2000 and 3000 feet above the' sea famous as whey-cure stations (Heiden, Gais, Appenzell, &c.), and various chalybeate springs (Weissbad, Gonten, Heinrichsbad). Basel contains salt baths at Schweizerhalle, Bienenberg, and Schauenburg. Bern is particularly rich in baths and sanatoriums (Lenk, Weissenburg, Heustrich, Gurnigel, Engistein, Blumenstein). Schwarzseebad is the chief mineral spring in Freiburg ; Pfäffers-Ragatz in St Gall is world- famous. The Stachelberger Schwefelbad in Glarus is much fre­quented. The Grisons have almost a superfluity of mineral waters, some of which (St Moritz, Fideris) are exported in large quantities. Weissenstein in Soleure is one of the oldest sanatoriums in Switzer­land. Lavey and Bex in Vaud are respectively famous for their sulphur and salt baths. In Valais, Saxon and Leukerbad are famous. The importance of altitude in the attractiveness of a health resort is shown in a table by Guyer, ‘230 of the hotels for foreign visitors being upwards of 3900 feet above the sea. Dr F. Stöpel *(Industrie u. Handelspolitik der Schweiz,* 1876) reckoned the total receipts from foreign visitors at 120,000,000 francs.

The position taken by Switzerland in the trade and commerce of the world is remarkable when the various natural obstacles are considered—such as absence of raw material for her industries, costly and difficult means of transport, and restrictive customs established by neighbouring countries. The following table shows the value in thousands of francs of the imports and exports for 1885 (the first year for which we have official returns):—

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Imports. | Exports | Imports. | | Exports. |
| Germany | 249,262  179,195 | 157,620  139,670 | Russia | 21,318  17,842 | 9,481  77,723 |
| France | United States |
| Italy | 112,095 | 60,316  37,726 | Egypt | 12,217  9,286  10,658 | 2,288 |
| Austria-Hungary  Great Britain and | 65,603 | Holland | 5,879  56,889 |
| other countries |
|  | 51,604 26,372 | 99,396  13,076 |  |  |
| Belgium | Total | 755,452 | 659,964 |
|  |  |

England is the great market for silver watches; Germany for gold watches and musical boxes; France for weaving machinery ; Russia for mills; Italy for miscellaneous machinery; France for asphalt; France for butter; France, Italy, Germany, and the United States for cheese; Germany for silk; Germany for cattle; France for sheep and goats. Cotton manufactures find their way to France, Italy, Austria, Britain, Germany, Spain, India, &c. ; leather to the United States and the Argentine Republic. The customs increased from 3,953,192 francs in 1850 to 21,342,403 in 1884.

By article 27 of the federal constitution of 1874, primary instruc­tion, while left in the charge of the several cantons, is required to be sufficient, obligatory, gratuitous, unsectarian, and under public control of the state. The primary school age is up to twelve years, as far as this general law is concerned, but in some cantons this is raised to fourteen, fifteen, or sixteen years of age. The first school year also varies from five to seven in different cantons. Great variety indeed exists in the whole school organization of the several cantons ; while the chief authority as regards the primary schools is in some cases vested in an educational department or educational council, or both, in others it is entrusted to an educational director with or without a council. Considering the difficulties caused in many regions by a sparse population and a rugged country, primary instruction is well carried out. Funds are provided by the state, the commune, and often by the private individual. Even in remote districts the school buildings are generally good. Bern has been especially active in building new schools. In 1882 218,191 boys and 215,889 girls attended the primary schools. Of these 311,271 had German as their mother tongue, 97,113 French, 19,864 Italian, and 5832 Romansch. The total number of male teachers was 5840, and of female teachers 2525; the average pay in money per male teacher was 1303 francs, for female teachers 822 francs. The primary school property was valued at 137,534,597 francs (86,647,507 in 1871). The expense was 14,781,610 francs (8,708,174 in 1871). The communes contributed 8,349,697 francs and the state 2,825,722. The expense per scholar was 34·1. For the school children who are too poor to obtain proper food and clothing both public and private assistance is freely rendered. Besides the ordinary public primary schools, there are a considerable number of secondary schools (attended in 1882 by 11,155 boys and 8976 girls), preparatory (or intermediate) schools (9556, 2133), infant schools (10,864, 11,242), schools for adults (12,758, 1110), and private schools (6057, 4834). In 1882 there were in all 272,039 males and 244,896 females in receipt of education. Among the preparatory schools are the “ colleges ” or “ gymnasiums ” and the industrial schools, one of which exists in almost all the cantonal capitals as well as at Winterthur, Burgdorf, Porrentruy, Einsiedeln, Murten, and Brieg. In Grisons and Neuchâtel normal schools for the education of teachers are attached to the cantonal schools. Separate establishments for this purpose exist in the cantons of Zurich, Bern, Lucerne, Schwyz, Freiburg, Soleure, St Gall, Aargau, Thurgau, Tessin, Vaud, and Valais. Among the more specialized institutions of the preparatory or middle class are the *Technitium*

at Winterthur, the veterinary colleges at Zurich and Bern, the agricultural schools at Oberstrass and Rütli, and the school of dentistry at Geneva. In the four universities of Basel, Bern, Zurich, and Geneva, each with faculties of law, theology, medicine, and arts (philosophy), the average number of matriculated students per session of six months was, between 1876 (the first year of the Geneva university) and 1881, in theology 113, in law 188, in medicine 469, and in arts 288,—a total of 1058, to which must be added 334 non-matriculated. Basel has a preponderance in theology, Bern in law, Zurich in arts. The great federal polytechnicum at Zurich (opened in 1855) comprises schools of architecture, civil and industrial engineering, industrial chemistry, forestry, and agriculture.@@1

The public libraries of Switzerland are briefly described in vol. xiv. p. 528, as they existed in 1868 (*cf*. p. 548); for the learned societies, see Societies.

The total revenue of the Confederation, which was only 22,049,353 francs in 1869, had increased to 44,308,000 on an average in 1879- 1883, and reached 48,392,000 in 1885 ; the expenditure, which was 21,744,459 at the first date, had correspondingly increased to 43,312,510 in 1879-1883, and 46,278,685 in 1885.

In Switzerland there is no standing army, but every male citizen between twenty-four and forty-four years of age is bound to military service and drill. The federal forces consist of the *Auszug, Élite,* or regular army (men from twenty to thirty-two years old), and the landwehr (men thirty-two to forty-four years). The whole army was reorganized in 1874, when extensive functions were assigned to the military physician in connexion with the recruiting and calling out of the soldiers. In the ten years 1875-84 there was one new recruit for 111 of the population (foreigners excepted); 49 per cent. of the total were declared fit for service, 19 per cent. re­manded, and 32 per cent. declared unfit. In the long run, about 61·1 per cent. of the young men of the country passed the standard. In 1886 the regulars numbered 117,179 and the landwehr 84,046.@@2

Railway construction, which began in 1844, proceeded in earnest after the new legislation of 1852, and by the close of 1862 718 miles had been constructed ; by 1872 the ordinary lines reached a total of 1459 miles, with 5 miles of special lines; for 1882 the corre­sponding figures were 2667 and 81. The annual railway profits increased from 105,599,970 francs in 1870-74 to 179,151,112 in 1880-84. Tramways began to be laid down in 1862, and rope railways in 1877. The railways are mostly in the northern plateau and connect with the systems of Northern Europe. The only Swiss line which crosses to the south of the Alps is the St Gotthard (see Railways). The proposed Simplon railway has already been carried up the Rhone valley as far as Brieg. The mountainous character of the country and the special exigencies of. its traffic have successfully stimulated to some striking efforts of. railway engineering. Thus the Rigi railway rises from the Lake of Lucerne to a height of 5739 feet, with a maximum gradient of 250 per thousand ; that of the Rorschach-Heiden line is 50 per thousand.

Switzerland is famous for its well-made and well-kept carriage- roads. Some of those that traverse the mountain-passes have been constructed at great expense. One of the most remarkable is the mule-path down an almost perpendicular rock from the Gemmi Pass to Leukerbad, made in 1737-40.

Bern has been the seat of the international Postal Union since 1874 (see Post-Office, vol. xix. p. 584). The federalization of the national post-office dates from 1848,—the different cantons having previously conducted their postal business according to very different methods. It is to be noted that this department charges itself with the conveyance of passengers as well as mails,—these numbering 831,839 in 1880 and 754,365 in 1885. For other details see the table given in vol. xix. p. 585.

The length of telegraph lines increased from 1920 kilometres in 1852 to 6874 in 1884 (wires from 1920 to 16,618 kilometres), and the number of despatches from 2876 in 1852 to 1,127,311 in 1884, the total receipts for the latter year being 2,555,687 francs.

In Switzerland there are thirty-three legalized banks of issue ; their average circulation of notes in 1885 was to the value of 123,431,000 francs. There are 325 savings banks proper (deposits 246,359,735 francs in 1882) and 162 other institutions which receive deposits (267,298,548 francs in 1882). Most of these are in the hands of companies or private merchants.

Besides the older but valuable works of Faber (1756), Fäsi (1765-68), Füssli (1770-72), Normann (1795-98), Durand (1795-96), Meister (1796), see *Hist*. *geοgr. statistische Gemälde der Schweiz* (a series of monographs, published by Huber and Co. of St. Gall and Bern); Hottinger, *Staatshaushalt der schweiz. Eidgen.,* 1847; Franscini. *Stat, delta Svizzera,* Lugano, 1827 and 1817-49; Wirth, *Allge­meine Beschreibung der Schweiz·,* Legoyt and Vogt, *La Suisse;* Prof. Egli’s most convenient *Taschenbuch* (1878, &c.) and *Schweizerkundc* ; Berlepsch, *Schweizer­kunde,* 1875; and Furrer’s comprehensive *Vοlkswirthshaft-Lexicοn.* A statistical bureau was founded in 1860, a statistical society in 1864. Dr Kummer gives a history of Swiss statistics in *Zeitschrift für Schweiz. Stat.,* 1885, and his successor, Herr Milliet, to whom we are indebted for much of the above information is engaged on a statistical handbook. (W. A. B. C.—H. A. W.)

@@@1 See especially C. Grob, *Statistik über der Unterrichtswesen in der Schweiz,* 7 parts, 1883, and Dr H. Wettstein, *Beric'.t über Gruppe 30, Unterrichtswesen* (Zurich Exhibition), 1884.

@@@2 Details may be found in the *Almanach de Gotha,* 1887.