hydroquinone carboxylic acid (German Patent 81,297). When boiled with calcium chloride and ammonia, salicylic acid gives a precipitate of insoluble basic calcium salicylate, ■ , a reaction which serves to distinguish it from the isomeric meta- and para-hydroxybenzoic acids. It yields both esters and ethers since it is an acid and also a phenol.

*Methyl Salicylate,* C6H4(OH)∙CO2CH2, found in oil of wintergreen, in the oil of *Viola tricolor* and in the root of varieties of *Polygala,* is a pleasant-smelling liquid which boils at 222° C. On passing dry ammonia into the boiling ester, it gives *scdicylamide* and dimethylamine. When boiled with aniline it gives methylaniline and phenol. *Ethyl salicylate,* C5H4(OH)∙CO2C2H5, is obtained by boiling salicylic acid with alcohol and a little sulphuric acid, or by dropping an alco- holic solution of salicylic acid into ß-naphthalene sulphonic acid at a temperature of 140-150° C. (German Patent 76,574). It is a pleasant- smelling liquid which boils at 233o C. It is practically unchanged when boiled with aniline. *Phenyl salicylate,* C6H4(OH)∙C∙O2C6H5, or salol is obtained by heating salicylic acid, phenol and phosphorus oxychloride to 12o-125° C.; by heating salicylic acid to 220° C. ; or by heating salicyl metaphosphoric acid and phenol to 140-150° C. (German Patent 85,565). It crystallizes in rhombic plates which melt at 42° C. and boil at 172° C. (12 mm.). Its sodium salt is transformed into the isomeric C6H4(OC6H5) CO2Na when heated to 300°. When heated in air for many hours it decomposes, yielding carbon dioxide, phenol and xanthone. *Acetyl-salicylic acid* (salacetic acid), C6H4(O∙COCH3)∙CO2H, is obtained by the action of acetyl chloride on the acid or its sodium salt (K. Kraut, *Ann.,* 1869, 150, p. 9). It crystallizes in needles and melts at 132° C. (with decom- position). Hydrolysis with baryta water gives acetic and salicylic acids. It is used in medicine under the names aspirin, acetysal, aletodin, saletin, xaxa, &c. It has the same action as salicylic acid and salicylates, but is said to be much freer from objectionable secondary effects. *Scdicylo-salicylic acid* O∙(C6H4CO2H)2 is obtained by continued heating of salicylic acid and acetyl chloride to 130- 140° C. It is an amorphous yellow mass which is easily soluble in alcohol.

*Applications.—*The addition of a little of the acid to glue renders it more tenacious; skins to be used for making leather do not undergo decomposition if steeped in a dilute solution; butter containing a small quantity of it may be kept sweet for months even in the hottest weather. It also prevents the mouldiness of preserved fruits and has been found useful in the manufacture of vinegar. The use of salicylic acid as a food preservative, was, however, condemned in the findings of the commission appointed by the government of the United States of America, in 1904.

*Medicine.—*The pharmacopeial dose of the acid is 5-20 grains, but it is so unrelated to experience and practice that it may be ignored. The British Pharmacopeia contains only one preparation, an ointment containing one part of acid to 49 of white paraffin ointment. Salicylic acid is now never given internally, being replaced by its sodium salt, which is much cheaper, more soluble and less irritating to mucous membranes. The salt has a sweet, mawkish taste.

Salicylic acid and salicin (*q.v.*) share the properties common to the group of aromatic acids, which, as a group, are antiseptic without being toxic to man—a property practically unique; are unstable in the body; are antipyretic and analgesic.; and diminish the excretion of urea by the kidneys. As an antiseptic salicylic acid is somewhat less powerful than carbolic acid, but its insolubility renders it un­suitable for general use. It is much more powerful than carbolic acid in its inhibitory action upon unorganized ferments such as pepsin or ptyalin. Salicyclic acid is not absorbed by the skin, but it rapidly kills the cells of the epidermis, without affecting the immedιatcly subjacent cells of the dermis (“ trap skin ”). It has a very useful local anhidrotic action. Salicylic acid is a powerful irritant when inhaled or swallowed in a concentrated form, and even when much diluted it causes pain, nausea and vomiting. When salicin is taken internally no irritant action occurs, nor is there any antisepsis. Whatever drug of this group be taken, the product absorbed by the blood is almost entirely sodium salicylate. When the salt is taken by the mouth, absorption is extremely rapid, the salt being present in the peripheral blood within ten minutes.

Sodium salicylate circulates in the blood unchanged, decom­position occurring in the kidney, and probably in tissues suffering from the *Diplococcus rheurnaticus* of Poynton and Paine. It used to be stated that these drugs are marked cardiac depressants; and the heart being invariably implicated in rheumatic fever, it is supposed that these drugs must be given with great caution. It has now been established that, provided the kidneys be healthy, natural salicylic acid, sodium salicylate prepared from the natural acid, and salicin, are not cardiac depressants. Of the two latter, 300 grains may be

given in a dose and 1½ oz. in twenty-four hours, without any toxic symptoms. The artificial acid and its salt contain ortho-, para- and meta-cresotic acids, which are cardiac depressants. The vegetable product—which is extremely expensive—must be prescribed or the synthetic product guaranteed “ physiologically pure,” *i.e.* tested upon animals and found to have no toxic properties. Salicylates are the next safest to quinine of all antipyretics, whilst being much more powerful in all febrile states except malaria. Sodium salicylate escapes from the blood mainly by the kidneys, in the secretion of which sodium salicylate and salicyluric acid can be detected within fifteen minutes of its administration. After large doses haematuria has been observed in a few cases. The rapid excretion by the kidneys is one of the cardinal conditions of safety, and also necessitates the very frequent administration of the drug.

*Therapeutics.—*Salicylic acid is used externally for the removal of corns and similar epidermic thickenings. It causes some pain, so that a sedative should be added. A common formula has 11 parts of the acid, 3 of extract of Indian hemp, and 86 of collodion. There is probably no better remedy for corns. Perspiration of the feet cannot be attacked locally with more success than by a powder consisting of salicylic acid, starch and chalk.

These drugs are specific for acute rheumatism (rheumatic fever). The drug is not a true specific, as quinine is for malaria, since it rarely, if ever, prevents the cardiac damage usually done by rheu­matic fever; but it entirely removes the agonizing pain, shortly after its administration, and, an hour or two later, brings down the temperature to normal. In thirty-six hours no symptoms are left. If the drug be now discontinued, they will return in over 90% of cases. In acute gonorrhoeal arthritis, simulating rheumatic fever, salicylates are useless. They may thus afford a means of diagnosis. In rheumatic hyperpyrexia, where the poison has attacked the central nervous system, salicylates almost always fail. The mode of their administration in rheumatic fever is of the utmost importance. At first 20 grains of sodium salicylate should be given every hour: the interval being doubled as soon as the pain disappears, and extended to three hours when the temperature becomes normal. The patient should continue to take about 100 grains a day for at least a fortnight after he is apparently convalescent, otherwise a recrudescence is very probable.

Salicylate of soda may occasionally be of use in cases of gallstone, owing to its action on the bile. It often relieves neuralgia, especially when combined with caffeine and quinine.

*Salicylism,* or salicylic poisoning, occurs in a good many cases of the use of these drugs. Provided the kidneys be healthy, the symptoms may be ignored. If nephritis be present, it may be seriously aggravated, and the drug must therefore be withheld. The headache, deafness, ringing in the ears and even delirium of salicylism, are practically identical with the symptoms of cinchonism. The drug must be at once withheld if haemorrhages (subcutaneous, retinal, &c.) are observed. As in the case of quinine, the administration of small doses of hydrobromic acid often relieve the milder symptoms.

SALIERI, ANTONIO (1750-1825), Italian composer, was born at Legnano, on the 19th of August 1750. His father was a merchant who died a bankrupt. Through the family of Mocenigo he obtained free admission to the choir school of St Mark’s, Venice. In 1766 he was taken to Vienna by F. L. Gassmann, who introduced him to the emperor Joseph. His first opera, *Le Donne letterale,* was produced at the Burg-Theater in 1770. Others followed in rapid succession, and his *Armida* (1771) was a triumphant success.

On Gassmann's death in 1774, he became *Kapellmeister* and, on the death of Bonno in 1788, *Hofkapellmeister.* He held his offices for fifty years, though he made frequent visits to Italy and Paris, and composed music for many European theatres. His *chef d'oeuvre* was *Tarare* (afterwards called *Axur, re d’Ormus),* a work which was preferred by the public of Vienna to Mozart’s *Don Giovanni.* It was first produced at Vienna on the 8th of June 1787, and was revived at Leipzig in 1846, though only for a single representation. His last opera was *Die Neger,* produced in 1804. After this he devoted himself to the composition of church music, for which he had a very decided talent. Salieri lived on friendly terms with Haydn, but was a bitter enemy to Mozart, whose death he was suspected of having produced by poison; but no evidence was ever forthcoming to give colour to the accusation. He retired from office on his full salary in 1824, and died at Vienna on the 7th of May 1825. Salieri gave lessons in composition to Cherubini and to Beethoven, who dedicated to him his “ Three Sonatas for Pianoforte and Violin,” *Op.* 12.

Sec also Albert von Hermann, *Antonio Salieri, eine Studie* (1897) ; J. F. Edler von Mosel, *Über das Leben und die Werke des Antonio Salieri* (Vienna, 1827).

SALII, the “ dancers,’’ an old Italian priesthood, said to have been instituted by Numa for the service of Mars, although later tradition derived them from Greece. They were originally twelve in number, called Salii Palatini to distinguish them from