

fungus is commended by Trousseau ; but it has not been as successful in the hands of Murrell as some other agents, although capable, sometimes, of very good results. Muscarine is of doubtful propriety, if not positively contraindicated, in renal affections characterized by deficiency in the excretion. On the other hand, it ought to be of signal service in *diabetes insipidus* and in saccharine diabetes. It has been used successfully to arrest the secretion of milk.

Authorities referred to :

- ALISON, DR. *Boucharlat's Annuaire de Thérapeutique*, etc., for 1877, p. 47 ; also, *Gaz. Méd. de Paris*, February 20, 1877. *The Action of Atropine and Muscarine on the Heart*.  
 BOGOSSLOWSKY, DR. *Centralblatt für die med. Wissenschaften*, No. 97, 1870.  
 BRUNTON, T. LAUDER. *Journal of Anatomy and Physiology*, 1876, p. 342.  
 HARNACK, DR. ERICH. *Archiv für experimentelle Pathol. und Pharmakol.*, Band iv, p. 168. *Untersuchungen über Pflegenpilzalkaloide*.  
 PREVOST, DR. J. L. *Bull. Gén. de Thérap.*, vol. xciii, p. 371. *Note relative à l'Antagonisme mutuel de l'Atropine et de la Muscarine*.  
 RINGER AND MOSSHEAD. *Ringer's Hand-Book of Therapeutics*, eighth edition, article *Muscarine*.  
 SCHIFF, PROF. *Lo Sperimentale*, abstracted in the *London Medical Record*, vol. iv, 1876, p. 339.  
 SCHMIEDEBERG UND KOPPE. *Das Muscarin, das giftige Alkaloid des Fliegenpilzes*, etc. Leipzig, 1869. Vogel.

**Quebracho.**—The bark of *Aspidosperma quebracho*, an apocynaceous tree of Chili.

**PREPARATIONS.**—*Tincture.*—One part of quebracho to five parts of alcohol. Dose, ℥ v—3 j.

*Wine.*—One part of quebracho, two parts of alcohol, and sixteen parts of white wine. Dose, a teaspoonful to a tablespoonful. A fluid extract, prepared according to the general directions of the Pharmacopœia, will probably be found an eligible preparation.

**COMPOSITION.**—Quebracho seems peculiarly rich in alkaloids, but it is doubtful whether any one represents in its entirety the physiological powers of the bark itself. The most important are *aspidospermine*, discovered by Fraude in 1878, and *quebrachine*, separated by Hesse in the following year. Hesse describes several other active constituents or alkaloids, but the two just mentioned are the most important.

**ADULTERATIONS.**—Soon after the first specimens were sent to Europe, the sudden demand which sprang up induced sophistication, and quebracho-wood and quebracho colorado were substituted for the genuine. This substitution proved the less important, since these preparations acted in a similar manner, and were only weaker (Penzoldt). The early physiological investigations must, therefore, be interpreted by the light of this difference in the action of the several substances comprehended in the term *quebracho*.

**PHYSIOLOGICAL ACTIONS.**—Quebracho has the stomachal effects of the bitters in general : it promotes appetite and increases the digestive powers. The alkaloids diffuse promptly into the blood. The action of the heart is lowered ; the pulse in the normal state is less frequent ; at first, the tone of the artery is higher and the blood-pressure is raised, but as the action is continued, especially from lethal doses in animals, the force of the circulation declines and the pressure falls. The respiration is also slowed, and the sense of need of air is less imperative. The hurry of circulation and of respiration, and the feeling of oppression induced by active exercise, are modified by quebracho. Picot-Berthold studied these actions on his own person. Ascertaining first the rate of increase of the respiratory movements and of the circulation induced by active exercise of a definite amount, he next determined the influence of the remedy on these functions when the same amount of exercise had been taken. While without quebracho his pulse and respiration rose respectively to 42 and 94, under the action of the medicament they were 30 and 80. Not only was the rate of movement lessened, but the accompanying distress for want of air was decidedly ameliorated.

Guttman, who has made an elaborate study of aspidospermine, finds that in both cold- and warm-blooded animals it is an active poison of the respiratory and circulatory apparatus. In cold-blooded animals the respiratory actions are most pronounced, and death is produced by the effect of the poison on the respiratory center. Slowing of the heart's action proceeds *pari passu* with the diminution of the respiratory energy, and the cessation of the heart's movements is finally due to the impression of the poison on the intra-cardiac motor ganglia. In warm-blooded animals (cats) the influence of the poison on the heart is primary. The slowing of the pulse is not due to any effect which it has on the vagi, but to the paralyzing action which it exerts on the cardiac motor ganglia. With the slowing of the heart the temperature declines, and, with the diminution of respiration, dyspnoea comes on. Then the accumulation of carbonic acid in the blood induces stupor, and in animals convulsions. The reflex function is lowered in cold- but not in warm-blooded animals ; sensibility is unaffected in the latter, but motor paralysis finally occurs in both classes. Death is due to paralysis of the heart.

**THERAPY.**—The applications of quebracho in the treatment of disease were originally empirical, but they are clearly deducible from its physiological actions. It has long been known as a fever-medicine and as a remedy for dyspnoea, in the province of Santiago, Chili, where it was first obtained by Dr. Schickendanz. It has been used as a stomachic tonic, like the bitters in general, but more especially like cinchona, to increase the appetite and digestion in *atonic dyspepsia*. It is, however, chiefly important as a remedy for *dyspnoea*.

Picot, Skoda, Krauth, Penzoldt, and many others, have used it in various instances of difficult breathing, with remarkable palliation. In *emphysema*, *spasmodic asthma*, *uræmic asthma*, in *spasmodic cough*, *chronic bronchitis*, with asthmatic breathing, it has afforded very considerable relief. It has appeared to be much less useful, if not injurious, in the dyspnoea from valvular disease of the heart, and has had no effect in the dyspnoea of old subjects due to atheroma of the vessels. Krauth, however, has used it with advantage in the dyspnoea due to hypertrophy of the heart and in the difficulty of breathing in a case of albuminuria consecutive to scarlatina. The relief to dyspnoea in all cases, Penzoldt thinks, is referable to the increased consumption of oxygen by the blood, but a more rational explanation would seem to be the action on the respiratory center, and the diminution in the sense of need of air.

Having a paralyzing action on the cardiac motor ganglia, quebracho is not without danger in cases of weak heart. It must be considered a doubtful remedy when the motor apparatus of the heart is impaired—especially, if the accelerator nerves and their terminal ganglia are the parts damaged. On the other hand, when the lesions of the heart are merely valvular, it would appear to be safe; but in the dyspnoea due to this cause it is much less useful (Laquer, Berger). Certain unpleasant results of its administration render prolonged use of quebracho very difficult. These are, according to Laquer, headache, dullness of the sense-organs, vertigo, salivation, and a strong repugnance to its taste.

The preparation most used at present is the *extract*, and the usual dose for an adult is five grains. The alkaloid *aspidospermine* has been administered chiefly in the experimental way, but, although its actions correspond closely to those of the bark itself, it can hardly represent the drug in its entirety, seeing that there are several alkaloids contained in it. The salts of aspidospermine—the citrate, hydrochlorate, and sulphate—are freely soluble in water, while the alkaloid itself is not at all readily soluble in water, but is taken up freely by oils and fats—five to eight parts dissolving in one hundred parts of cod-liver oil by heat.

Authorities referred to :

BERGER, M. *Pharm. Journ. and Trans.*, quoted by *Annuaire de Thérapeutique* for 1881.

FRAUDE, M. G. *Quebracho-Aspidospermine*. *Bull. de la Soc. de Chim.*, quoted by *Annuaire de Thérapeutique* for 1881.

GUTTMANN, DR. G. *Ueber Wirkung und Anwendung verschiedener Aspidosperminpräparate*. *Archiv für experiment. Pathologie und Pharmakologie*, Band xiv, p. 463.

KRAUTH, DR. *Ecorce de Quebracho, son emploi thérapeutique*. *Bull. Gén. de Thérapeutique*, 1880.

PENZOLDT, DR. F. *Die Wirkungen Quebrachodogen*, Erlangen, 1881. (Pamphlet.)

PICOT-BERTHOLD. Quoted in *Annuaire de Thérapeutique* for 1881.

SKODA, PROF. DR. *Wiener med. Blätter*, No. 41, 1879.

REMEDIES USED TO CAUSE SOME EVACUATION  
FROM THE BODY.—EVACUANTS.

EMETICS.

SOME of the agents in this group produce vomiting by virtue of a local action on the stomach, and do not affect this viscus when introduced elsewhere. These may be entitled Emetics by Local Action. There are others which cause emesis when they enter the blood at any point—Systemic Emetics. The first sub-group of emetics make an impression on the gastric nerves, and an action is at once instituted for their expulsion. The process consists in the transmission of the peripheral irritation to the spinal center, the generation of a motor impulse, and the consequent action of the nervous and muscular apparatus concerned in the mechanism of vomiting. The systemic emetics produce their effects through the intermediation of the blood, and the vomiting is only one of the results of the disturbance introduced into the functions of the nervous system.

EMETICS BY LOCAL ACTION.

The most important of these are :

*Cupri sulphas*, sulphate of copper.

*Zinci sulphas*, sulphate of zinc.

*Hydrargyri sulphas flava*, yellow subsulphate of mercury.

*Alumen*, alum.

*Sinapis*, mustard.

*Scilla*, squill.

All of the members of this group have been discussed in other parts of this work, except mustard and squill, and the consideration of these will be more appropriate elsewhere. It is necessary, however, in this place to indicate the nature of the action, the cases to which they are adapted, and the mode of administration of the more important of the emetics belonging to this division.

**Cupri Sulphas.**—This is a very prompt and efficient emetic. The action begins in a few minutes, and the medicine comes up with the vomited matters. Very little depression follows the emetic action. It is more especially adapted to the treatment of *narcotic poisoning*, because, the action being local, the obtunded state of the reflex centers interferes less with its operation than is the case with the systemic emetics; and to *phosphorus poisoning*, because of its antidotal power. It is also occasionally used in *croup*, to effect the dislodgment of the false membrane, but other mechanical emetics are preferable.

**ADMINISTRATION.**—Dissolve twenty grains of the sulphate of copper in two ounces of distilled water, and give a tablespoonful every fifteen