SCIENTIFIC MISCELLANY.

After a careful study of most of the self-propelled carriages, from the earliest times to the present day, Sir David Salomons concludes that steam is much the most suitable and advantageous motive power. In England, electric energy for carriages cannot be calculated at less than 4d per horse-power hour, and accumulators must be frequently re charged, with considerable loss in useless travel, unless charging stations are to be found throughout the locality. The cost of benzine gas would be about a fourth as great for the same power, steam, from petroleum fuel at 6d per gallon, costing about the same as the gas. The best existing motor the world has yet seen for its power. method of fuelling, suspension springs, and traveling long distances before recharging, is one which is likely to remain with us for many a long year to come, whatever may be the future development of motor traffic. It is known and loved by all under the name of the horse.

The actual effects of deforestation upon climate are not definitely known, although trees are believed to exert a marked influence. In his recent lecture on Kimbelry, Dr. William Crookes mentioned that over a million trees have been cut down to supply the diamond mines; and the country, within a radius of 100 miles, has been denuded of wood. The frequent dust storms o summer are among the injurious effects supposed to have been thus caused.

Anthropologists have ascertained that the Andaman Islanders, the smallest race of people in the world, average less than four feet in height, while few of them weigh more than seventy-five pounds.

"Growing pains" are a myth, says Dr. Irving S. Haynes. The pains mean Potts' disease of the spine, and the ignorant or lazy doctor does not find it out until the limp, or the hump on the back appear.

Extraordinary expectations seem to have been built upon a new variety of asphalt, locally known as "Munjak," which was, not long ago, found in large quantities in Barbadoes. It exists near the surface of the ground, in seams from one to two feet thick. It is supposed to have been formed by the drying up and consolidation of petroleum, which occurs with it; and, while its composition is very similar to that of Trinidad pitch, the Utah uintahite or gilsonite, and the Canadian albertite, it is claimed to be superior to these in quality. It even rivals the Egyptian asphaltum. The material has been successfully used for electric insulation, for fine varnishes, for paving concrete, for fuel with peat or other organic matter, and for enriching coal gas. The prediction is made that it will even supplant rubber in all waterproof work.

The investigations of M. Meguin have now made it possible to determine, with great precision, the time of death of a person, by noting the bacteria present in the body. He has conclusively proven that the successive forms always arrive in the same order from the time of death to that of complete disintegration of the body—a fact that has been shown by several interesting examples to be of great practical value.

Nansen's discovery of a deep Arctic basin, has suggested to M. 'de Sapparent, that the real shape of the earth may be that of a top, with the South pole as its spinning point. This theory results from considering that the area we may now assign to the Arctic ocean, is almost the same as that given by Murray to the Antarctic continent (about (1,750,000 square miles), while the depths observed by Nansen correspond in order of magnitude to the heights observed by Ross. Such a suppositon, it is added, would tend to reconcile the slight differences of astronomers and geodesists as to the ratio of the polar and equatorial diameters. The latter base their value of the polar flattening (1 294) upon measurements made almost entirely in the northern hemisphere; and the value obtained by M Tisserand, from the precession of the equinoxes (1,297). may prove sensibly correct, if the effect of a south polar protuberance upon the form of the sea surface is considered.

A supply of spring water at Kiel, Germany, is so strongly charged with iron, as to be unsuitable for use. To improve it, the authorities first cause it to traverse a system of metallic channels and cascades, then to pass through a bed of coke ten feet thick, and finally through sand filters, each about sixty-five feet long and forty-nine feet wide. The treatment has proven successful in removing all iron, leaving the water unobjectionable in color, taste and smell. The bed of coke is divided into eight compartments, which are washed free from iron once a week by isolating a compartment at a time, and sand filters are cleansed by replacing a thin upper layer with clean sand.

Darwin's view that the human beard is a hereditary remnant of animal growth, is directly opposed by A. Brandt. This writer believes that it has been acquired in man's development; and, that the occasional beard of women, is prophetic of a coming time when all women will be bearded.

Liquid air has been hitherto an expensive product, as it has been obtained by the successive refrigeration, compression and expansion of several gases—such as carbonic acid, ethylene and oxygen. By the recently perfected process of Professor Linde, of Munich, a pump of five horse-power condenses the air to a pressure of 200 atmospheres, the air passing down a spiral tube and expanding, with the production of great cold, on being admitted to a chamber surrounding the spiral Each instalment of air pumped in further cools the spiral, until in a few minutes the air escapes into the chamber in liquid drops having a temperature of 273° below zero. This process is said to have reduced the cost in Germany from about $2.25 to 2¼ cents for each five cubic meters reduced, and the sudden cheapening of a substance of such varied possibilities is expected soon to bring about many industrial changes.

Photographers are said to be able sometimes to produce direct positives by extreme over-exposure or by special treatment. Anthony's Bulletin calls attention to the remarkable experience of a beginner, who obtained three positives and one negative from four exposures of the same subject, the only difference in conditions being the length of exposure. The one good, clean-cut positive of the three was produced by an exposure of a minute and a quarter with fairly large stop in full daylight. In another experience mentioned, two exposures of the same subject under precisely the same conditions of lighting and timing produced one positive and one negative, although developed in the same tray at the same time.

Fruit trees along highways and even railroads have become a source of revenue to some German states, and in the grand duchy of Luxembury special classes are held every year for instructing inspectors and road hands in the planting and care of orchards.

Several substitutes for glass are now made in Germany. Tectorium is bichromated gelatin overlying on both sides a web of galvanized iron or steel wire, and is made into sheets about a sixteenth of an inch thick. It is lighter than glass and practically unbreakable. It may be bent, is easily repaired, and is a poor conductor of heat and cold. It is about as translucent as opal glass. Its disadvantages are inflammability and liability to soften on warm days. A material for hot-houses is Fensterpappe. It is a tough manilla paper made translucent and impervious to water by soaking in boiled linseed oil, and in long rolls one meter wide is said to cost only about one-hundredth as much as glass, while it is duracle and not readily damaged. It requires no shading from hot sunshine; yet at all times admits sufficient light for growing plants. A more recent product is Horngias. This resembles tectorium, but is claimed to be more transparent and to soften less readily on heating.

A new element, bythium, is claimed by Theodor Gross, a German Chemist, to have been obtained from sulphur. On electrolyzing a fused mixture of silver sulphide and silver chloride in a nitrogen atmosphere, he obtained a dark gray powder, insoluble in aqua regia and in ammonia. Fused with alkaline carbonate, this dissolved in hydrochloric acid, from which hydrogen sulphide gave a brown precipitate. The new substance equals five per cent of the original sulphur used, and as there is not only a corresponding loss of sulphur but a smaller loss of chlorine, the possibitity is admitted that bythium may have come from the decomposition of chlorine instead of sulphur.

The fascinating idea that each disease microbe has its one specific poisonous principle, its toxin, is attacked by M A. Charrin, a French biologist. He shows from experiments that a single microbe species may produce several pathogenic compounds—the bacillus of pus, for instance, yielding several, which are easily distinguished by their pathological effects.

Experiments have shown that the ash constituents of coal, which are not readily permeable, may be roughly estimated by means of Roentgen rays on