prevalent, and the number of deaths and of men invalided was very large. In the meantime, however, an expedition, led by Colonel Donnier, against the Chinese garrison at Chu, about 10 m. south-east from Lang-kep, was completely successful; and in a battle fought near Chu the Chinese were defeated, with a loss of 3000 killed, the French loss being only 20 killed and 90 wounded. In the skirmishes which followed the French were generally victorious, but not to such a degree as to warrant any enlargement of the campaign.

In January 1885 large reinforcements arrived and Brière de l'Isle, who had succeeded Millot as commander-in-chief, ordered an advance towards Lang-Son. The difficulties of transport greatly impeded his movements, still the expedition was successful. On the 6th of February three forts at Dong- Song, with large supplies of stores and ammunition, fell into the hands of the French. Three days’ heavy fighting made them masters of a defile on the road, and on the 13th Lang-Son was taken, the garrison having evacuated the town just before the entrance of the conquerors. With his usual energy General Négrier, who commanded a division under Brière de l’Isle, pressed on in pursuit to Ki-Hea, and even captured the frontier town of Cua-Ai. But Brière de l’Isle had now to hurry back to the relief of Tuyen-Kwan, which was doggedly resisting the attacks of an overwhelming Chinese force, and Négrier was left in command at Lang-Son. The withdrawal of Brière de l’Isle’s division gave the Chinese greater confidence, and, though for a time Négrier was able to hold his own, on the 22nd and 23rd of March he sustained a severe check between Lang-Son and That-Ke, which was finally converted into a complete rout, his troops being obliged to retreat precipitately through Lang- Son to Than-Moi and Dong-Song. Brière de l’Isle reached Tuyen-Kwan, the garrison of which was commanded by Colonel Dominé, on the 3rd of March, and effected its relief. The disaster at Lang-Son caused the downfall of the Ferry ministry (March 30). Shortly afterwards Sir Robert Hart succeeded in negotiating peace with China. By the terms agreed on at Tientsin (June, 1885), it was stipulated that France was to take Tongking and Annam under its protection and to evacuate Formosa and the Pescadores. (For further history, see Indo- China.)

See J. Dupuis, *Le Tong-kin et l'intervention française* (Paris, 1898) ; C. B. Norman, *Tonkin or France in the Far East* (London, 1884); Prince Henri d’Orléans, *Autour du Tonkin* (Paris, 1896); J. Ferry, *Le Tonkin et la mère-patrie* (Paris, 1890); J. Chailley, *Paul Bert an Tonkin* (Paris, 1887); E. Lunet de Lajonquière, *Ethnographie du Tonkin Septentrional* (Paris, 1906); A. Gaisman, *l'OEuυre de la France au Tonkin* (Paris, 1906); also the bibliography under Indo-China, French.

**TONGS** (O. Eng. *tange* Μ. Eng. *longe,* cf. Du. *lang.* Ger. *Zange,* from base *lang,* to bite, cf. Gr. *δάκνειν),* a gripping and lifting instrument, of which there are many forms adapted to their specific use. Some are merely large pincers or nippers, but the greatest number fall into three classes: the first, as in the com­mon fire-tongs, used for picking up pieces of coal and placing them on a fire, which have long arms terminating in small flat circular grippers and are pivoted close to the handle; the second, as in the sugar-tongs, asparagus tongs, and the like, consisting of a single band of metal bent round or of two bands joined at the head by a spring, and third, such as the blacksmith’s tongs or the crucible-tongs, in which the pivot or joint is placed close to the gripping ends. A special form of tongs is that known as the “ lazy-tongs,” consisting of a pair of grippers at the end of a series of levers pivoted together like scissors, the whole being closed or extended by the movement of the handles communicated to the first set of levers and thence to the grippers, the whole forming an extensible pair of tongs for gripping and lifting things at a distance.

**TONGUE** (O. Eng. *lunge),* in anatomy, a movable organ situated in the floor of the mouth, and serving for the sensation of taste besides helping in the mastication of food, in articulate speech, and in feeling the exact position of any structure within the mouth.

The tongue is divided into a main part or body, a base which looks backward toward the pharynx, a dorsum or upper surface, a root by which it is attached to the hyoid bone and floor of the mouth, a tip which is free and an inferior free surface in contact with the front part of the floor of the mouth and with the lower incisor teeth. Owing to the large amount of muscle in its composition the shape of the tongue varies considerably from time to time. The dorsum of the tongue is covered by stratified squamous epithelium, and, when at rest, is convex both anteroposteriorly and transversely; it is thickly studded with papillae, of which four kinds are recognized.

*Filiform papillae* arc minute conical projections covering the whole of the dorsum, by which term the true upper surface is meant, as well as the tip and borders of the tongue. They are very numerous and contain a short core of subepithelial mucous membrane covered by a thick coating of epithelial cells, which coating may divide at its tip into a number of thread-like processes.

*Fungiform papillae* are less numerous than the last, and somewhat resemblc “ button mushrooms ” ; they generally contain special taste buds.

*Circumvallate papillae* are usually from seven to ten in number and are arranged in the form of a V, the apex of which points down the throat. They lie quite at the back of the upper surface of the tongue and each consists of a little flat central mound surrounded by a deep moat, the outer wall of which is slightly raised above the surface, and it is to this that the papillae owe their name. Both sides of the moat have taste buds embedded in them, while into the bottom small serous glands open.

*Foliate papillae* arc only vestigial in man and consist of a series of vertical ridges occupying a small oval area on each side of the tongue near its base and just in front of the attachment of the anterior pillars of the fauces. (See Pharynx.)

The posterior surface or base of the tongue forms part of the anterior walI of the pharynx and has a quite different appearance to that of the dorsum. On it are found numerous circular or oval elevations of the mucous membrane caused by lymphoid tissue (lymphoid follicles), on the summit of the most of which is a mucous crypt or depression. The division between the superior or oral surface of the tongue and the posterior or pharyngeal is sharply marked by a V-shaped shallow groove called the *sulcus terminales* which lies just behind and parallel to the V-shaped row of circumvallate papillae. At the apex of this V is a small blind pit, the *foramen caecum.*

At the lower part of the pharyngeal surface three folds of mucous membrane, called *glosso-epiglottic folds,* run backward ; the middle one passes to the centre of the front of the epiglottis, while the two lateral ones, in modern anatomy often called pharyngo-epiglottic folds, pass backward and outward to the fossa of the tonsil.

On the inferior free surface of the tongue, that is to say, the surface which is seen when the mouth is looked into and the tongue turned up, there is a median fold of mucous membrane called *the fraenum linguae,* which is attached below to the floor of the mouth. On each side of this the blue outlines of the ranine veins are seen, while close to these a little fold on each side, known as a *plica fimbria ta,* is often found. It must not, however, be confused with the plica sublingualis described in the article Mouth and Salivary Glands.

The substance of the tongue is composed almost entirely of striped muscle fibres which run in different directions. Some of these bundles, such as the *superficial, deep, transverse* and *oblique linguales* are confined to the tongue and are spoken of as intrinsic muscles. Other muscles, such as the byo-glossus, stylo-glossus, &c. come from elsewhere and are extrinsic; these are noticed under the head of Muscular System. The arteries of the tongue are derived from the lingual, a branch of the external carotid (see Arteries), while the veins from the tongue return the blood, by one or more veins on each side, into the internal jugular vein (see Veins).

The nerves to the tongue are the (1) *lingual* or gustatory, a branch of the fifth (see Nerves: *Cranial)* which supplies the anterior two- thirds with ordinary sensation and also, by means of the chorda tymphani which is bound up with it, with taste sensation; (2) the glossopharyngeal which supplies the circumvallate papillae and posterior third of the tongue with taste and ordinary sensation ; (3) a few twigs of the superior laryngeal branch of the vagus to the pharyngeal surface of the tongue ; and (4) the hypoglossal which is the motor nerve to the muscles.

*Embryology.*

The mucous membrane covering the second and third visceral arches fuses to form the furcula (see Respiratory System). Just in front of this a rounded eminence appears at an early date in the ventral wall of the pharynx to form the *tuberculum impar* which is separated from the furcula by the depression known as the *sinus arcuatus.* This tuberculum impar gradually grows to form the central part of the tongue in front of the foramen cæcum, while the anterior part of the organ is derived from two lateral swellings which appear in the floor of the mouth and surround the tuberculum impar antero-laterally. The posterior third, or pharyngeal part, is developed from the anterior part of the furcula