

weight of the bronze, containing 10 per cent of aluminum, 7·68 a weight which corresponds very nearly with that of wrought iron; so that, taking into consideration the superior strength of the material, and the consequent smallness of parts necessary in an apparatus constructed from it, we perceive that, from the lowness of the specific gravity, the work would be extraordinarily light. Altogether, in a mechanical sense, this alloy seems to compare most closely with steel; and it is the opinion of competent persons, that in certain kinds of apparatus and instruments, the oxydizable steel may be well substituted by the comparatively un-oxidizable aluminum alloy. It is probably in the construction of high-class philosophical apparatus, therefore, that the great value of this alloy will be found. In such work, combined strength and lightness are requisite, and these qualities are united in the highest degree in aluminum bronze. It can be engraved with great sharpness and regularity, and the engraved lines are said to be remarkably distinct. Writing on this subject, Lieut.-Col. Strange observes, that experiments, and the concurrent testimony of those who have given it a fair trial, prove that ten per cent. aluminum bronze is superior, not in one or some, but in every respect, to any metal hitherto used for the construction of philosophical apparatus.

The present price, about 6s. 6d. per lb., of the alloy, is no doubt an obstacle to its extended use. In cases where elaborate workmanship is required the price will, however, bear but a small proportion to the value of the work; and the important question, under such circumstances, is not the difference of a few shillings in the value of the raw material, but the existence of qualities in that material which will ensure the greatest possible effectiveness in the manufactured article.—*Newton's London Journal.*

INDUSTRIAL DISEASES.

Arsenical Green.

We learn from the report of Mr. Simons, the Medical Officer of the Privy Council, that workpeople who have much to do with arsenical green are liable to suffer from its influence in two different ways—first almost universally they suffer, and in many cases very grievously, from peculiar skin affections, which the irritating arsenical dust of the occupation engenders; secondly, in many cases, the arsenic gets absorbed into the body, and produces, with more or less severity, the ordinary signs of chronic arsenical poisoning. These results do not fall with equal severity on all branches of the industry, nor on all industrial establishments; but both in different branches of occupation, and also in different establishments, proportion themselves to the intensity of the arsenical influence. It accordingly deserves particular notice that the occupations which have to do with arsenical green are pursued entirely without restriction by law. And the evidence now submitted with regard to occupations corroborates very importantly the general conclusion which an accumulation of other evidence led me to suggest in my last annual report, that in all industrial establishments which directly or indirectly endanger health, ought to be subject to official superintendence and regulation.

Sufferings from arsenical green arise much more during the application, than during the manufacture and packing, of the pigment. Indeed the *manufacture*, in the open air, does not seem to produce extreme ill-consequences. The arsenical dust, like all other dusts irritates the mucous membrane of the nose and eyes; presently it begins to affect the skin (especially at the arm-pits, and at the scrotum) producing itching, blotches, rawness, and perhaps boils; and these inconveniences, it seems, commonly, make the workman discontinue work before he has absorbed such a quantity of arsenic as would affect his internal organs and develop signs of true arsenical poisoning.

The *industrial applications* of the pigment are principally two:—first in the colouring of various papers, either of the sorts used for ornamental wrapping and lining, or of the sorts used for hanging in rooms; secondly, in the colouring of artificial leaves, fruits, and flowers. The pigment is also used, though less considerably, by chromolithographers and toy makers. It is likewise used by house painters. It is used as a colour for tarlatanes. And most culpably, though only to a small extent it is used by the makers of cake ornaments and coloured confectionary. So far as concerns the health of persons employed, only the first two occupations require particular notice; but, in them, there is a considerable suffering.

Thus, for instance, in visiting one of the larger establishments where artificial leaves are made, an establishment employing about one hundred young women, Dr. Guy found more or less suffering was almost universal among the work-people. The skin affection, which hardly any of them escaped, and which sometimes would begin after even so little as one day's working, occurred in different degrees: sometimes as mere erythema, sometimes as an eruption of clustered papules, vesicles, or pustules, sometimes as more or less destruction of skin, by process of ulceration or sloughing. The fingers, which (often with accidental chops and scratches on them), are the immediate agents in the industry; the face, the neck, especially about the roots of the hair, the flexure of the arms, the axilla, the genitals; these were the parts where the skin-disease had most shown itself: parts namely, to which the arsenical dust is most largely applied, and parts where it is the most likely to be retained, and parts where the cuticle is most thin and penetrable. The suffering from these skin affections had been, in many cases, very considerable; for instance, in several cases the mere pudendal affection had been such that the sufferers could not bear to sit down. But the skin affection was only a minor part of the suffering. Of twenty-five of the sufferers whom Mr. Guy examined, nearly all showed signs, often highly developed, of chronic arsenical poisoning; excessive thirst, nausea, and loss of appetite, sickness and vomiting; often with pain in the stomach, palpitation, and shortness of breath, debility, fever, headache, drowsiness, dimness of sight, and tremblings, nervous twitchings or convulsions. Dr. Guy says: of the whole group of twenty-five females, four only did not complain of weakness; and of the remaining twenty-one there were again only four who did not describe the weakness as extreme. Febrile symptoms were present in no less than 20 cases, in five of which