

we have the survival of some pagan or possibly prehistoric day of angury, which has sheltered itself and preserved its vitality under the protection of an ecclesiastical saint. This view is supported by the fact adduced in *Notes and Queries* (1st ser., xii. p. 137) that in France St Médard (June 8) and St Gervase and St Protas (June 19) are accredited with an influence on the weather almost identical with that attributed to St Swthun in England. Mr Parker professes to detect a shower of rain as the symbol of St Swthun in the clog almanacs (of Queen Elizabeth's time), but Mr Earle doubts the resemblance. Of other stories connected with St Swthun the two most famous are those of the Winchester egg-woman and Queen Emma's ordeal. The former is to be found in Gotzelin's life (c. 1100), the latter in Rudborne's *Historia Major*

(15th century),—a work which is also responsible for the not improbable legend that this prelate accompanied Alfred on his visit to Rome in 856.

The so-called lives of St Swthun written by Wulfstan, Lanfrid, and perhaps others towards the end of the 10th century may be found in Bollandus's *Acta Sanctorum* (July), i. 321-327; Mabillon's *Acta SS. O. B.*, vi. 70, cc., vii. 628, cc.; and Earle's *Life and Times of St Swthun*, 59, &c. See also William of Malmesbury, *Gest. Reg.*, i. 159, and *De Gest. Pont.*, 169, 167, 179; Florence of Worcester, i. 168; Rudborne ap. Wharton's *Anglia Sacra*, i. 237; Hardy's *Cat. of MSS.*, i. 513-17; Brand's *Popular Antiquities*; Chamber's *Book of Days*; Ethelwulf's *Tithe Charters*, nearly all of which refer to St Swthun in the body of the text, may be studied in Haddan and Stubbs's *Councils*, iii. 636-45; a comparison of the charter on page 642 with Gotzelin's life (ap. Earle, 69) and William of Malmesbury (*Gest. Reg.*, 150; *De Gest. Pont.*, 100) seems to show that these charters, even if forgeries, date back at least to the 11th century, as well as the story of his being Ethelwulf's "altor et dactor."

SWITZERLAND

PART I.—GEOGRAPHY AND STATISTICS.

AS the Swiss Confederation consists of a number of small districts, differing from each other in many points, but gathered round a common centre, originally for common defence against a common foe, it is not surprising that its political boundaries do not coincide with those of nature. So we find that Ticino is south of the main chain of the Alps, a large part of the Grisons is east of the Rhine and of the ranges separating it from Tyrol, while Schaffhausen is north of the Rhine, and Porrentruy is in the French plain far down the western slope of the Jura. Putting aside these exceptional cases (all of them outside the original limits of the Confederation), the physical geography of Switzerland may be thus roughly summed up:—

General configuration.

(1) To the south there is the main chain of the Alps, which is joined at Mont Dolent (12,566 feet) by the lower ranges running east from the east end of the Lake of Geneva, and which continues to be the boundary up to the Stelvio Pass.

(2) To the north of this main chain of the Alps there is another great range, only slightly inferior in height and extent, which starts from the hills known as the Mont Jorat above Lausanne, rises in the great peaks of the Bernese Oberland and in the Todi, trends to the north near Chur, and, after rising once more to form the Säntis, dies away on the south shore of the Lake of Constance.

(3) The main chain of the Alps and this great north outlier are parallel to each other from Mont Dolent to near Chur; joined for a short space near the Pizzo Rotondo (west of the St Gotthard), they again part near the Oberalp Pass (east of the St Gotthard). Between these two great ranges flow two of the mightiest European rivers, the Rhine towards the east and the Rhone towards the west, their head waters being separated only by the tangled mountain mass between the Pizzo Rotondo and the Oberalp Pass.

(4) To the north of the great north outlier of the main chain of the Alps there are what may be called the plains of Switzerland, really the huge undulating valley of the Aar (and its affluents), to which must be added the Thur valley between the Aar basin and the Lake of Constance.

Thus, omitting the special cases named above, we may roughly describe Switzerland as consisting of two great trenches traversed by two great rivers, and enclosed by two huge mountain masses, together with the enormous valley of the Aar and the smaller one of the Thur, both these shut in by the great north outlier of the main chain of the Alps, the Rhine, and the Jura,—two deeply cut trenches, and two wide and undulating valleys.

The main chain of the Alps rises in Swiss territory to the height of 15,217 feet in Monte Rosa, and its north outlier to 14,026 feet in the Finsteraarhorn. The mean level of the Aar valley has been estimated at 1378 feet, its lowest point being the low-water mark of the Rhine at Basel (914 feet); the lowest level within the Confederation, however, is on the Lago Maggiore (646 feet).

According to the most recent calculations, the total area of the Confederation is 15,964.2 square miles, of which 71.7 per cent., or 11,443.3 square miles, are classed as "productive," 3032 square miles being covered by forests, and 132.3 square miles by vines. Of the other 28.3 per cent., or 4520.9 square miles (classed as "unproductive"),

709.9 are occupied by glaciers, 520.3 by lakes, 90 by beds of rivers and streams, and 62.4 by towns, villages, and buildings. Of the whole area the three great cantons of the Grisons, Bern, and Valais take up 7439.9 square miles, or nearly one-half, while, if to them be added Vaud, Ticino, and St Gall, the extent is raised to 10,552 square miles, or about two-thirds of the entire Confederation.

The total area of Switzerland (15,964.2 square miles) is distributed over four great river basins (draining to three different seas) in the following proportions:—Rhine, 11,166; Rhone, 2717; Po, 1358; and Inn, 721.

The Rhine basin is by far the largest in Switzerland, and drains of course to the North Sea. The Rhine itself is formed of two branches,—Vorder Rhine (valley of Dissentis) and Hinter Rhine (from the Splügen and St Bernardino),—which unite at Reichenau, near Chur. The joint stream receives several mountain torrents, expands into the Lake of Constance, and then turns west, receiving the Thur, and opposite Waldshut the great stream of the Aar, finally leaving Swiss territory at Basel, where it turns north. Its main affluent is the Aar, the basin of which covers no less than 6794 square miles. This stream rises in the glaciers of the Bernese Oberland, expands into the Lakes of Brienz and of Thun, receives from the left the Kander, the Saane, and the Zihl, and from the right the Emme, as well as (near Brugg, that great meeting-place of the waters) the Reuss flowing through the Lake of Lucerne and the united stream of the Linth and the Limmat flowing through the Lakes of Wallenstadt and Zürich. It is interesting historically to note the fact that the thirteen cantons which till 1798 formed the Confederation are all comprised in the Rhine basin, the ten oldest (i.e., all before 1500) being within that of the Aar, and that it was only after 1798 that certain Romansch, French, and Italian-speaking "allies" and subject lands—with their respective river basins—were tacked on. The Rhone rises in the glacier of the same name and flows west, receiving the mountain torrents of the Visp, the Lonza, and the Dranse, besides others, expands into the Lake of Geneva, and a little way from Geneva quits Swiss territory on its way to the Mediterranean. The main stream flowing from Switzerland to the Po basin is the Ticino (from the St Gotthard), which widens into the Lago Maggiore; another stream expands into the Lake of Lugano; and others run into the Lake of Como,—all finally joining the Po in the Lombard plains, thus draining to the Adriatic. The Ramm, flowing through the Münsterthal, joins the Adige and so drains into the Adriatic. The Inn basin is composed of the upper part of the river (above Martinsbruck) and drains into the Danube and so into the Black Sea.

Most of the great Swiss rivers, being in their origin mere mountain torrents, tend to overflow their banks, and hence much is required and has been done to prevent this by embanking them, and regaining arable land from them. So the Rhine (between Ragatz and the Lake of Constance), the Rhone, the Aar, the Reuss; and in particular we may mention the great work on the Linth (1807 to 1822) carried out by J. Konrad Escher, who earned by his success the surname of "Von der Linth," and on the Zihl near the Lakes of Neuchâtel and Bienné, while the diversion of the Kander from its junction with the Aar at Utendorf to a channel by which it flows into the Lake of Thun was effected as early as 1714.

There are very many lakes in Switzerland. The two largest Lakes (Geneva and Constance) balance each other at the south-west and north-east corners of the Confederation. The following list gives details regarding the fifteen over 4 square miles in extent. It will be noticed that of these twelve are in the Rhine basin (seven of

¹ The hydrographic bureau of Switzerland publishes annually a series of graphic tables representing the seasonal changes in the volume of all the important rivers.



them being in that of the Aar, two in the Po basin, one in the Rhone basin, and none at all in the In basin. It has been estimated that in the Rhone basin there are no fewer than nineteen large and thirty-seven small lakes. Of the smaller Swiss lakes we may mention the Dauben See, and the Oeschinen See, as well as the Märjelen See close to the Gross Aletsch glacier. There are of course an infinite number of Alpine tarns.

Name of Lake.	River Basin.	Area in Square Miles.	Mean Height of Surface above Sea Level in Feet.	Approximate Depth in Feet.
Geneva*.....	Rhone.	223	1230.3	984.3
Constance*..	Rhone.	208.1	1305.8	65.5
Neuchâtel...	Aar, Rhine.	92.3	1427.2	472.4
Maggiore*...	Ticino, Po.	82.7	646.3	1230.3
Lucerne.....	Reuss, Aar, Rhine.	43.7	1433.7	? 853
Zurich.....	Limmat, Aar, Rhine.	33.8	1341.9	469.1
Lugano*.....	Po.	19.4	889.1	902.2
Thun.....	Aar, Rhine.	18.5	1337.3	711.9
Bienne.....	Aar, Rhine.	16.2	1423.9	255.9
Zug.....	Reuss, Aar, Rhine.	14.8	1368.1	1321.4
Brienz.....	Aar, Rhine.	11.5	1351	856.4
Morat.....	Aar, Rhine.	10.5	1427.2	157.4
Wallenstädt.	{ Linth, Limmat, } Aar, Rhine.	8.9	1394.4	c. 500
Sempach.....	Aar, Rhine.	5.4	1663.4	? ...
Hallwyl.....	Aar, Rhine.	4	1483	? 1522.8

The lakes marked * are only partly in Swiss territory. There are a great number of waterfalls in Switzerland, the loftiest being that of the Staubbach (1001 feet), in the valley of Lauterbrunnen, or "Clear Springs" (Bernese Oberland). In the Oberland, too, we find the Handeck (200-220 feet), near the source of the Aar, while the Reichenbach descends in seven falls and the Giessbach in thirteen. The falls of the Rhine at Schaffhausen contain an enormous mass of water, though they are only 82 feet in height. In southern Switzerland the Pissevache fall (200 feet), in the Rhone valley, is the best known.

Dr A. Heim¹ reckons up 471 glaciers in Switzerland and 462 in Austria, his figures for France and Italy being untrustworthy and incomplete; but Switzerland has 138 glaciers of the first rank (i.e., over 4½ miles long) as against 71 in Austria, though Austria has 391 of the second rank (i.e., between 4½ and 3 miles long) as against 333 in Switzerland. The distribution of the Swiss glaciers deserves notice, for in eleven cantons (that is, half of those in the Confederation) there are no glaciers at all, while in five others (Unterwalden, Vaud, St Gall, Schwyz, and Appenzell) they only cover about 13 square miles out of 709.9 square miles of ice and snow in the Confederation, according to the official survey. Valais heads the list with 375.1 square miles, then come the Grisons (138.6), Bern (111.3), Uri (44.3), Glarus (13.9), and Ticino (13.1). The longest glacier in the Alps is the Gross Aletsch in the Bernese Oberland, 15 miles long; it has a basin of 49.8 square miles and a maximum breadth of 1968 yards. In point of length the Unteraar glacier comes next (10.4 miles), followed by the Gorner and Viesscher glaciers (each 9.4 miles). The lowest point to which a Swiss glacier is known to have descended is 3225 feet, attained by the Lower Grindelwald glacier in 1818. Dr Heim has ascertained that the maximum annual snowfall in the Alps takes place in the lower snow regions, a conclusion which the present writer can confirm from personal experience gained on the ascent of several of the highest Oberland peaks in January 1874 and 1879. Dr Heim states that in the central Alps of Switzerland the limit of perpetual snow varies from 9259 to 9023 feet. See GLACIER.

In Switzerland, where the height above sea-level varies from 646 feet (Lago Maggiore) to 15,217 feet (Monte Rosa), we naturally find very many climates, from the regions of olives, vines, oaks and beeches, pines and firs, to those of high mountain pastures, rhododendrons, and of eternal snow (see ALPS). As regards the duration of the seasons, there is a corresponding variety. It has been reckoned that, while in Italian Switzerland winter lasts only three months, at Glarus it lasts four, in the Engadine six, on the St Gotthard eight, on the Great St Bernard nine, and on the St Théodule always. A painstaking writer has calculated that, if Switzerland were flattened out into a plain, and reduced to the level of the sea, it would be comprised between the isotherms 51° 8' and 55° 4' F. As a matter of fact the mean temperature varies no less than 34½°, for at Bellinzona it is 54½° F., at Geneva 49½°, at Basel 49½°, at Chur 48½°, at Interlaken 48°, while on the Great St Bernard it sinks to 30°, and on the St Théodule to 20°. The Alps form the boundary between the region where the rainfall is greatest in summer and that where it is greatest in autumn, the winter and spring rainfall varying but slightly. These are the percentages of the annual rainfall in Switzerland at different seasons:—

¹ In his epoch-making work, *Handbuch der Gletscherkunde*. Stuttgart, 1885.

Rhone Basin: winter, 18; spring, 25; summer, 33; autumn, 24.
 Rhone Basin: " 21; " 26; " 26; " 27.
 Ticino Basin: " 12; " 26; " 27; " 35.

It has been shown by careful observations that the rain (or snow) fall is greatest as we approach the Alps, whether from the north or south, the flanks of the great ranges and the valleys opening out towards the plains receiving much more rain than the high Alpine valleys enclosed on all sides by lofty ridges. Thus the annual rainfall is 35 inches at Basel but 64½ at Bontenber (above Interlaken) and 69 at Schwyz, rising to 83 on the Grimsel and 102 on the St Bernardino, and falling again at Lugano to 63. Dr Heim calculates that the percentage of snow in the total annual rainfall in Switzerland varies from 63 on the Great St Bernard to 6 at Geneva, the mean fall of 34 being at Platta in the Grisons. Thunderstorms generally vary in frequency with the amount of rainfall, being most common near the great ranges, and often very local. The floods caused by excessive rainfall are sometimes very destructive, as in 1839, 1852, and 1868, while the same cause leads to landslips, of which the most remarkable have been those on the Rossberg above Goldau (1806), at Evionnaz (1835), and at Elm (1881).

As regards the larger cyclones or storms of Europe, a south wind in the Alps indicates that the barometrical minimum is in the English Channel, a west wind that it is in the North Sea, a north wind that it is in the Eastern Alps, and an east wind that the depression is in the Mediterranean, about Corsica. When the barometrical minimum shifts from the Atlantic over Scandinavia to Russia, a south-west wind in the Alps is followed by west and then north winds. The "fohn" is the most remarkable of the local winds in Switzerland,—a strong south-west or south wind, very hot and very dry. It was formerly supposed to come from the Sahara, but is now held to be a south-west or south wind which, saturated with moisture, crosses the Alps, precipitating a copious rainfall in its course; commencing its descent in the northern valleys with a high temperature for these great heights, it necessarily increases in temperature and dryness as it passes into the high pressure of lower levels. Dr Hann concludes from observation that, assuming the air to cool at the rate of 1° C. in every 100 metres of ascent, and the ridge crossed by the fohn to be 2000 metres in height, the heat lost on the ascent is only 0° 5 C., so that when the fohn reaches the north side it will have a heat, not of 10°, but of 20°. The fohn occurs most frequently in spring. Other local winds in the Alps are those which blow up a valley in the morning and down it in the evening, due to the heating of the air in the valleys by the sun during the day and its cooling by terrestrial radiation at night. The cloud streamers from great Alpine peaks are due to the condensing of the moisture in a layer of air, and, as the moisture is carried away by the wind, so the streamer is dissolved.

For all these reasons Switzerland has many varieties of climate; and, while, owing to the distribution of the rainfall, the Ticino and Aar valleys are very fertile, the two great trenches between the main chain and its north outlier, though warm, are less productive, as the water comes from the rivers and not from the skies.

Asphalt is the only raw mineral product the export of which exceeds the import; and it is obtained only in the canton of Neuchâtel, where the output of the Val de Travers deposit in 1883 reached 28,000 tons. Though iron ores are known (according to Weber and Brosi's map) to exist in 13 localities, gold in 3, silver in 22, copper in 29, lead in 27, nickel and cobalt in 2, tin in 1, sulphur in 3, Switzerland is practically dependent for all its metals on foreign supply. While 35,161 tons of iron were obtained in 1870 (mostly from mines in the Jura), only 19,045 were obtained in 1881. True coal is wholly absent; lignites, however, occur both in the Tertiary and the Quaternary formations, the most important workings being those of Käpfnach, Uznach, Mörschwil, Dürnten, Lutry, Conversion, and Oron. In 1870 the output was 33,364 tons. In 1881 only 6184. Anthracite occurs in Valais. Peat is common in many parts. Salt (42,000 tons) is procured from wells in Aargau, Basel, and Vaud. The first salt-deposit was discovered in 1836 at Rothenhaus (Basel canton), that of Rheinfelden in 1844, of Ryburg in 1845, and of Kaiserstuhl in 1865. The wells at Bex have been worked since 1554.

Game is not abundant in any part of Switzerland; and rigorous game laws and other devices have been adopted in order to increase the number of wild animals. In 1875 a law was passed in accordance with which a commission marked out certain reservations or "districts francs pour la chasse au gibier de montagne"; and in 1881 their limits were revised for another term of five years, including an area of 5268 square kilometres in 1885. There were then within this area 8487 chamois and about 106 roebuck. The chamois were most abundant in the Grisons, Bern, Glarus, and Freiburg. In the Alpine regions the marmot and Alpine hare are still common, and their numbers have increased under the protective system. Grouse, partridge, wild duck, and snipe are the

² See Stockalper, *Rapport sur le groupe 16 Produits Bruts Exp. Nat. S. à Zurich*, 1883, and Hermann Streng, "Rohprodukte u. deren Fundorte in der Schweiz," *Zeitsch. f. Schweiz. Statistik*, 1884.

chief game birds. A close time protects birds not considered game, and the federal council in 1885 appointed a commission to draw up a catalogue of all birds found in Switzerland, and to establish stations for collecting facts of ornithological interest.

Attention has recently been directed to the diminution of the supply of freshwater fish, due in part to over-fishing and in part to pollution of the streams. It is estimated that the fish-bearing waters in the whole country cover an aggregate area of 1581 square kilometres (1348 belonging to lakes and 233 to rivers and streams), the cantons with the greatest areas being Vaud (443 square kilometres), Bern (161), Thurgau (139), and Neuchâtel (98). Close seasons, and in certain places close years, have been established, and numerous fish-hatcheries are also in operation (57 in 1885), the species treated being mainly salmon, lake trout, river trout, grayling (ombre), red trout or Röthel, the Swiss Coregonus, American Coregonus (C. albus), Salmo fontinalis, and the "mäder." No fewer than 5,709,432 fish were introduced into the lakes and rivers in 1885. By a law of 1884 the federal council is allowed to defray

one-third of the expense of the construction of fish-ladders. In 1882 a Swiss fisheries society was founded. Conventions in regard to the fisheries have been signed with Italy, France, and Germany. Great importance attaches to the domestic animals of Switzerland. In 1876 there were 284,478 owners of live-stock, in 1886 289,610. The following are the numbers for those two years:—horses, 100,935 and 98,333; cattle, 1,035,930, 1,211,713; sheep, 367,549, 341,632; goats, 396,055, 415,916; pigs, 334,515, 394,451; mules, 3145, 2741; asses, 2113, 2042; and beehives, 177,825, 207,180. See Z. f. schv. Statistik, 1886. The following table gives a variety of details regarding the twenty-two Swiss cantons, arranged in the order of their extent. In the first column the languages principally spoken in the different cantons are indicated by letters, as described in the appended footnote, and the percentages of population speaking them in 1880 are given. In every case the official language is that of the majority, with the exception of Freiburg, where it is German. The same column also shows the various executive and legislative authorities.

Table with columns: Canton, Date of Admission, Date of Present Constitution, Area in English Square Miles, Population 1850, Population 1880, Density per Square Mile, Deputies in National Rath, Cantonal Capital, and Population of Capitals.

* Languages.—G, German; F, French; I, Italian; R, Romansch. Executive Authority.—A, Regierungsrath; B, Conseil d'état; C, Consiglio di stato; D, Staatsrath; E, Ständeskommission; H, Rath u. Ständeskommission; K, Kleiner Rath u. Ständeskommission; L, Grosser Rath; M, Grand conseil; N, Gran consiglio; O, Kantonsrath; P, Landsgemeinde; Q, Landrath. For details regarding the Städte Rath, of 44 members, and the National Rath, of 145 (made up as shown in column 8 above), see p. 795; and for information regarding the referendum in the cantons, see p. 796.

Census returns.

The first federal census of which the results were published was neither quite synchronous (April 1836 to February 1838) nor quite systematic. That of 1850 took account only of the population with right of residence (population domiciliée), and not of the population actually present at the date of the census. In 1860 the census was declared decennial. The following are the numbers returned:—March, 18–23, 1850, 2,392,740; December, 10, 1860, 2,507,170; December 1, 1870, 2,669,147; December 1, 1880, 2,846,102. As regards density of population, Switzerland, with 198.5 persons to the square mile, stands considerably above Scotland (125) and a long way below England and Wales (446). The Alpine region is the sparsest generally, though certain districts, like Appenzell Auser-Rhoden, are very densely peopled; the Jura region has a much higher ratio; and the densest region of all is the Swiss plateau. If we draw an irregular line from the east end of the Lake of Geneva by Thun, Lucerne, and the south of the Lake of Zurich to Rheineck, we shall have nearly all the more densely populated portions of the country to the north, the only notable exception being what might be called the Swiss peninsula of Lugano. A large proportion of the country to the south has only from 1 to 19 inhabitants to the square kilometre. The districts where the density rises above 250 to the square kilometre are that to the south-east and south-west of Geneva, the vicinity of Lausanne, the districts of Chaux de Fonds, Neuchâtel, Biel, Bern, Soleure, Basel, a large tract along both sides of the Lake of Zurich, and the district between St Gall and Rheineck. The districts in which an increase of population had taken place between 1870 and 1880 are curiously distributed. An increase of 30 per cent. or over occurs only in the environs of Basel and in two large areas of which the chief centres are Altdorf and Airolo. Decrease was prevalent throughout a large part of the better populated regions of the north, while a certain increase had taken place throughout much of the south-western area.

In 1880 there were 960.8 males to every 1000 females, a rather smaller preponderance of females than in England and Wales. For every 1000 above the age of 50 there are 176 unmarried females to 154 unmarried males. The disproportion of the sexes in the country at large is mainly due to emigration; but in certain cantons it is partly due to excess of women in the immigrants from neighbouring countries. In Uri, Schwyz, and Valais only is there an excess of males. In every 1000 of the population there were, in 1860, 296 under 15 years of age, 620 between 15 and 60 years, and 84 upwards of 60; the corresponding figures in 1870 being 315, 595, and 90; and for 1880, 319, 593, and 88. The proportion of married persons to the total number of the adults (47.4 per cent.) is less than in most other countries, though this proportion has been gradually raised both before and since 1880 by certain legislative changes, including the new marriage law in 1874. At the same time the average fertility of the marriages has decreased. Early marriages on the part of the males are slightly more frequent than in England. Divorce and separation are frequent. Thus in 1876–80 they formed nearly 5 per cent. of the marriages, while in Belgium and the Netherlands they do not reach 1 per cent. As regards the marriage relations of the different creeds, the five years 1877–81 showed that (excluding the canton of Geneva, where the creed is not registered) there were only 0.7 separations per 1000 existing marriages where both husband and wife were Catholics, 2.8 where both were Protestants, 3.2 where the husband was a Catholic and the wife a Protestant, and 4.5 where the husband was a Protestant and the wife a Catholic. The percentage of illegitimate births during the years 1871–77 was 5.7, 5.2, 5.1, 4.8, 4.4, 5.0, and 4.9 respectively, a rate almost identical with that of England and Wales. Infant mortality has been decreasing. While 20.32 per cent. of the quick-born children of 1876 died in their first year, only 17.3 died in 1885.

The following table shows the annual number of births, &c.:—

Table with columns: Year, Marriages, Per 1000, Births, Per 1000, Deaths, Per 1000.

At the census of 1880 there were in Switzerland 211,035 foreigners (112,311 males and 98,724 females), or one foreigner to every 13 or 14 of the population. The origin of this alien element was very various:—from Alsace-Lorraine, 2607 males, 2732 females; Germany, 43,923, 45,991; Austria-Hungary, 8389, 4929; Italy, 27,321, 13,709; Spain and Portugal, 175, 93; France, 26,264, 27,889; Holland and Belgium, 445, 493; Great Britain, 1027, 1785; Russia, 599, 685; Servia, Roumania, and Greece, 119, 35; Denmark, Norway, and Sweden, 194, 188; America, 563, 543. Between 1868 and 1877 the average number of emigrants from Switzerland was 3516 per annum; between 1878 and 1882 it was 7196. In 1883, 1884, and 1885 the figures were respectively 13,502 (12,758 of them native-born Swiss), 9608, and 7583. By far the greater proportion of the emigrants found their way to America, and mainly to the United States, though some of the South American republics (as Chili) attract a considerable number. In the five years 1876–80 3172 persons on an average left for North America annually, 99 for Central America, 594 for South America, and 107 for Australia, while Asia and Africa together did not count more than 167. The population is to a very great extent rural. Only three cities (Zurich, Geneva, and Basel) have a population exceeding 50,000, and at the census of 1880 only 59 other towns had each more than 4000 inhabitants. Of these Bern (see table above), Lausanne, Chaux de Fonds (22,456), St Gall, Lucerne, Neuchâtel, Winterthur (12,595), Schaffhausen, Biel (11,623), Freiburg, Herisau (11,082), and Locle (10,464) exceeded 10,000.

Cities.

Religion.

A religious census was taken in 1850, 1860, 1870, and 1880; in the first case only three categories were recognized—Catholic, Protestant, and Jew; in 1860 and 1870 four—Catholic, Protestant, Christians of other denominations, and non-Christian. After much discussion the federal council, which had proposed to drop the religious census in 1880, was prevailed upon by the arguments of ten cantons to adopt a similar classification in 1880. The figures in 1870 were—1,566,347 Protestants, 1,684,369 Catholics, 11,435 members of other sects, and 6396 Jews; in 1880 the Protestants numbered 1,667,109, the Catholics 1,160,782, the Jews 7273, and miscellaneous 10,838. The Jews are most strongly represented in the cantons of Bern (1215 in 1890), Basel (1053), Aargau (1234), Zurich (866), Neuchâtel (689), and Geneva (665).

Agricultural Statistics.

It has been estimated that, of the whole area of Switzerland, 1,642,471 acres are under arable cultivation and 1,917,632 acres in forest, while 2,866,113 acres are altogether unproductive. Agricultural statistics have never been systematically registered by the federal authorities, and only a few of the cantons have devoted serious attention to the matter. Herr C. Mühleman (Z. f. Schweiz. Stat., 1886) gives the following estimate of the area cropped and the annual value (in thousands of francs) of the produce:—

Table with columns: Crop, Acres, Value, other crop, Acres, Value.

The value of the fruit produce is given as 127,418,391 francs (apples, 71,316,992; pears, 38,656,150). The name "allmend" is given to land still held in common, whether arable, meadow, pasture, or forest. The main part of the "allmends" now existing consists of pasture and forest land. The pasture lands, "alps," or high mountain pastures comprise "voralpen," used in the spring, "mittelalpen," or cow-pastures, and "hochalpen" (sometimes 9000 feet above the sea), for sheep and goats. They are most numerous in Neuchâtel, Bern, and Grisons. The capital value of the whole is estimated at 200,000,000 francs or more. Of the 3032 miles of forest land 127.3 belong to the state, 2007.1 to "communes" or private associations, and 897 to private persons. The federal Government has done much to reallocate tracts, both by itself and by stimulating cantonal effort, and generally to promote the science of forestry. The silk industry of Switzerland was already established at

Zurich and Basel in the latter half of the 13th century; but after a period of prosperity it died out. It was again introduced by the Protestants expelled from Locarno in 1655. Crape, velvet, and tafetas were the favourite products of the first stage; ribbon-weaving came later with another band of Locarno refugees and the French Huguenots. In 1872 116 firms were engaged in the silk trade, in 1881 134. Between those dates the employees had increased from 39,940 to 49,816 (65,000 in 1883), and the wages from 15,382,186 to 19,815,453 francs. In 1881 2,153,100 kilos of raw silk and 1,067,700 of silk-waste were imported; and the export of silk goods, ribbons, and ferret silk was 1,152,300, 1,965,400, and 819,000 kilos respectively. Cotton begun to be manufactured in Switzerland in the 15th century, and power-loom weaving was introduced in 1830. The industry has owed a good deal to the abundant water-power of the country. In 1881 there were about 23,000 cotton looms; and cotton-spinning employed about 60,000 spindles. The workers numbered 88,046 in 1883. Bleaching and cloth-dressing have attained a great development in the neighbourhood of St Gall, both in the cantons of St Gall and Appenzell. Printworks are especially numerous in Glarus. Aargau is the chief seat of the woollen manufacture, having 4 millions of the total production valued at 11½ million francs. Linen, the first of the Swiss textile fabrics to find its way to a foreign market, is no longer manufactured on a large scale. Embroidered goods are the great speciality of the export trade of eastern Switzerland,—the cantons of St Gall, Appenzell, Thurgau, and part of Zurich. In flat-stitch machine embroidery 15,256 workers were employed in 1872, and 27,801 in 1880 (43 and 47 per 1000 inhabitants). In the different departments of hand embroidery 33,359 persons were employed in 1881. The St Gall market is also supplied by a large number of workers in Vorarlberg. The value of the embroidered goods exported from the consular district of St Gall for America alone increased from 19 to nearly 30 million francs between 1879 and 1882. Straw-plaiting is an important industry in Aargau (centre at Wohlen), Ticino, and Freiburg. In 1867–68, when the trade was at its best, the total export was worth 10½ million francs. Watch and clock making is a specially Swiss industry, giving employment to 44,000 workers in 1883. In Geneva alone 296 establishments were at work in 1882 in some department or other of the manufacture. The valley of Joux (Vaud and Saint Croix), Chaux de Fonds, Locle, Les Brenets, Les Ponts, Fluelvier (Neuchâtel), Bienne, Porrentruy, Saint Imier (Bern), Granges (Soleure), Waldenburg (Basel), and Schaffhausen are all important seats of the craft. The condensed-milk industry of Switzerland is also well known. The exports in 1875 amounted to 4,261,800 kilos, and in 1883 to 12,086,900. A similar article is Nestlé's infants' food from Vevey. Swiss cheese (Emmenthal and Gruyère) has a widespread reputation; the export increased from 5,093,100 kilos in 1851 to 25,959,400 in 1883. The production of beer in Switzerland was 6,160,000 gallons in 1867 and 20,240,000 in 1882; in the latter year 239,564 gallons were exported. The distilleries (1006) produce about 990,000 gallons of pure alcohol annually. Allusion can only be made here to the great chemical industries of the country, its potteries, paper-mills, engineering works, gun-factories, &c.

Wood-carving was one of the most ancient, as it is now one of the best known, of the minor arts of Switzerland. The great seat of the modern industry is the Bernese Oberland, where the peasants during the long evenings of winter for centuries devoted themselves to producing artistic articles in wood. It was regularly organized by Christian Fischer in Brienz (1825), and is now mainly in the hands of a company, founded in 1881, which associates capitalists and workmen in the profits. In 1870 1139 men and 56 women were employed throughout Switzerland in this department; in 1880 the numbers were 1202 and 105. Owing to the original abundance of timber it was almost the only wooden material employed in the building of houses. There are practically three styles: the so-called block-house, in which the logs are laid one upon the other; the post-built house, in which upright posts and a strong framework are filled in with planks; and the "riegelhaus," in which a framework of wood is filled in with brick or stones. In the cantons of Zurich, Thurgau, and Schaffhausen the riegelhaus (the usual form in southern Germany) has—chiefly owing to the increased cost of timber—displaced the two other styles, which alone were in use there till the beginning of the 17th century. In Gsell-Fels's Bäder u. klimatische Kurorte der Schweiz (1880), 505 health stations are mentioned. In Aargau we have the hot springs of Baden and Schinznach (sulphur), the salt baths of Rheinfelden and Mumpf, the mineral waters of Wildegg and Birmensdorf. In Appenzell there are a number of places between

1 See Rahn, Gesch. der bildenden Künste in der Schweiz; Sulvisberg, Die Holzschnitzerei des Berner Oberlands; and Davinet, Bericht über Holzschnitzerei, 1854. 2 See Gladbach, Die Holz-Architektur der Schweiz, 1885; Grafenried and Stürler, Architektura Suisse; Hochstättler, Schweizer Architektur; Varin, L'Arch. pittoresque en Suisse; and Gladbach, Der Schweizer Holzstil.