solution in long yellow needles, TlOH or T1OH + H2O, which dissolve readily in water, forming an intensely alkaline solution, which acts as a caustic, like, for instance, potash-ley, and like it greedily absorbs carbonic acid from the atmosphere. But, unlike the alkalies, it readily loses its water at 100o C. and even at the ordinary tempera­ture, to pass into the state of anhydrous T12O, which is black or black-violet.

The *chloride,* T1C1, is readily obtained from the solution of any thallous salt (*e.g.,* the sulphate), by addition of hydrochloric acid, as a white precipitate similar in appearance to chloride of silver, like which it turns violet in the light and fuses below redness into a (yellow) liquid which freezes into a horn-like flexible mass. The specific gravity of this “horn” thallium, as one might call it, is 7∙02. One part of the precipitated chloride dissolves at 0o C. in 500 parts of water, and in 70 parts at 100o C. It is less soluble in dilute hydrochloric acid. Carbonate of soda solution dissolves it pretty freely.

The *iodide,* TlI, is a yellow precipitate, which requires 16,000 parts of cold water and still more of solution of iodide of potassium for its solution.

The *chloroplatinate,* PtCl6Tl2, readily obtainable from thallous- salt solutions by addition of chloride of platinum (PtCl6H2), is a yellow precipitate soluble in no less than 15,600 parts of cold water.

The *carbonate,* T12CO3, comes closer to the lithium compound than to any other ordinary carbonate. It forms resplendent monoclinic prisms, soluble at 18o C. in 19∙1 and at 100o in 4∙46 parts of water. A stable bicarbonate, TlHCO3, does exist.

The *sulphate,* T12SO4, forms rhombic prisms isomorphous with K2SO4. It dissolves at 18o C. in 20∙8 and at 101o in 5∙2 parts of water. It unites with vitriol into an acid salt, TlHSO4 + 3H2O, and with sulphate of alumina into an “alum,” A12(SO4)3Tl2SO4 + 24H2O.

*Thallic salts* are related to thallous pretty much as manganic are to manganous. The chloride, T1C13, is obtained as a solution by passing chlorine into a suspension of thallous chloride in water. The solution, when evaporated *in vacuo,* deposits colourless crystals, T1C13 + H2O. For the oxide, if chlorine be passed into a solution of thallous chloride in carbonate of soda a brown precipitate is produced, which, after drying, has the composition T12O3 + H2O. When heated with strong hydrochloric acid it evolves chlorine and yields T1C1 ; when heated with oil of vitriol it yields oxygen gas and thallous sulphate. Thallic sulphate, however, does exist,—in crystals, T12(SO4)3 + 7H2O, soluble in dilute sulphuric acid, but decomposed by water, with precipitation of hydrated T12O3.

*Analysis.—*All thallium compounds volatile or liable to dissocia­tion at the temperature of the flame of a Bunsen lamp impart to such flame an intense green colour. The spectrum consists of only one line, which, of course, has a definite position in the spectrum, and consequently is easily identified,—a most delicate test.

From solutions containing it as thallous salt the metal is easily precipitated as chloride, iodide, or chloroplatinate by the corre­sponding reagents (see *supra*)*.* Sulphuretted hydrogen, in the presence of free mineral acid, gives no precipitate; sulphide of ammonium, from neutral solutions, precipitates T12S as a dark brown or black precipitate, insoluble in excess of reagent. Thallic salts are easily reduced to thallous by means of solution of sulphur­ous acid, and thus rendered amenable to the above reactions.

The atomic weight of thallium was determined very carefully by Crookes. He found it Tl = 204∙2,−O being 16. (W. D.)

THAMES, the most important river in Great Britain, has its source in several streams on the Gloucestershire border, the main one having its rise in the parish of Coates, 3 miles south-west of Cirencester. The upper part of the river, until the junction with the Thame near Dorchester, is generally called the Isis, a usage to which Camden per­haps gave currency, who derives the word Tamesis or Thames from the junction of the names of the two rivers, the Thame and Isis. The total length of the river from Thames Head to London Bridge is 170 miles, and to Sheer­ness 228 miles. It drains an area of 6100 miles. It be­comes navigable 24 miles from its source, near Lechlade, its waters having been greatly augmented by the junction of the Colne, Leach, and Churn ; here also is the junction with the Thames and Severn Canal. The height of its source above sea-level is 370 feet, and that of the stream at Lechlade 250 feet, the average fall between Lechlade and London Bridge (146 miles) being 21 inches per mile. The course is remarkably equable throughout. Above Teddington, 19 miles from London Bridge, the tidal wave may be said to cease, and thence up to Lechlade naviga­tion is carried on by the aid of locks. A small steamer plies as high as Oxford. While at Lechlade the daily flow of the ordinary summer level is about 100 million gallons, the flow at Teddington is about 380 million gallons. There are seven hours of ebb tide and five hours of flow tide. From the Nore to London Bridge, a distance of 40 miles, the tidal wave travels in two hours, and in other two hours it reaches Teddington. The width of the river at Ted­dington is 250 feet, and at London Bridge the width at high tide is 800 feet, the depth being 30 feet, while at low tide the width is 650 feet and the depth 12 feet. Large barges can ascend the river 150 miles above London Bridge, vessels of 200 tons as high as the bridge, and of 400 tons to the Pool, below which, at Irongate and St Katherine’s wharf, deep-sea steamer navigation commences, while vessels of any tonnage can come as high as Deptford.

The Thames leaves the Gloucestershire and Wiltshire border near Buscot, after which it separates successively Berks and Oxford, Berks and Bucks, Middlesex and Surrey, and, finally, at its estuary, Essex and Kent. Below Lechlade it has a winding course, passing near Farringdon and Bampton. After receiving the Windrush, it passes near the grounds of Blenheim, whence it receives from the left the Evenlode, and at Oxford it receives from the left the Cher- well. It then flows in a southerly direction to Abingdon, where it receives on the right the Ock from the valley of the White Horse, and has a junction with the Wilts and Berks Canal. Turning in an easterly direction it is joined, about a mile after passing Dor­chester, by its principal affluent the Thame. Thence, through an opening of the Chiltern Hills, it passes Bensington, and turns southwards by Wallingford and Reading, where it receives the Kennet from the right. It then bends northward to Henley, east­ward to Great Marlow, and southward to Maidenhead, where it receives from the right the Loddon. Winding in a south-easterly direction it passes Eton, Windsor, Datchet, Staines, and Chertsey, receiving at Staines the Colne from the left. Flowing through the grounds of Hampton Court it reaches Kingston and Teddington, where its bulk is increased by the tidal wave. From Richmond, where it receives the Mole, it begins to pass the villas and suburbs of London. At Gravesend, 27 miles below London, it has a width of half a mile, and at the Nore lighthouse, 50 miles below London Bridge, the estuary widens to nearly 10 miles. In the tidal reaches the principal affluents of the Thames are the Mole at Richmond, the Brent at Brentford, the Wandle at Wandsworth, the Lea at Blackwall, the Roding at Barking Creek, the Ingrebourne at Rain­ham, and the Medway at Sheerness. The land adjoining the river is greatly subject to floods, and from above London there were in ancient times wide stretches of marsh land covered by shallow lagoons. The embankments below London Bridge date possibly from the time of the Romans, but their origin is the subject of much dispute (see London, vol. xiv. p. 840). Between London Bridge and Chelsea the bed of the river has been altered artificially, and flooding is prevented by a marine wall (see London, vol. xiv. p. 823). The Thames occupies the bed of a much larger prehis­toric river, the gravels of which adjoin its banks at a considerable distance.

The scenery, though scarcely to be called picturesque, and in a certain sense monotonous, has a peculiar charm from the richness of its sylvan beauty and its pleasant alternation of hill and dale. The number of islands that occur in the course of the river add to its interest, and afford convenient seclusion for the erection of boat­houses and tents. The Thames vies with the Tyne as the principal river for boat-racing in England, and of course greatly surpasses the latter river as regards amateur boat-racing, the principal fixtures in which are the Oxford and Cambridge boat race and the Henley regatta. The river affords about one half of the water supply of London, and is the principal outlet for its sewage. It is under the government of conservators, originally constituted in 1857, but their duties have been extended by several subsequent Acts.

See *The River Thames from Oxford to the Sea,* 1859 ; Cassell’s *Royal River* (richly illustrated), 1885 ; Huxley’s *Physiography,* 1877 ; and Dickens’s *Dictionary of the Thames.*

THANA, or Tannah, a district in Bombay presidency, India, with an area of 4243 square miles, lying between 18o 42' and 20° 20' N. lat. and 72o 45' and 73o 48' E. long. It extends along the coast for 105 miles, with a breadth of 50 miles, and is confined between the Sahyádri Gháts on the E. and the sea on the W., while on the N. it is bounded by the Portuguese territory of Daman and by Surat district, and on the S. by Kolába and Poona districts. The district is well watered and wooded, and, except in the north-east, is a low-lying rice tract broken by hills. The spurs of the Gháts form health resorts ; the two most