European, and to a large extent in other warfare, horsed transport is by far the most generally used. Mechanical transport (generally either traction engines with trucks or motor lorries) is, however, superseding horse draught to a considerable extent in second-line transport. The vehicle usually employed for military transport is the " General Service Wagon," a heavily-built springless four- wheeled vehicle drawn by six or four horses according to circum­stances, which weighs empty about 18 cwt., and allows of a maximum load, of 30 cwt. There are also four-horse “ limbered wagons ” consisting of body and limber, weighing 13 cwt. empty and 43 cwt. fully loaded, and lighter two-wheeled carts which can take 13-15 cwt. load.

As regards organization and functions, road transport is used on the line of communications to supplement the railway, and consists of locally hired or requisitioned vehicles worked by the Army Service Corps, or by civilian personnel under A.S.C. control. Transport with the field units is, as has been said, divided into first line, which accompanies the fighting troops, and second line, which follows them at a distance. Both lines are, as a rule, manned exclusively by the A.S.C. (or regimental details in the case of regimental transport) and composed of regulation-pattern carts and wagons. The first-line vehicles include ammunition wagons and carts, tool carts, engineer vehicles and medical vehicles. All baggage and store and supply wagons, as well as a proportion of medical, ammunition and engineer vehicles, form the second line.

(C. F. A.)

**SUPRA-RENAL EXTRACT.** The extract of the supra-renal gland is one of the most valuable remedies recently introduced in medicine. Feeding with the fresh gland of sheep was at first practised, but the sterilized glycerin preparation known as supra-renal extract is now used, the dose being 5 to 15 minims. the active principle of the gland,, best known as adrenaline or epinephrine, occurs only in the medulla of the gland. It forms minute white crystals, soluble in weak solutions of hydrochloric acid. The U.S.P. contains a desiccated preparation, *Glandulae suprarcnales siccae.* Adrenaline is most frequently used in 1 % solutions of the chloride.

Adrenaline has no action on the unbroken skin, but locally applied to mucous membranes it causes blanching of the part owing to its powerful constriction of the capillaries by stimulating the muscular fibres of the vessel walls. It acts rapidly in a similar manner when hypodermically injected. The vessels of the uterus are strongly acted upon by it, but the effect on the cerebral vessels is slight, and the pulmonary vessels are unaffected. The heart is slowed and the systole increased. Adrenaline stimulates the salivary glands. It also produces a temporary glycosuria. In poisonous doses it causes haemorrhages into the viscera and oedema of the lungs.

In Addison’s disease the use of supra-renal extract has been beneficial in some cases, but its chief use is in the control of hae­morrhage. For this purpose it is given in conjunction with local anaesthetics such as cocaine in order to produce bloodless opera­tions on the eye, nose and elsewhere. It is also useful in hae­morrhage from small vessels, where it can be applied at the bleeding spot, as in epistaxis. In menorrhagia and metrorrhagia it is also of service. In surgical shock and in chloroform syncope an injection of adrenaline often saves life through the rise of blood pressure produced. An attack of bronchial asthma may be cut short by a hypodermic injection of adrenaline solution. It should never be used in the treatment of haemoptysis. Similar commercial pro­ducts on the market are hemisine, renaglandine, suprarenine, adnephrine, paranephrine and renostyptine. Supra-renal snuff containing the dry extract with menthol and boric acid is of use in hay fever. Rhinodyne is of this type. Suppositories containing supra-renal extract are used to check bleeding piles.

The chemistry of adrenaline has been mainly elucidated by the investigations of Pauly, Jowett and Bertrand; Jowctt proposing a constitution (see annexed for­mula) now accepted as correct. Many substances having related constitutions have been synthe­sized, and it has been found that they resemble adrenaline in increasing the blood pressure. For example, the corresponding ketone, adrenalone (obtained in 1904 by Stolz) is active, and the methyl group can be replaced by hydrogen or another radical without destroying the activity. It seems that the para-hydroxyl group is essential. \* For instance, para-hydroxyphenylcthylaminc, HO·C6H4CH2·CH2NH2, which is one of the active bases of ergot, closely resembles adrenaline (G. Barger, Jonrw. *Chem. Soc.,* 1909, 95, pp∙ 1123,. 1720; K. W. Rosenmund, *Ber.,* 1909, 42, p. 4778); as does also its dimethyl derivative hordenine, an alkaloid found in barley (G. Barger, ibid., p. 2193). Adrenaline is optically active, the naturally occurring isomer being the laevo form ; it is interest­ing to note that, like nicotine, the laevo base has a much greater physiological activity than the dextro.

**SUPREME COURT OF JUDICATURE,** in England, a court of law established by the Judicature Act 1873, by section 3 of which it was provided that the high court of chancery, the courts of king’s bench, common pleas, and exchequer, the high court of admiralty, the court of probate and the divorce court, should be united under this name. By section 4, the Supreme Court was to consist of two divisions, one to be called the “ high-court of justice ” and the other the “ court of appeal.” See further under Judicature Acts, and also the articles under the headings of the different courts enumerated above.

The Supreme Court of the United States is the head of the national judiciary. Its establishment was authorized by article iii. of the Constitution, which states that “ the judicial power of the United States shall be vested in one Supreme Court, and in such inferior courts as the Congress may from time to time ordain and establish ” (s. i.). Section ii. states that “ the judicial power shall extend to all cases in law and equity arising under this Constitution, the laws of the United States, and treaties made, or which shall be made, under their authority; to all cases affecting ambassadors, other public ministers and consuls; to all cases of admiralty and maritime jurisdiction; to controversies between two or more states, between a state and citizens of another state, between citizens of different states, between citizens of the same state claiming lands under grants of different states, and between a state, and the citizens thereof, and foreign states, citizens, or subjects. In all cases affecting ambassadors, other public ministers and con­suls, and those in which a state shall be party, the Supreme Court shall have original jurisdiction. In all the other cases before mentioned the Supreme Court shall have appellate jurisdiction both as to law and fact, with such exceptions and under such regulations as the Congress shall make.” The Supreme Court of the United States also occupies the unique position of being guardian of the Constitution. It has to decide whether a measure passed by the legislative powers is unconstitutional or not, and it may thus have to veto the deliberate resolutions of both houses of Congress and the president.

See United States.

**SURABAYA** (Dutch *Soerabaja),* **a** seaport of **Java,** in the eastern division of the island, on the narrow Surabaya strait, which separates the island of Madura from Java, and at the mouth of the Kali Mas River. Pop. (1900), 146,944 (Europeans 8906; Chinese 13,035). Surabaya is the principal mercantile town in Java. Its roadstead is sheltered by Madura, and it has important dockyards. It is also the headquarters of the military authorities for East Java, and has artillery workshops. Railways running north-west, south-west and south give it connexions throughout the island. In the old town, with its partly demolished fortifications, houses, shops and warehouses are more closely packed and the streets are narrower than in most East Indian towns, and, although a considerable number of Europeans live in this quarter, the outlying quarters, such as Simpang (where is the government house) and Tuntungan, are preferable for residence.

**SURAJ-UD-DOWLAH** (d. 1757), ruler of Bengal. The date of his birth is uncertain, but is generally placed between 1729 and 1736. His name was Mirza Mahommed, and he succeeded his grandfather Aliverdi Khan as nawab of Bengal on the 9th of April 1756. He was a cruel and profligate fanatic. Being offended with the English for giving protection to a native official who had escaped with treasure from Dacca, he attacked and took Calcutta on the 20th of June 1756. He then permitted the massacre known in history as “ The Black Hole of Calcutta ” (see Calcutta). This atrocious act was soon avenged. Cal­cutta was retaken by Clive and Admiral Watson on the 2nd of January 1757, and on the 23rd of June, Suraj-ud-Dowlah, routed at Plassey, fled to Rajmahal, where he was captured. He was put to death on the 4th of July 1757 at Murshidabad, by order of Miran, son of Mir Jafar, who had conspired against Suraj-ud-Dowlah and had been present at Plassey without taking part in the battle.