

What led him to test its dyeing qualities he has probably forgotten, but he found that, after purifying and dissolving it, the stuff possessed the property of dyeing wool and silk a beautiful violet-like color, which was named mauve. This discovery turned the young Englishman's investigations into another channel, and when Dr. Hofmann returned from his vacation he found that his assistant had secured patents and was planning to begin the manufacture of the new dye-stuffs.

A factory was erected near Harrow in 1857, and by the end of that year was turning out a heavy output of dye-stuffs. Thus the great aniline dye industry of the world was born, an industry which Germany, France, and Belgium, especially, have found exceedingly profitable.

Perkin made another great step forward in 1868, when he began producing the valuable artificial madder, or Turkey-red, on a large scale. Before that the artificial substance was merely a laboratory curiosity and its cost was so great as to be prohibitive.

Gigantic Factories.

In the same way he laid the foundation of the artificial perfume industry. Early in the seventies, having accumulated a fortune, he retired from business and has since devoted himself to scientific research. He had started the world, however, upon a new line of industry. German scientists took up the possibility of coal-tar products, and have developed the gold mine persistently and effectively. Today five principal coal-tar product factories of Germany are valued at £5,000,000. Their output goes to all parts of the world. At one of these 4,500 men are employed, including 1200 skilled artisans, 500 clerks, 175 engineers, and 145 graduated chemists. The firm owns 1200 German patents and 1400 others through the remainder of Europe and in the United States.

One English dye factory employs 4000 workers, including 80 research chemists. These examples indicate what an enormous business has sprung from a once-worthless material.

Scents for Soap.

Benzine is one of the important substances found in coal-tar, having been discovered by Michael Faraday in 1825. It is now used in great quantities for the production of aniline and also a powerful perfume called essence of mirbane, or artificial oil of bitter almonds. No less than 150 tons of this perfume is used annually in Europe for scenting soaps and other toilet articles. The usefulness of benzine in cleaning goods is known in every household. Another substance found in coal-tar is naphthalene, from which some of the most beautiful yellow to reds, pinks, greens and scarlets are got. Naphthalene is highly prized by naturalists for preserving moths, butterflies, and other insects. From the substance known as anthracene the popular color Turkey red is obtained. Since the time when this was first known it had been produced from the roots of the madder plant largely cultivated in Russia, Turkey, and France.

Alizarin, as the coloring principle of madder is called, has the property of forming various different hues with different chemicals. A piece of calico, printed with several chemicals and given a bath of alizarin, will emerge with different colors—a fact that was mentioned by Pliny.

When Perkin adopted by his dye-factory business the discovery of two German scientists that an artificial alizarin could be made from the coal-tar product, anthracene, the dyeing and calico-printing industries underwent a revolution.

This once despised and rejected coal-tar has also become a corner-stone in the temple of medicine. Its derivations are being extensively used to cure human ills.

For assuaging fevers, antipyrine is effective, and is cheaper than quinine. It has been used with success in treating typhoid fever and influenza.

Thallium, another coal tar drug, has especial potency in mitigating yellow fever, phenacetine is used for headaches, colds, neuralgia, and whooping-cough.

Sulphonal is popular with travellers, especially those in countries where hardships and fatigue are the common lot. It produces a deep quiet sleep, lasting seven or eight hours, from which the person awakes refreshed and strengthened.

Sweeter than Sugar.

One of the most remarkable constituents of this black fluid that comes from coal is saccharine, a substance that is two hundred times sweeter than sugar, and which is used extensively in the manufacture of candies, fruit, preserves, jams, and jellies. Saccharine does not fatten as cane sugar does, and for that reason is recommended to persons suffering from certain

diseases, such as diabetes. Those who have visited or passed gas works and have seen a tar tank, dirty, repulsive-looking, emitting a tarry, nauseous odor, would never imagine that here some of the most delightful perfumes of my lady's boudoir have their origin. From coal-tar comes such pleasing scents as 'new-mown hay,' suggestive of sunny fields and buzzing bees; the 'white heliotropes' and others so well known and popular. The same tarry source yields vanillin, a flavoring essence resembling the best product of the true vanilla bean; it gives us oil of wintergreen, musk, jasmine, and many others. Photography has been aided by this product of the coal. Pyrogallie acid, metol, hydroquinone, and adural, all extensively used as developing agents, come from it. So does pyridine, which is employed in the denaturation of grain alcohol. Antinoline, another derivative, is used to prevent dry rot in timber. In fact, street paving with wooden blocks has been taken up extensively in European and American cities since it was discovered that remarkable preservation of the wood was insured by treatment with coal-tar substances.

Powerful Explosives.

And still the resources of this wonderful by-product, this waste of former years, are not exhausted. From its derivatives powerful explosives are manufactured—picric acid, lyddite, melinite, maxinite, and jovite. Some of these were brought prominently to the world's attention during the Boer and Russo-Japanese wars. Lyddite was first used extensively by the English artillery in the South African conflict, while the enterprising Japs are said to have employed both this explosive and maxinite. Lyddite is, practically, pure picric acid, while melinite, which the French prefer, consists of picric acid modified by 4 per cent of thick, viscid petroleum oil. This may be shot through armor plates without detonating by the shock, which lyddite will not do. All these coal-tar explosives may be handled without danger except from sudden and severe shock. A lighted match dropped among them would not send the man dropping the match soaring skyward, together with a large part of his surroundings, as in the case with gunpowder. Instead, the substances will burn freely and as harmlessly as pitch-pine. But when confined in a strong steel shell, and ignited by a powerful detonating charge, their explosive energy is among the most fearful of known substances. Such, then, in brief is the remarkable record of coal tar. It would seem as though some all-powerful fairy had touched this ugly black ooze with a mystic wand, endowing it with a wealth of possibilities that has amazed the chemical world for more than a generation.

Diocesan News

ARCHDIOCESE OF WELLINGTON

(From our own correspondent.)

May 5.

His Grace the Archbishop left on Wednesday morning on a visit to the Wairarapa.

The Ven. Archdeacon Devoy, S.M., the Very Rev. Father Lewis, and the Rev. Father Hickson leave on the 23rd inst by the 'Corinthian' to represent the Society of Mary in New Zealand at the meeting of the General Council of the Order to be held in Belgium.

Two of our young men were on Saturday evening elected by the students of Victoria College to the two chief posts of honor on the Students' Association. Mr. W. Perry, last year's secretary, was elected president, and Mr. H. O'Leary, secretary.

The parish authorities at South Wellington are improving the church grounds by laying down an asphalt path from the Green street entrance to the church door, and building a handsome fence at the same approach. These improvements will be a decided advantage for the congregation. A social gathering to raise the necessary funds is to be held on the 15th inst in the Victoria Hall, Adelaide Road.

During the week both the local dailies made reference to Mother Aubert's work in terms of warm appreciation. It is everywhere recognised that the maintenance of the Home of Compassion is a matter for all, irrespective of creed. Several business firms here are donating bed clothing, and in other ways helping to furnish the Home. A furnishing tea is being arranged by the general committee. It is not too much to expect that Mother Aubert will receive help from every part of the Colony. Her work is not local but general.

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