acid [the only agent known which will effect that purpose], it becomes incapable of taking many colours, especially the new and brilliant coal tar dyes. The long-disputed question amongst chemists—How sulphurous acid operates so as to bleach wool?—has lately been solved by Messrs. Leuchs and Weber, who have proved that sulphurous acid unites with the colouring matter of wool, forming a colourless compound, in proof of which it appears that if the wool is placed in boiling water this colourless compound is dissolved, and the wool regains its susceptibility to dyes, though it is slightly discoloured. A slight amount of alkali added to the boiling water greatly facilitates the removal of this artificial sulphuretted compound. In a paper lately published by Mr. Grothe, he states that 100 parts of wool fix on an average 0·67 of sulphur, or 1·31 of sulphurous acid to bleach it, and practically 100 parts of wool require about five parts of sulphur to be burnt to produce the result. I should also state that wool must always be wet before being submitted to the fumes of sulphur, and it is always advantageous to pass it previously through a soap lye or weak alkali. Wool so bleached should always be well washed in cold water, to remove the excess of sulphurous acid, which otherwise, if the wool were subsequently exposed to moisture, might be converted into sulphuric acid and destroy the fibre of the wool. It may be interesting to ladies to know the process used by a French scourer, named Jolly, to restore Cashmere shawls discoloured by time. It consists in dipping them into a solution of sulphurous acid, which bleaches the wool but does not affect the fast colours with which the fibres composing the patterns of the shawls are dyed. The shawls then only require to be washed and pressed to be restored to their origiual beauty. There is no doubt in my mind that a solution of sulphurous acid might be substituted for the gas in bleaching wool with advantage and economy, owing to the sulphureus acid being in a more condensed form, and in better condition for effecting the bleaching process. A few years ago I took advantage of the fact that wool contains sulphur to produce upon it an artificial lustre. The woollen goods were passed through a weak boiling solution of acetate of lead, washed carefully in pure water, and submitted to the action of high-pressure steam, when the lead combined with the sulphur of the wool, producing galena, which gave the wool a lustre. The action was regulated by generating, under the influence of steam, nascent sulphuretted hydrogen from a polysulphuret of sodium, which facilitated the object in view. Wool is generally dyed either in the fleece, after undergoing the processes of washing and scouring, or it is first spun into yarn or worsted. To describe all the various methods of dyeing wool would far exceed the limits of this lecture. The operations of spinning wool into yarn or worsted are purely mechanical, and it is not therefore within my province to describe them. The same remark applies also to the manufacture of felt and shoddy, now so extensively carried on in Yorkshire, and I shall therefore merely refer to one or two points having reference to chemistry, such for instance as the working up of the wool or the cotton in worn-out fabrics. To recover the wool from such fabrics the process is most simple, consisting merely in immersing them in diluted muriatic acid, and drying them at a temperature of about 220°, by which means the cotton is completely destroyed, the wool remaining unaffected. The material is then submitted to the action of a "devil," which separates and blows away the cotton, leaving the wool ready for being worked up. To remove the vegetable fibre with the view of applying it to the purposes for which it is adapted, as the paper manufacture for instance, the following process has been devised by Mr. F. O. Ward and Captain Wynants. The mixed fabric is submitted to high pressure steam [60 to 80 lbs. to the square inch], and under the influence of this high and moist temperature the vegetable fibre remains unchanged, whilst the animal one is so disorganized that when the rags are removed from the receptacle and dried, and submitted to the action of a beating machine, the cotton fibre remains intact, whilst the animal matter falls to the bottom of the machine in the form of a dark-coloured powder mixed with small lumps of the same substance; this residue has been advantageously applied as a manure, by these gentlemen, under the name of "ulmate of ammonia." I am happy to state that chemical science has discovered several means of distinguishing cotton from wool when employed in the same fabric, and even of determining their respective weights in the same; but the aid of the magnifying powers of the microscope is often required in investigating the mixtures of wool with flax, cotton, jute, &c., which are now so extensively and so ingeniously spun together. The description of these processes, however, would involve so much technicality, and require so much time, that I must not trouble you with their details. The same remarks apply to the means for distinguishing the materials used in mixed fabrics of silk and cotton, or silk, wool, and cotton.

Silk.—This material has always been highly esteemed, owing to its remarkable durability, and to the beauty of the fabrics produced from it. Thus the Chinese have used silk from time immemorial, and the Romans held it in such high estimation that, in the time of the Cæsars, silk was worth its weight in gold. The most interesting fact for us is the date of the introduction of the silkworm into Europe. It is related that in A. D. 555 two monks, returning from the East, concealed some silkworms' eggs in their staves, and having succeeded in rearing the worms, their culture soon spread through Greece and Turkey, and gradually found its way into Italy towards the twelfth century. The silk in use at the present day is chiefly derived from the *Bombyx mori*, but the extensive disease which has during the last eight or ten years destroyed very large numbers of the worms has given rise to great efforts to introduce some new species, two of which, the *Bombyx mylitta*, feeding on the *Palma Christi*, or castor oil tree, and the *Bombyx ailanthi*, feeding on the plant from which it is named, have been to some extent successful. The material forming the silk is secreted in two glands placed on the side of the animal's body, whence it passes into an organ called the spinaret, on each side of which are two other glands, which secrete a gummy substance, and this uniting with the former forms the silk