

Western hemlock slabs and edgings are manufactured into lath, and as a lath material it is equally as valuable as Douglas fir or other wood. In this form there is no distinction made as to species, all pieces of a suitable form to make lath being thrown in together and used indiscriminately.

It is used to a large extent for barrels and boxes for shipping foodstuffs. For this purpose it serves admirably, since the wood is odorless and tasteless. A good development along this line may be looked for when consumers realize the value of the wood, and cease wasting it as at present.

PAINT AS AN ENGINEERING MATERIAL.*

By Dr. Maximilian Toch.

The progress that paint chemistry has made since 1905 is by far greater than the progress that has been made from its earliest invention up to that date. It is very difficult for me to imagine that my first book on "The Chemistry of Paints" stimulated others to continue the work which I had started, and if the little that I have done to enlighten the manufacturers and consumers has brought about the progressive results, I certainly have been rewarded for all the work I have ever done on the subject.

The first skyscraper ever built was the Gillender Building, corner of Wall and Nassau Streets, which was razed two years ago. Chemists knew before this building was demolished that linseed oil paint was not the best material for the protection of steel of large buildings. The question as to whether our monumental buildings are permanent has been a source of great worry to many chemists and engineers. Fortunately, if any of the steel contained in buildings like the Woolworth Building, Metropolitan Tower, the Singer Tower and dozens of others should show signs of corrosion and disintegration, the process is so slow that preventive methods could be applied, for a beam could not corrode in a masonry wall without cracking or bulging the wall. I have in mind one building in Maiden Lane where this actually occurred, and the wall of the fifteenth floor was cut away, the corroded beam exposed, thoroughly scraped, painted and reinforced, surrounded by concrete, and the brick wall replaced.

From the street level up every skyscraper in the world is safe, but from the street level to the grillage beams is the dangerous point. Of course, a small building could be "jacked up" and a grillage beam replaced. In a large building, two of which I have in mind, where the grillages were affected by leaky electrical currents, the foundation beams were uncovered, scraped clean and painted, and then a grout of almost pure neat cement injected all over the surface. Of course, it would be out of the question to "jack up" a building like the Woolworth Building or the Metropolitan Life, even though Archimides said: "Give me a fulcrum and I will move the world," but it is a source of great satisfaction to know that engineers and architects in charge of these buildings have taken sufficient precautions to prevent any danger whatever, either from electrolysis by means of stray currents, or from corrosion by means of dampness, and all the sensational talk about danger of the newer skyscrapers not lasting fifty years is utter "rot," for not one of these buildings is so constructed that should any danger result it could not be remedied in due time.

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That paint is an engineering material of incalculable value is evidenced by the fact that none of our bridges would last ten years if they were not repeatedly painted and watched. The railroads are much wider awake to this condition than the municipal governments. Politics and paint do not mix very well, as is evidenced by the condition of some of our bridges. It may be very safely said, that all of our elevated railroads in New York City and all of the battle-ships of the United States government depend for their life on the frequency with which they are painted. My examination of the battleship "Maine" when the wreck was uncovered last year showed that not a vestige of paint remained, and it furthermore showed that wherever steel and copper, or iron and bronze were in close proximity an electric battery was formed and the iron was completely dissolved.

This, then, leads me to the general subject of the more modern type of paint containing no saponifiable oil, but made entirely of such materials as are unaffected by alkali, and such tremendous structures as the Pennsylvania Terminal, in New York City, the Metropolitan Life Tower, and Building, the Woolworth Building, and the newest and largest of all engineering structures—the New York and Connecting Railway not yet begun—are types of modern structures in which the old-time linseed oil paints have been superseded and protected by more scientific paints. Perhaps the most remarkable fact in all these instances is that fifteen years ago perhaps one concern in the United States started a campaign of education and convinced many prominent and well-known engineers that paint was an engineering material, and not one material is suitable for all purposes, with the result that the paint industry has been raised from empiricism to an exact science. Ten years ago nobody dreamed of painting cement floors or cement walls on account of the tradition that it was impossible to paint concrete. It is quite true that it is impossible to paint new concrete with a linseed oil paint owing to the resulting chemical action of the combination of the oil and the lime in the concrete, and yet when the first patent was taken out on this subject nobody infringed because it was believed that it could not be a success, but after it was demonstrated that this was a success it was the same story as "Columbus and the egg," and everybody imitated and made a success of it.

The United States Navy, through one of its most efficient naval constructors, Mr. Henry Williams, has kept pace with the paint progress, and Mr. Henry Williams' article, a treatise on the subject of "Newer Paint Conditions in the United States Navy," read before the Eighth International Congress of Applied Chemistry, was copied not only by every paper in the United States, but was heralded throughout Europe, and to those who want to know what excellent progress has been made in this branch of the government, I would refer to his excellent treatise on the subject which is to be found in the transactions of the Eighth International Congress of Applied Chemistry.

Before closing my remarks and showing the illustrations I have taken for this lecture, I must say a few words regarding the sensational statements that have appeared lately in the press concerning the poisonous effects of white lead on workmen. It is very true that lead injected or absorbed in any form into the system produces plumbism, but the matter is not as serious as sensational newspaper writers have made it. All this talk about putty powder poisoning men in glass polishing factories is practically untrue, for putty powder happens to be tin oxide or a mixture of tin oxide and precipitated barium sulphate. The use of lead compounds in the preparation of wall papers is just as ridiculous as the arseni-