contained in the burner-gases in the shape of flue-dust, especially the arsenic, which after a short time rendered the contact substance inactive, in a manner not as yet entirely understood. Another difficulty arose from the fact that the reaction SO2+O = SO3 is reversible, the opposite reaction, SO3 = SO2 +O setting in but little above the temperature required for the synthesis of SO«. As far as is known (so much secrecy having been observed), the best results obtained in various places, save one, did not exceed 67 % of the theoretical quantity, the remaining 33% of SO2 having to be converted into sulphuric acid in the ordinary lead chambers. As is now known, the exception (undoubtedly the only one until 1899) was the process discovered as early as 1889 by Dr It. T. J. Knietsch, of the Badische Anilin-und Soda-Fabrik, at Ludwigshafen, but kept strictly secret until 1899, when the patents were published. The principal features of this invention are, first, a much more thorough purification of the burner-gas than had been practised up to that time, both in a chemical and a mechanical sense, and second, the prevention of superheating of the contact substance, which formerly always occurred by the heat generated in the process itself. As the Badische process effects this prevention by cooling the contact apparatus by means of the gaseous mixture to be later submitted to the catalytic action, the mixture is at the time heated up to the requisite temperature, and a considerable saving of fuel is the conse­quence. Altogether this process has been brought to such a pitch of simplicity and perfection, that it is cheap enongh, not merely for the manufacture of fuming oil of vitriol of all strengths, but even for that of ordinary sulphuric acid of chamber-acid strength, while it is decidedly cheaper than the old process in the case of stronger acids, otherwise obtained by concentration by fire, ft should be noted that these are not the results of a few years’ working with an experimental plant, but of many years’ work with large plant, now equal to a capacity of 120,000 tons of pyrites per annum, ft is therefore not too much to say that, in all probability, the contact process will ultimately be employed generally for concentrated acids. Still, for the reasons given in the beginning of this article, the revolution thus impending will require a certain time for its accomplishment. Since the Badische process has become, known several other new contact processes have come into the field, in some of which ferric oxide is employed as contact substance, but we must refrain from describing these in detail. (G.L.)

*Medicine.—*Sulphuric acid or oil of vitriol is a colourless oily- looking liquid incompatible with alkalis and their carbonates, lead and calcium. There are two medicinal preparations: (1) *Acidum sulphuricun dilutum,* containing 13∙65% of hydrogen sulphate, (2) *acidum sulphuricum aromaticum* (elixir of vitriol), containing alcohol, spirit of cinnamon and ginger and 13∙8 % of hydrogen sulphate.

*Therapeutics—*For external use, sulphuric acid is a powerful irritant and caustic, acting by its powerful affinity for water and therefore dehydrating the tissues and causing them to turn black. It coagulates the albumen. Strong sulphuric acid is occasionally used as a caustic to venereal sores, warts and malignant growths. It is difficult, however, to limit its action, and glacial acetic and nitric acids are preferable for this purpose. Considerable burns on the face or body may result from the application of sulphuric acid in the practice known as “ vitriol-throwing,” a brownish black eschar serving to distinguish the burns produced by this acid from those of other corrosive fluids. Internally, dilute sulphuric acid is used in poisoning by alkalis as a neutralizing agent. Both it and the aromatic solution are powerful intestinal astringents, and are there­fore useful in diarrhoea of a serious type, being strongly recom­mended both as a prophylactic and as a treatment during epidemics of Asiatic cholera. Small doses of the aromatic acid also serve as a prophylactic to those artisans who work in lead and as a treatment in lead poisoning in order to form an insoluble sulphate of lead. Sponging the body with very dilute solutions of sulphuric acid is useful to diminish the night-sweats of phthisis.

*Toxicology.*—Given in toxic doses or in strong solution, sulphuric acid is a severe gastro-intestinal irritant, causing intense burning pain, extending from the mouth to the stomach, and vomiting of mucous and coffee-coloured material. The effects of the ingestion of large quantities may be so rapid that death may take place in a couple of hours, owing to collapse, consequent on perforation of the walls of the oesophagus or stomach, or from asphyxia due to swelling of the glottis consequent on some of the acid having entered the larynx. Should the patient survive the first twenty-four hours death generally results later from stricture of the oesophagus or intestine, from destruction of the glands of the stomach or from exhaustion. Death has occurred in a child from the ingestion of half a teaspoonful of the strong acid, but recovery is recorded after half an ounce had been swallowed. the treatment consists in the prompt neutralization of the acid, by chalk, magnesia, whiting, plaster, soap or any alkaline substance at hand; emetics or the stomach pump should not be used. Morphine may be given hypodermically to mitigate the pain. Should the patient survive he will probably have to be fed by rectal enemata. The prognosis of sulphuric acid poisoning is bad, 60 to 70% of the cases proving fatal. The post-mortem appearances will be those of corrosive poisoning. The buccal mucous membrane will be greyish, brown or black in colour, due to the corrosive effects of the acid.

**SULPICIA,** the name of two Roman poets. The earlier lived in the reign of Augustus, and was a niece of Messalla, the patron of literature. Her verses, which were preserved with those of Tibullus and were for long attributed to him, are elegiac poems addressed to a lover called Cerinthus, possibly the Cornutus addressed by Tibullus in two of his *Elegies* (bk. ii., 2 and 3; see Schanz, *Gesch. d. röm. Litt.* § 284; F. Plessis, *La Poésie latine,* PP∙ 376-377 and references there given). The younger Sulpicia lived during the reign of Domitian. She is praised by Martial (x. 35, 38), who compares her to Sappho, as a model of wifely devotion, and wrote a volume of poems, describing with consider­able freedom of language the methods adopted to retain her husband Calenus’s affection. An extant poem (70 hexameters) also bears her name. It is in the form of a dialogue between Sulpicia and the muse Calliope, and is chiefly a protest against the banishment of the philosophers by the edict of Domitian (a.d. 94), as likely to throw Rome back into a state of barbarism. At the same time Sulpicia expresses the hope that no harm will befall Calenus. The muse reassures her, and prophesies the downfall of the tyrant. It is now generally agreed that the poem (the MS. of which was discovered in the monastery of Bobbio in 1493, but has long been lost) is not by Sulpicia, but is of much later date, probably the 5th century; according to some it is a 15th-century production, and not identical with the Bobbio poem.

Editions by O. Jahn (with Juvenal and Persius, revised by F. Bücheler, 1893) and in E. Bährens, *De Sulpiciae quae vocatur satira* (1873); see also monograph by J.C. Boot (1868); R. Ellis *in Academy,* (Dec. 11, 1869) and *Journal of Philology* (1874), vol. v.; O. Ribbeck, *Geschichte der römischen Dichtung* (1892), vol. iii. ; H. E. Butler, *Post-Augustan Poetry* (1909), pp. 174-176; Μ. Schanz, *Geschichte der römischen Litteratur* (1900), iii. 2; Teuffel, *Hist, of Roman Literature* (Eng. trans., 1900), p. 233, 6. There are English translations by L. Evans in Bohn’s *Classical Library* (prose, with Juvenal and Persius) and by J. Grainger (verse, 1759).

**SULPICIUS RUFUS, PUBLIUS** (c. 121-88 b.c.), Roman orator and statesman, legate in 89 to Cn. Pompeius Strabo in the Social War, and in 88 tribune of the plebs. Soon afterwards Sulpicius, hitherto an aristocrat, declared in favour of Marius and the popular party. He was deeply in debt, and it seems that Marius had promised him financial assistance in the event of his being appointed to the command in the Mithradatic War. To secure the appointment for Marius, Sulpicius brought in a franchise bill by which the newly enfranchised Italian allies and freedmen would have swamped the old electors (see further Rome, *History,* II. “ The Republic ”). The majority of the senate were strongly opposed to the proposals; a *justitium* (cessation of public business) was proclaimed by the consuls, but Marius and Sulpicius got up a riot, and the consuls, in fear of their lives, withdrew the *justitium.* The proposals of Sulpicius became law, and, with the assistance of the new voters, the command was bestowed upon Marius, then a mere *privatus.* Sulla, who was then at Kola, immediately marched upon Rome. Marius and Sulpicius, unable to resist him, fled from the city. Marius managed to escape to Africa, but Sulpicius was discovered in a villa at Laurentum and put to death; his head was sent to Sulla and exposed in the forum. Sulpicius appears to have been originally a moderate reformer, who by force of circum­stances became one of the leaders of a democratic revolt. Al­though he had impeached the turbulent tribune C. Norbanus *(q.v.),* and resisted the proposal to repeal judicial sentences by popular decree, he did not hesitate to incur the displeasure of the Julian family by opposing the candidature for the consulship of C. Julius Caesar (Strabo Vopiscus), who had never been praetor and was consequently ineligible. His franchise proposals, as far as the Italians were concerned, were a neeessary measure of justice; but they bad been carried by violence. Of Sulpicius as an orator, Cicero says *(Brutus,* 55): “ He was by far the most dignified of all the orators I have heard, and, so to speak, the most tragic; his voice was loud, but at the same time sweet and clear; his gestures were full of grace; his language was rapid and voluble, but not redundant or diffuse; he tried to imitate Crassus, but lacked his charm.” Sulpicius left no written