III. Astronomy.

Astronomical observatories and their publications have been already treated and enumerated in the article Observatory. The *Royal Astronomical Society* was founded in 1820 under the title of *Astronomical Society of London,* and was incorporated on 7th March 1831. It occupies rooms in Burlington House, and has published *Memoirs* (1822, &c.) and *Monthly* *Notices* (1831, &c.). There are also societies at Bristol (1869), *Reports* ; Liverpool (1881) ; and Leipsic, *Astrono­mische Ges.* (1863), *Publ.* (186δ, &c.) and *Vierteljahrsschrift* (1866, &c.).

IV. Physics.

The *Physical Society of London* was founded in 1874 and registered under the Companies Act ; it has published *Proceedings* (1874, &c.). The *London Electrical Society* (1836), did useful work in its *Transactions* (1837-40, vol. i.) and *Proceedings* (1841-43). Sir W. Siemens was one of the originators of the *Society of Telegraph Engineers and Electricians,* which was founded in 1871 and registered in 1883. It owns the Ronalds library of electricity and magnetism and publishes a *Journal.*

United States: Chicago, *Amer. Electrical Soc., Journ.* (1875). New York, *National Telegr. Union, Telegrapher* (1864-70). France : Cambrai, *Soc. Mag­nétique, Archives* (1845). Paris, *Soc. Franç. de Phys.* (recognized as of public utility on 15th January 18S1), *Dull.* Germany: Berlin, *Physikalische Ges.* (1843), *Fortschritte der Physik* (1847, &c.); *Elektrotechnisch. Ver.* (1877), *Ztschr.* (1880, &c.). Breslau, *Physikalischer Ver.* Frankfort, *Physikalischer Ver., Jahresber.* Italy: Naples, *R. Accad. delle Sc. Fis. e Matern., Rendic.* (1856, &c.) and *Atti* (1863). Rome, *Soc. degli Spettroscopisti Ital.* Holland : Rotterdam, *Bataafsch. Genootschap van Proefondervindelijke Wijsbegeerte, Verhandel.* (1774, &c.).

V. Chemistry.

Pharmaceutical societies are placed in class xiii. (Medicine, &c.). The *Chemical Society of London* for the promotion of chemistry and the sciences immediately connected with it was instituted on 23d February 1841 ; a charter of incorporation was obtained in 1848. It publishes *Memoirs* (1843, &c.) and *Quarterly Journal* (1849, &c.). Chemistry and its connexion with the arts, and agricultural and technical matters, form the subjects of the *Institute of Chemistry,* founded on 2d September 1877 and incorporated on 2d October 1877. The *Society of Chemical Industry* (1881) is specially devoted to the branch of chemical engineers. The *Society of Public Analysts* publishes the *Analyst* (1876, &c.). The oldest of the numerous photographic societies is the *Photographic Society of Great Britain* (1853), which issues a *Journal.* The *Royal College of Chemistry* was founded in July 1845, and had a brief career ; it published *Reports* (1849). The *Cavendish Society* was instituted in 1846 for the publica­tion and translation of works and papers on chemistry. It came to an end in 1872 after having issued 30 vols.

United States : New York, *American Chemical Soc.* (1876), *Proc.* (1876) and *Journ.* (1879, &c.). France : Paris, *Soc. Chimique, Bull.* (1858, &c.). Germany : Berlin, *Deutsche Chemische Ges.* (1867), *Ber.* (1868, &c.). Frankfort, *Chem. Ges.* Jena, *Chem. Laborat.* Würzburg, *Chemische Ges.* (1872). Bohemia : Prague, *Spolek Chemiku Ceských* or *Soc.* *of Bohemian Chemists, Zpravy* or *Trans.* (1872, &c.). Russia: St Petersburg, *Russ. Chem. and Phys. Soc. at Univ., Journal* (1869, &c.).

VI. Geology, Mineralogy, and Palæontology.

Among these the *Geological Society of London,* founded in 1807 and incorporated in 1826, is the largest and most important ; it has published *Proceedings* (1834- 46), *Transactions* (1811, &c.), and a *Quarterly Journal* (1845, &c.). The *Geologists’ Association* was instituted in 1858, and issues *Proceedings* (1859, &c.). The *Mineralogical Society* (1876) has united with it the *Crystallogical Society* ; it issues the *Mineralogical Magazine* (1876, &c.). The *Palseontographical Society* was founded in 1847 for the delineation and description of British fossils ; it issues *Publications* (39 vols. 4to, 1847, &c.). The *Cornwall Royal Geological Society* (1814) devotes special attention to the mining interests of the county, and publishes *Transactions* (1818, &c.). It holds its meetings at Penzance. In Scotland there are the *Geological Society of Edinburgh* (1834), which has *Transactions (*1870, &c.), and the *Glasgow Geological Society* (1858), which also has *Transactions* (1860, &c.). The *Royal Geological Society of Ireland* (1832) is chiefly directed to the geology of the country. It publishes a *Journal* (1837, &c.). There are also the *Geological Associations* of Leeds (1874) and Liverpool (1880), *Trans.,* the *Societies* of Liverpool (1859), *Proc.,* Manchester (1838), *Trans.,* and Norwich (1864), *Proc.,* and the *Yorkshire Geological and Technological Society, Proc.* (1839, &c.).

United States: Louisville, Ky., *Ohio Falls Geolog. Soc.* San Francisco, *California State Geolog. Soc.* (1876). France: Lille, *Soc. Géol. du Nord* (1870), *Annales* (1874, &c.). Havre, *Soc. Géol. de Normandie, Bull.* (1873, &c.). Paris, *Soc. Géol. de France* (1830, recognized 1832), awards the Prix Viquesnel (£40) every three years, *Bull.* (1830, &c.) and *Mém.* (1833, &c.); *Soc. Franç. de Minér­alogie* (recognized 1886), formerly *Soc. Minéral. de France, Bull.* Saint-Étienne, *Soc. d'Ind. Minérale* (1855), *Bull*. (1855, &c.). Germany and Austria-Hungary : Berlin, *Deutsche Geol. Ges.* (1848), *Ztschr.* (1849, &c.). Brünn, *Wernerscher Geol. Ver., Jahresber.* Darmstadt, *Mittelrheinischer Geol. Ver.* (1851), *Mittheil* (1855, &c.). Dresden, *Gebirgs-Ver.* (1855). Pesth, *Geol. Ver. f. Ungarn.* Switzerland: *Schweizerische Geol. Ges.* (1882), section of *Allg. Schw. Ges.* Zurich, *Schweiz. Päldontol. Ges.* (1874)*, Abhandl.* (1875, &c.). Italy: *Soc. Geol. Ital.,* founded at the second International Geological Congress. Belgium : Antwerp, *Soc. Paléontol.* (1857), *Bull.* Charleroi, *Soc. Paléontol.* (1863), *Documents et Rapports* (1866, &c.). Liége, *Soc. Géol. de Belgique, Annales* (1874, &c.). Sweden: Stock­holm, *Geologiska Forening, Förhandlingar* (1872, &c.). Russia : St Petersburg, *Imp. Russian Mineralog. Soc., Trans.* (1830, &c.). Argentine Republic: Buenos Ayres, *Soc. Paleontol.*

VII. Meteorology.

The *International Meteorological Congress* first met at Vienna in 1873. The *Royal Meteorological Society* (1850) of London was incorporated in 1866 ; its organ is *Quarterly Journal* (1873, &c.). To this must be added the *British Rainfall Society* and the *Scottish Meteorological Society,* which holds its meetings at Edin­burgh and issues a *Journal* (1866, &c.). Port Louis (Mauritius), *Meteorolog. Soc., Trans.* (1853, &c.). Paris, *Soc. Météorolog. de France, Annuaire* (1849, &c.) and *Nouvelles Météorolog.* (1868, &c.). Hamburg, *Deutsche Meteorolog. Ges.* (18S3), *Ztschr.* Magdeburg, *Ver. f. landwirthsch. Wetterkunde* (1881). Meissen, *Gesellsch. Isis.* Vienna, *Oesterreich. Ges. f. Meteorol., Zeitschrift* (1866, &c.). Modena, *Soc. Meteorolog. Ital.*

VIII. Microscopy.

The *Royal Microscopical Society* (1839, incorporated 1866), with *Transactions* (1842-68) and *Journal* (1869, &c.) ; the *Quekett Microscopical Club* (1865), with a *Journal* (1868, &c.) ; and the *Postal Microscopic Society* (1873), also with a *Journal,* are located in London. There are suburban societies at Ealing (1877), Hackney (1877), Highbury (1878), South London (1871), and Sydenham (1871). Amongst those in the provinces may be mentioned the ones at Bath (1859), Birmingham (1880), Bolton (1877), Bradford (18S2), Bristol (1843), Carlisle, Chichester *(Trans.),* Croydon (1870, *Trans.),* Dublin (1840), East Kent (1858), Liverpool (1868, *Trans.),* Manchester (1880), New Cross (1872), and Sheffield (1877). In the United States the *State Microscop. Soc. of Illinois* publishes the *Lens* (1872, &c.) ; Buffalo, *Amer.*

*Soc. of Microscopists* ; New York, *Microscop. Soc.* Brussels, *Soc. Belge de Micro-* scop. (1875), *Proc.-Verb.* (1875, &c.)and *Annales (1876,* &c.). Berlin, *Ges.f. Mikro­skop.* (1877), *Ztschr.* (1878, &c.). Hanover, *Ges. f. Mikroskop.* (1879), *Jahresber.*

IX. Botany and Horticulture.

Linnæan societies, which usually deal with both zoology and botany, are placed in the general class (No. i.). The *Congrès International d’Horticulture* first met at Brussels in 1864 and the *Congrès International de Botanique* at Amsterdam in 1865. The *Royal Botanic Society of London* (incorporated 1839) has gardens in the inner circle of Regent’s Park, and issues a *Quarterly Record* (1880, &c.). The *Royal Horticultural Society* (established in 1804, incorporated in 1809) has gardens at Chiswick, and publishes a *Journal* (1846, &c.). The chief pro­vincial societies are—Aberdeen, *North of Scotl. Hortic. Assoc.* (1879), *Trans.* Ar­broath, *Hortic. Assoc.* (1880). Birmingham, *Bot. and Hortic. Soc.* (1830), gardens. Dublin, *Roy. Hortic. Soc.* (1830). Edinburgh, *Bot. Soc.* (1836), *Proc.* (1837, &c.) and *Trans.* (1844, &c.) ; *Scottish Arboric. Soc.* (1854), *Trans. ; Cryptogamic Soc. of Scotl.* (1875). Canada: Kingston, *Bot. Soc. of Canada* (1860), *Annals* (1861, &c.).

United States : Boston, *Hortic. Soc.* (1829). New York, *Torrey Botanical Club, Bull.* (1870, &c.). San Francisco, *State Hortic. Soc.* France : Beauvais, *Soc. d'Hortic. et de Bot.* (1864), *Bull.* (1864, &c.). Bordeaux, *Soc. d'Hortic.* Chartres, *Soc. d'Hortic. et de Viticulture.* Chauny, *Soc. de Pomologie.* Dijon, *Soc. d'Hortic.* Fontenay-le-Comte, Soc. *d'Hortic.* Lisieux, *Soc. d’Hortic. et de Bot.* (1866), *Bull.* (1866, &c.). Lyons, *Soc. d’Hortic. Pratique* (1844), *Bull.* (1844, &c.) ; Soc. *Dot.* (1872), *Annales* (1872, &c.) ; *Soc. Pomologique* (1872), *Bull.* (1872, &c.). Moulins, *Soc. d’Hortic.* Nimes, Soc. *d’Hortic.* Niort, Soc. *d'Hortic.* Orleans. Soc. *d’Hortic.* (1839), *Bull.* (1841, &c.). Paris, Soc. *Nat. d’Hortic.* (1827; declared of public utility 1852), *Journal* ; Soc. *Bot. de France, Bull.* (1854, &c.). Rouen, Soc. *Centr. d'Hortic.* Saint Germain-en-Laye, *Soc. d'Hortic.* Senlis*, Soc. d’Hortic.* Troyes, *Soc. d’Hortic.* Versailles, *Soc. d’Hortic.* Germany and Austria-Hungary: Berlin, *Bot. Ver.* (1859), *Verhandl.* (1859, &c.) ; *Deutsche Bot. Ges.* (1882) ; *Horticult. Ges.* Blankenburg, *Bot. Ver.* Bonn, *Bot. Ver.* (1818), *Jahresber.* (1837, &c.). Dresden, *Flora-Ges. f. Bot., Mittheil.* (1841, &c.). Erfurt, *Gartenbau Ver.* Frankfort, *Gartenbau Ges.* Freiburg, *Bot. Ver.* Görlitz, *Gartenbau Ver.* Gotha, *Thüringer Gartenbau Ver.* Klagenfurt, *Kärntnerische Gartenbau Ges.* Landshut, *Bot. Ver.* (1864). Meiningen, *Ver. f. Pomologie u. Gartenbau.* Munich, *Baierische Gartenbau Ges.* Ratisbon, *K. Baierische Bot. Ges.* (1790), *Flora* (1818, &c.) and *Repertorium* (1864, &c.). Reutlingen, *Pomolog. Inst.* Sondershausen, *Bot. Ver.* Stuttgart, *Gartenbau Ges., Flora.* Vienna, *K. k. Gartenbau Ges.; Botan. Ver., Verhandl.* (1851, &c.). Weimar, *Ver. f. Blumistik.* Würzburg, *Bot. Inst., Arbeiten* (1871, &c.). Italy : Milan, Soc. *Crittog. Ital., Atti* (1878, &c.). Belgium : *Fédération des Soc. d'Hortic. de Belgique* (1860), *Bull.* Antwerp, Soc. *Roy. d'Hortic. et d'Agr.·, Soc. Phytologique, Annales (1864,* &c.). Bruges, *Soc. d'Hortic. et de la Bot.* Brussels, Soc. *Roy. de Bot.* (1862), *Bull.* (1862, &c.); Soc. *Roy. de Flore* ; Soc. *Centr. d’Arboric., Annales.* Liége, *Soc. Roy. d'Hortic.* Holland: Leyden,*Nederl.Bot.Vereen.* Luxem­bourg, *Soc.de Bot., Recueil* (1874, &c.). Nimeguen, *Nederl. Bot. Vereen., Archief* (1871, &c.). Denmark : Copenhagen, *Bot. Forening, Tidsskrift* (1866, &c.).

X. Zoology.

Societies dealing with natural history in general, or zoology and botany together, are arranged under class i. The *Zoological Society of London* (founded 1826, incorporated 1829) is famous for its collection of live animals in its gardens at Regent’s Park. It publishes *Proceedings* (Svo, 1830, &c.) and *Trans­actions* (4to, 1835, &c.). The other metropolitan societies are—*British Ornitho­logists’ Union* (1859) ; *Entomological Society of London* (1833), *Trans.* (1834, &c.) ; *National Fish Culture Association* (1883). The Marine *Biological Association of Great Britain* (1884), for the study of marine food fishes and shell-fish, has a laboratory at Plymouth. The *Royal Zoological Society of Ireland* (1831) has gardens in the Phœnix Park. There is the British *Beekeepers' Association* (1874). Australia and New Zealand : Auckland, *Acclimatisation Soc.* Bris­bane, *Acclimat. Soc.* Christchurch, *Acclimat. Soc.* Melbourne, *Zoolog. and Acclimat. Soc. of Victoria, Report* (1861, &c.). Sydney, *Acclimat. Soc. of N.S. Wales, Report* (1862, &c.); *Entomolog. Soc. of N.S.W., Trans.* (1863, &c.). Wel­lington, *Westland Nat. and Acclimat. Soc.* Africa : Cape Town, *Zoolog. Soc.* Port Louis (Mauritius), Soc. *d'Acclimat.* Canada : Toronto, *Entomolog. Soc. ; Beekeepers' Assoc.*

United States : Cambridge, *Nuttall Omitholog. Club, Quart. Bull.* (1876, &c.); and *Entomolog Club, Psyche* (1874, &c.). Cincinnati, *Zoolog. Soc.* (1874), *Report* (1875, &c.). *Illinois Central Beekeepers’ Association.* Philadelphia, *Zoolog. Soc.* (1873), *Report* (1874, &c.) ; and *Amer. Entomolog. Soc.,* merged in the *Acad. of Nat. Sc.* Washington, *Biolog. Soc.* ; and *Entomolog. Soc.* France: Alais, *Soc. Séricicole, Bull.* (1876, &c.). Amiens, *Soc. d' Apiculture, Bull.* (1875, &c.). Cler­mont, *Soc. Centr. d'Apicult., Bull.* (1875, &c.). Lille, *Inst. Zoolog. à Wimereux, Travaux* (1877, &c.). Paris, *Soc. Nat. d’Acclimat.* (1854), *Bull. Mensuel* (1854, &c.) and *Chron. Bimens.* (1875, &c.) ; *Soc. Zoolog. de France, Bull.* (1876, &c.) ; *Soc. Entomolog. de France;* and Soc. *de Biologie, Comptes Rendus* (1850, &c.). Germany and Austria-Hungary : *Wanderversammlung Deutscher Bienenzüchter, Verhandl.* (1856, &c.). Bendorf, *Akklimat.-Ver.* Berlin, *Akklimat.-Ver.* (1856), *Zeitschr.* (1858, &c.); *Central-Inst. f. Akklimat., Mittheil.* (1859, &c.); *Deutsche Zoolog. Ges. ; Deutsche Ornithologen-Ges.* (1845), *Ber.* (1850, &c.) ; *Deutsche Fisch­erei Ver., Dublikat.* (1871, &c.) ; *Deutsche Entomolog. Ges.* (1856), *Entomolog. Zeitschr.* (1857, &c.) ; *Ver. zum Beford. des Seidenbaues, Jahresber.* (1869, &c.) ; *Physiolog. Ges., Verhandl.* (1877, &c.). Breslau, *Physiolog. Inst., Studien* (1861, &c.) ; *Ver. f. Schles. Insektenkunde, Zeitschr.* (1847, &c.). Brunswick, *Deutsche Omitholog. Ges.* Carlsruhe, *Badischer Ver. f. Geflügelzucht, Monatsblatt* (1872, &c.). Frankenberg, *Bienenwirthschaftl. Haupt-Ver., Sachs. Bienenfreund* (1865, &c.). Frankfort, *Zoolog. Ges., Der Zoolog. Garten* (1860, &c.) ; *Deutsche Malako- zoolog. Ges., Jahrbüch.* (1874, &c.)and *Nachrichtsblatt* (1869, &c.). Halberstadt, *Deutsche Omitholog. Ges.* ; Halle, *Omitholog. Central-Ver.* Hamburg, *Zoolog. Ges., Ber.* (1862, &c.). Hanover, *Bienenwirthschaftl. Central-Ver., Centralblatt* (1865, &c.). Leipsic, *Sachs. Seidenbau Ver., Zeitschr.* (1868, &c.). Munich, *Entomolog. Ver. (1876); Fischerei Ver., Mittheil.* (1876, &c.). Nördlingen, *Ver. Deutscher Bienenwirthe, B.-Zeitung* (1845, &c.). Ratisbon, *Zoolog.-Mineralog. Ver.* (see class i.). Stettin, *Omitholog. Ver.* (1873), *Jahresber.* (1873, &c.) ; *Entomolog. Ver.* (1837), *Ent. Zeitung* (1840, &c.). Triest, *Zoolog. Inst. u. Zoolog. Station, Arbeiten* (1878, &c.)*.* Troppau, *Schles. Bienenzucht-Ver.* (1873). Vienna, *Entomolog. Ver.; Embryolog. Inst., Mittheil.* (1871 &c.);*Omitholog. Ver.* Würz­burg, *Zoolog.-Zootomisches Inst.* (1872), *Arbeiten* (1874, &c.). Switzerland : Bern, *Schweiz. Entomolog. Ges.* Geneva, Assoc. *Zoolog. du Léman; Soc. Omith­olog. Suisse* (1865), *Bull.* (1866, &c.). Italy : Casale, *Soc. Bacologica, Boll.* (1866, &c.). Florence, *Soc. Allantina Ital., La Sericicultum* (1865, &c.); *Soc. Entomo­log. Ital., Bull.* (1869, &c.). Naples, *Zoolog. Station, Mittheil.* (1878). Palermo, *Soc. di Acclimaz., Atti* (1861, &c.). Pisa, *Soc. Malacolog. Ital., Bull.* (1875, &c.). Rome, *Soc. di Pisicolt. Ital.* (1872). Belgium : Antwerp, *Soc. Roy. de Zoologie.* Brussels, Soc. *Roy. de Zoologie* ; Soc. *Entomolog. de Belgique* (1855), *Annales* and *Bull.* (1857, &c.) ; Soc. *Malacolog.* (1863), *Annales* (1863, &c.) and *Procès-Verb.* (1872, &c.). Holland: Amsterdam, *K. Zoolog. Genootschap “Natura Artis Magistra,” Jaarboekje* (1852, &c.) and *Tijdschr.* (1863, &c.). The Hague, *Nederl. Entomolog. Vereen., Tijdschr.* (1857, &c.). Rotterdam, *Nederl. Dierkundige Vereen., Tijdschr.* (1874, &c.). Norway : Bergen, *Selskabet for Norges Fiskerier.* Sweden : Stockholm, *Entomolog. Forening.* Russia : Moscow, *Acclimat. Soc.* St. Petersburg, *Russian Entomolog. Soc.* Argentine Republic : Buenos Ayres, *Soc. Zoolog. Argentina, Period. Zoolog.* (1875, &c.); Soc. *Entomolog. Argent.*