitants:—

- (1) The Aborigines, a yellowish-brown race, chiefly found in the interior and forest regions. They are not numerous in their pure state. The Incas of Peru were their most famous representatives.
- (2) The European races, made up of the descendants of the Spanish and Portuguese invaders, and of the more recent settlers. British are fairly numerous in Argentina, Chile, and the West Indies; Italians, Frenchmen and Germans in the La Plata basin and elsewhere.
- (3) The African negroes, descendants of the slaves introduced by the Portuguese, and chiefly found along the east and north coasts, from the La Plata to the Isthmus.

Africa, north of lat.  $10^{\circ}$  N., is mainly peopled by races of Caucasian origin, the most famous being the ancient Egyptians, whose descendants are the chief cultivators of the Nile valley, and the various branches of the conquering Moslems from Arabia, who have spread their religion and influence right across to the west coast.

South of lat.  $10^{\circ}$  N. the arid regions cease, and from east to west extends a broad equatorial forest zone peopled by typical negroes, the Sudanese. South of the equator another and generally lighter-skinned type of negro predominates, the "Bantu," whose best known members are the Kaffirs. European nations have sent settlers to the most promising parts of the continent, but only the extreme north and south, and possibly the highlands of the eastern tropical region, are climatically suited to such inhabitants. The French in Algeria, the British and Dutch in South Africa, are by far the most important of this group, but are numerically an insignificant fraction of the total population.

**C** Of the aboriginal inhabitants of South America, those dwelling in the Andean region had reached a fairly high state of civilisation when the Spaniards conquered their country. In the north, these



Copyright]

[Mrs. A. Le Blond.

FIG. 153.—IN THE ALGERIAN SAHARA.

Taken during a dust storm, near Biskra, on the occasion of a race meeting organised by the French garrison. Notice the Moorish dress, and the kind of vegetation. This is on the edge of the desert, in the land of dates. Locate the place on the map, and give its latitude. Does a railway go to Biskra?



From Stereograph Copyright]

[Underwood & Underwood, London and New York.

FIG. 154.—TYPES OF AFRICAN RACES.

These men live in the deserts of Egypt. They are typical nomads. Notice their tent, their clothing, and long rifles. Most of the faces in the picture are like the Jewish type. Of what race are these? In the right lower corner is a man of the Sudanese negro type. Contrast his features with those of the rest. Compare the dress here shown with the clothing of the Berbers in the picture above.



interesting races had spread to Central America and Mexico, where their descendants are still numerous. In the south, the Araucanians of Chile made a strong resistance to Spain, and still form an appreciable element in the population. The natives of the great river valleys of Patagonia and Tierra del Fuego have always remained in a lower state of development, but have not by any means died out.

Throughout the continent, a great mixture of white, and black, and brown races has taken place, and the result is that the majority of the inhabitants in this region are unable to be assigned definitely to any one predominant type.

In North Africa, the Caucasian races can be divided into the Hamites and Semites. The former were much the earlier to invade the country, and besides the Egyptians, the Berbers of the north-west, the Tauregs of the Sahara, the Gallas of Abyssinia, the Somalis and Masai of East Africa, are among their representatives. Of the latter, the Arabs of the Upper Nile and the Fulas of Northern Nigeria have shown their power in recent times. Abyssinia was peopled by an invasion from Arabia long before the rise of Mohammedanism, and still retains a form of the Christianity which was introduced there in early times.

Besides the many Bantu races of the southern half of the continent, are to be found Hottentots and Bushmen in the arid regions of the south-west, the Pygmies of the Congo forest, and the Hovas of eastern Madagascar, the latter of quite distinct Malayan origin.

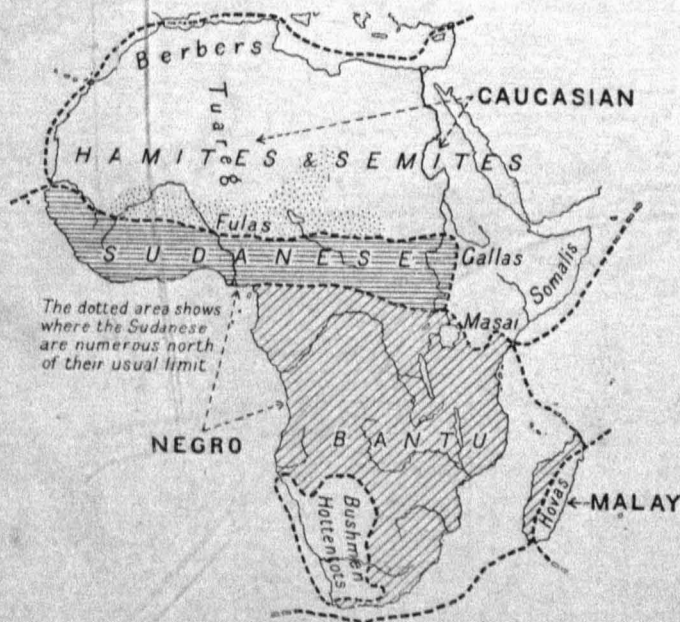


FIG. 155.—DISTRIBUTION OF AFRICAN RACES.

#### QUESTIONS AND EXERCISES.

- A** 1. What parts of Africa are desert, and why? Are these areas entirely destitute of vegetation or inhabitants? Why not?
2. In what parts of these two continents are areas marked as too high for useful vegetation?

3. Where are the most important producing regions for wheat, rubber, vegetable-oils, coffee, sugar, cocoa?

4. Pine-forests are not common in these continents. Why not? What kind of tree growth is chiefly found?

5. What regions, though rainless, are productive, and why?

6. Why is the population of Africa greater than that of South America?

7. Compare the Congo basin and the Amazon basin as to climate, rainfall, natural vegetation and population.

8. Bring up two traced outlines of each continent (on a scale of 1:80,000,000), and be ready in class to fill them in as vegetation and population maps.

9. Compare the population of South America (39,000,000) with that of U.S.A., the United Kingdom and the Indian Empire.

**B** 1. Mention the main groups into which the races of Africa can be divided. How are these distributed geographically?

2. Do the same for South America and Central America.

3. Where are Europeans chiefly found in these two continents? What are the climatic causes?

4. Compare the Argentine and British South Africa as to climate, rainfall, natural products and distribution of population. Are the same natural causes at work in both regions?

5. About lat. 34° S. there are very similar patches of population on the east and west coasts of both continents. Can this resemblance be accounted for?

6. Do similar causes bring about the Atacama desert and the desert of South-west Africa? Why is the latter the larger? What mineral products induce people to live in these regions?

7. What influence has the position of Eurasia upon the climate, rainfall and vegetation of Northern Africa? Compare the conditions in the north of South America, and give reasons for the differences.

8. Compare the thinly populated areas of South America and Africa. Are there similar causes at work? Are any parts of these regions likely to be peopled in the future, and why?

9. Compare the conditions of climate, rainfall, and natural products in lat. 30° S. on the west coasts of South America and South Africa? What natural features cause the great difference?

10. Trace the Vegetation Map of Africa, shading in pencil all the areas marked in any shade of blue. Make diagonal lines in ink over the forest regions. Place this over the Climatic and Population maps, and be ready to show the natural connexion between these maps?

**C** 1. Arabs are nomadic, negroes agricultural. Have these characteristics influenced the distribution of the two races in Africa, or have the natural conditions brought about these characteristics?

2. The deltas of the Nile and the Mississippi are in about the same latitude. Compare and contrast their climates and natural productions. Explain why they differ? Why is it that the amount of water carried by these rivers is so very dissimilar both in amount and seasonal variation?

3. To what extent, do you think, does the elevation of the surface in certain parts of tropical Africa and America make possible permanent European settlements?

4. Make a tracing of the outline of Africa from the map on Plate 51. Be ready to fill it up from memory as a map showing the distribution of races.

5. Do you expect a greater future for South America south of the tropics or for South Africa south of the tropics? Compare their relative advantages of position, climate, and surface features.

6. Give an account of the races of South America. What native races still survive, and where? What would you expect to be the dominant languages and religion of South America?

7. Get a reference atlas, and from it find where are to be found the greatest proportion of Portuguese and Spanish names in these continents. Give examples of native names in both continents, and of Arabic names in Africa.

# CENTRAL & S. AMERICA & AFRICA.—Vegetation & Population. 51

