CHEMISTRY, PHYSICS, AND TECHNOLOGY.

PAIN.— "Pain" is an ache, or abnormal feeling, produced from an unnatural condition of the nerve or nerves afflicted, and in most cases it is induced by pressure, derangement, disintegration, or the imperfect circulation of the blood in or near them. Proof of the first and last : Rubbing over and near the sensitive nerves by increasing the circulation mechanically, will remove the annoyance.

TURPENTINE AS A DISINFECTANT.—Mr. Thos. Taylor, Microscopist of the Department of Agriculture, has an article in a Washington paper, from which we take the following: "Turpentine I also found to be a powerful deodorizer. A tablespoonful added to a pail of water will destroy the odor of cesspols instantly, and in the sick chamber will prove a powerful auxiliary in the destruction of germs and bad odors."

PATE DE BOIS.—In the Norwegian section of the Paris Exhibition, no less than 17 exhibitors send samples of the newly-developed ' $pdte \ de \ bois$ " industry. The article named is really the wood of the pine tree pulped, and formed into paper or carton by compression. The whole forms a most interesting exhibit, from the sheets of wood-pulp card-board to the highly-decorative cornices and panels, many of the designs being, moreover, both good and simple. This industry bids fair to become a very important item in the export trade of Norway. The export of this class of goods to France and England varies from 800 to 2000 tons per annum; and we learn that the demand is rapidly increasing every year.

RENDERING WOVEN FABRICS INCOMBUSTIBLE.—An accident in a match manufactory, in which a girl's clothing caught, fire, lately induced M. Sieborath, of Dresden, to experiment upon Processes for this purpose. Saturation with five or ten per cent. alum solution gave no good results; the stuffs burned with a flame after the impregnation, which, moreover, spoiled their ap-Pearance. On the other hand, a five per cent. solution of phose phate of ammonia proved quite successful; the impregnated clothes did not burn with flame, but were merely destroyed by Carbonization. Lastly, a solution containing five per cent. alum and five per cent. The fabrics thus treated did not even burn when they had before been vigorously rubbed with gunpowder, The powder flashed, but left the stuff unconsumed. The clothes lose their incombustibility by getting wet or being washed. It is a disadvantage that they can be worn only in certain places, and that after washing a fresh impregnation is required.

PHOSPHOEUS A CURE FOR SCIATICA.—It is not ordinarily wise to try remedies for effecting cures which one finds in the newspapers. But where the ingredients are such that no harm can arise from their trial, and the source from which the prescription emanates is likely to be reliable, the afflicted will gladly try almost any remedy recommended. Dr. Volquardsen reports in Schmidt's *Dictionary* and the *Pesth Medico-Chirurg. Presse*, both good authorities, from which the London Medical Record copies, a case of sciatica which lasted for two years and defied all treatment. He then arrived at the idea of trying the internal use of phosphorus, which he prescribed in doses of fifteen milligrammes (about one-fourth of a grain) three times a day. Three days sufficed to obtain a marked improvement, and three weeks brought a complete cure.

To REMOVE TIGHT STOPPERS.—To remove glass stoppers when tightly fixed, it has been recommended to apply a cloth wet in hot water. This is an inconvenient and frequently unsuccessful method. The great object is to expand the neck of the bottle so as to loosen it on the stopper. If, however, the latter be heated and expanded equally with the former, the desired effect is not produced; and this is often the case in applying hot water. By holding the neck of the bottle about half an inch above the flame of a lamp or candle, for a few seconds, we have never failed in the most obstinate cases. The hands should be wrapped in a towel, and great care should be taken not to let the flame touch the glass, as this might cause it to crack. The bottle should be kept rapidly turning during the operation, s- as to bring all parts of the neck equally under the influence of the heat, when it will be rapidly expanded, and the stopper may be withdrawn by a steady pull and twist. Following this plan, we have never failed once out of hundreds of attempts. When the bottle contains alcohol, benzine, ether, or similar inflammable liquids, great care must be taken lest the stopper should come out suddenly, and the contents of the bottle take fire.

IMITATION SHELL AND PEARL. — Imitations of lapis lazulitortoise shell and mother-of-pearl have been manufactured in Austria for more than 12 years. The "shell" imitation, which is in greatest demand, may be made on glass, and consists of a layer of clear gelatine, on which the characteristic markings of the tortoise shell are produced by dotting it with a concentrated solution of vesuvine (aniline color) to which a handsome reddish shade may be given with fuchsine ; or the solution is spattered over the surface and the drops allowed to run together. When dry, the whole is covered over with a coating of glue. The imitation of mother-of-pearl is more difficult. It may likewise be made on glass, and contains in the first gelatine layer a concentrated solution of some salt. Several salts may be chosen for this purpose, such as white vitriol, epsom salts, &c. After the crystallization of this salt solution, and when dry, essence of pearls is spread over the whole. The latter material is made from the exceedingly fine and silvery-shining belly scales of the bleak, which are scraped off and washed out thoroughly. To the gelatine layer thus prevared, a coat of glue is applied and the article is then complete.

AN UNEXPECTED SCAVENGER.—An unexpected friend to man has been discovered in a kind of animacule engendered by sewage, which prevents the decomposing matter from becoming a dangerous nuisance. Mr. Angell, the public analyist for Hampshire, having examined the sewage-polluted fluid in Southampton water, has discovered that where the suspended matters are thickest there is going on a silent destruction of the foul matters through the agency of millions of minute creatures, by some held to be of animal, but Mr. Angell believed to be of vegetable origin. On examining the muddy fluid through a microscope it was found to contain myriads of little brown organisms surrounded with a gelatinous substance. Each specimen was found to be active in its movements and of peculiar shape, being furnished with a belt of cilia round the center of the body, and with a long, transparent, and very flexible tail. After death these tiny atoms give off an odor similar to that of sea-weed, and change to a green color. During life they evolve bubbles of oxygen gas, which serve to purify the water from the effects of the decomposing matter on which they themselves feed. It is a pity, however, that man, by polluting rivers with sewage, should stand so much in need of this self-developed scavenger.

EXPLOSION OF SAWDUST.—A propos the theory advanced on flour mill explosions, that all substances which are inflammable are also explosive, when finely divided in the shape of dust and mingled in the air, we notice that a gentleman of Appleton, Wis., has had an experience which verifies our theory. In his spoke mill, the upper story was used as a finishing-room, where the spoke was finished and polished by contact with rapidly revolving sanded be'ts. In this store was a stove for warming purposes. The fine, 1.ght dust produced by the operation of the belts upon the spokes, accumulated in every crack and crevice of the room, requiring to be cleaned off every day. One day, not long ago, some of this dust was seen to fall from a rafter upon some live coals that had accidentally been left upon the hearth. Instantly there was a flash that filled the whole loft, and set it on fire in a hundred places. It was with difficulty that the fire was subdued, and not without considerable damage to the building. We may also notice in this connection, that some scientific authorities in Great Britain assign the explosions in the coal mines there to clouds of coal dust instead of to fire-damp.

CALCULATING MACHINES.—In his address on the science of mathematics, Mr. Spottiswood made allusion to calculating machines. The idea of substituting mechanical for intellectual power has not laid long dormant, for, besides the arithmetical machines whose name is legion, from Napier's bones to Earl Stanhope's calculator, and the Schultz and Thomas machines, now in actual use, Prof. James Thompson has recently constructed a machine which, by means of the mere friction of a disk, a cylinder and a ball is capable of effecting a variety of complicated calculations which occur in the highest application of mathematics to physical problems. By its aid an unskilled laborer may perform the work of ten skilled arithmeticians. The machine is applicable alike to the calculation of thal, of magnetic, of meteorological, and perhaps also of all other periodic phenomena. It will solve the different equations of the scoond and perhaps of even higher orders, and through the same invention the problem of finding the free motions of any number of mutually attractive particles, unrestricted by any of the approximate suppositions required in the treatment of the lunar and planetary theories, is reduced to the simple process of turning a handle.