A king Kisu of Silna (Salamis) is mentioned in a list of tributaries of Assur-bani-pal of Assyria in 668 **B.c.,** and Assyrian influence is marked in the fine terra-cotta figures from a shrine at Toumba excavated in 1890-1891. The revolts of Greek Cyprus against Persia in 500 B.c., 386-380 b.c. and 352 B.c. were led respectively by kings Onesilaus, Evagoras (*q.v.*) and Pnytagoras, who seem to have been the principal Hellenic power in the island. In 306 Demetrius Poliorcetes won a great naval victory here over Ptolemy I. of Egypt. Under Egyptian and Roman administration Salamis flourished greatly, though under the Ptolemaic priest-kings and under Rome the seat of government was at New Paphos (see Paphos). But it was greatly damaged in the Jewish revolt of a.d. 116-117; it also suffered repeatedly from earthquakes, and was wholly rebuilt by Constantius II. under the name Constantia. There was a large Jewish colony in Ptolemaic and early Roman times, and a Christian community founded by Paul and Barnabas in a.d. 45-46. Barnabas was himself a Cypriote, and his reputed tomb, discovered in a.d. 477, is still shown, a little inland, near the monastery of Ai Bamába. St Epiphanius was archbishop a.d. 367-402. The Greek city was destroyed by the Arabs under the Caliph Moawiya in 647, and does not seem to have revived. In later times the site was plundered for the building of Famagusta; it is now covered by sandhills, and its plan is imperfectly known. The market-place and a Jew public buildings were excavated in 1890-1891, but nothing of importance was found.

See W. H. Engel, *Kypros* (Berlin, 1841 ; classical allusions) ; J. A. R. Munro and H. A. Tubbs, *Journ. Hellenic Studies,* xii. 59 ff., 298 ff. (site and monuments); British Museum, *Excavations in Cyprus* (London, 1900; Mycenaean tombs) ; G. F. Hill, *Brit. Mus. Cat. Coins of Cyprus* (London, 1904; coins). (J. L. M.)

**SAL AMMONIAC,@@1 or** Ammonium Chloride, NH4Cl, the earliest known salt of ammonia (*q.v.*), was formerly much used in dyeing and metallurgic operations.

The name *Hammoniacus sal* occurs in Pliny *(Nat. Hist.* xxxi. 39), who relates that it was applied to a kind of fossil salt found below the sand, in a district of Cyrenaica. The general opinion is, that the sal ammoniac of the ancients was the same as that of the modems; but the imperfect description of Pliny is far from being conclusive. The native sal ammoniac of Bucharia, described by Model and Karsten, and analysed by M. H. Klaproth, has no resemblance to the salt described by Pliny. The same remark applies to the sal ammoniac of volcanoes. Dioscorides (v. 126), in mentioning sal ammoniac, makes use of a phrase quite irreconcilable with the description of Pliny, and rather applicable to rock-salt than to our sal ammoniac. Sal ammoniac, he says, is peculiarly prized if it can be easily split into rectangular fragments. Finally, we have no proof whatever that sal ammoniac occurs at present, either near the temple of Jupiter Ammon, or in any part of Cyrenaica. Hence we conclude that the term sal ammoniac was applied as indefinitely by the ancients as most of their other chemical terms. It may have been given to the same salt which is known to the moderns by that appellation, but was not confined to it.

In any case there can be no doubt that it was well known to the alchemists as early as the 13th century. Albertus Magnus, in his treatise *De alchymia,* informs us that there were two kinds of sal ammoniac, a natural and an artificial. The natural was sometimes white, and sometimes red; the artificial was more useful to the chemist. He does not tell us how it was prepared, but he describes the method of subliming it, which can leave no doubt that it was real sal ammoniac. In the *Opera mineraliα* of Isaac Hollandus the elder, there is likewise a description of the mode of subliming sal ammoniac. Basil Valentine, in his *Currus triumphalis antimonii,* describes some of the peculiar properties of sal ammoniac in, if possible, a still less equivocal manner.

Egypt is the country where sal ammoniac was first manu­factured, and from which Europe for many years was supplied with it. This commerce was first carried on by the Venetians, and afterwards by the Dutch. Nothing was known about the method employed by the Egyptians till the year 1719. In 1716 C. J. Geoffroy read a paper to the French Academy, showing that sal ammoniac must be formed by sublimation; but his opinion was opposed so violently by W. Homberg and N. Lemery, that the paper was not printed. In 1719 D. Lemaire, the French consul at Cairo, sent the Academy an account of the mode of manufacturing sal ammoniac in Egypt. The salt, it appeared, was obtained by simple sublimation from soot. In the year 1760 Linnaeus communicated to the Royal Society a correct detail of the whole process, which he had received from Dr F. Hasselquist, who had travelled in that country as a

naturalist *(Phil. Trans.,* 1760, p. 504). The dung of black cattle, horses, sheep, goats, &c., which contains sal ammoniac ready formed, is collected during the first four months of the year, when the animals feed on the spring grass, a kind of clover. It is dried, and sold to the common people as fuel. The soot from this fuel is carefully collected and sold to the sal ammoniac makers, who work only during the months of March and April, for it is only at that season of the year that the dung is fit for their purpose.

The composition of this salt seems to have been first discovered by J. P. Tournefort in 1 700. The experiments of C. J. Geoffroy in 1716 and 1723 were still more decisive, and those of H. L. Duhamel de Monceau, in 1735, left no doubt upon the subject. Dr Thomson first pointed out a process by synthesis, which has the advantage of being very simple, and at the same time rigidly accurate, resulting from his observation that when hydrochloric acid gas and ammonia gas are brought in contact with each other, they always combine in equal volumes.

The first attempt to manufacture sal ammoniac in Europe was made, about the beginning of the 18th century, by Mr Goodwin, a chemist of London, who appears to have used the mother ley of common salt and putrid urine as ingredients. The first successful manufacture of sal ammoniac in Great Britain was established in Edinburgh about the year 1760. It was first manufactured in France about the same time by A. Baumé. Manufactories of it were afterwards established in Germany, Holland and Flanders.

It is now obtained from the ammoniacal liquor of gas works by distilling the liquor with milk of lime and passing the ammonia so obtained into hydrochloric acid. The solution of ammonium chloride so obtained is evaporated and the crude ammonium chloride purified by sublimation. The subliming apparatus consists of two parts: (1) a hemispherical stoneware basin placed within a close- fitting iron one, or an enamelled iron basin, and (2) a hemispherical lead or stoneware lid, or dome, cemented on the top of the basin to prevent leakage. The dome has a small aperture in the top which remains open to preclude accumulation of pressure. The carefully dried crystallized salt is pressed into the basin, and, after the lid has been fitted on, is exposed to a long-lasting moderate heat. The salt volatilizes (mostly in the form of a mixed vapour of the two components, which reunite on cooling), and condenses in the dome in the form of a characteristically fibrous and tough crust.

The pure salt has a sharp saline taste and is readily soluble in water. It readily volatilizes, and if moisture be rigorously excluded, it does not dissociate, but in the presence of mere traces of water it dissociates into ammonia and hydrochloric acid (H. B. Baker, *Journ. Chem. Soc.,* 1895, 65, P∙ 612).

Sal ammoniac (ammonium chloride, British and United States pharmacopoeiae) as used in medicine is a white crystalline odourless powder having a saline taste. It is soluble in 1 in 3 of cold water and in 1 in 50 of 90% alcohol. It is incompatible with carbonates of the alkalis. The dose is 5 to 20 grs. Ammonium chloride has a different action and therapeutic use from the rest of the ammonium salts. It possesses only slight influence over the heart and respiration, but it has a specific effect on mucous membranes as the elimination of the drug takes place largely through the lungs, where it aids in loosening bronchial secretions. This action renders it of the utmost value in bronchitis and pneumonia with associated bronchitis. The drug may be given in a mixture with glycerine or liquorice to cover the disagreeable taste or it may be used in a spray by means of an atomizer. The inhalation of the fumes of nascent ammonium chloride by filling the room with the gas has been recommended in foetid bronchitis. Though ammonium chloride has certain irritant properties which may disorder the stomach, yet if its mucous mem­brane be depressed and atonic the drug may improve its condition, and it has been used with success in gastric and intestinal catarrhs of a subacute type and is given in doses of 10 grains half an hour before meals in painful dyspepsia due to hyperacidity. It is also an intestinal and hepatic stimulant and a feeble diuretic and dia- phoretic, and has been considered a specific in some forms of neuralgia.

SALARIA, VIA, an ancient highroad of Italy, which ran from Rome by Reate and Asculum to Castrum Truentinum (Porto d’Ascoli) on the Adriatic coast, a distance of 151 m. Its first portion must be of early origin, and was the route by which the Sabines came to fetch salt from the marshes at the mouth of the Tiber. Of its course through the Apennines considerable remains exist.

@@@1 Some derive the name sal ammoniac from Jupiter Ammon, near whose temple it is alleged to have been found; others, from a district of Cyrenaica called Ammonia. Pliny’s derivation is from the sand (άμμos) in which it occurred.