this passed off completely when the heart had been moistened a few times with normal saline as shown in Fig. 5. All the above experiments were confirmed, and in no point have we stated anything which is the result of a single experiment. We are aware that nothing has been arrived at pointing clearly to the nature of the contained impurity, and this note has been written in the hope that it may be the means of more attention being paid to chloroform examination.

Fig. 1.

Fig. 2.

Fig. 3.

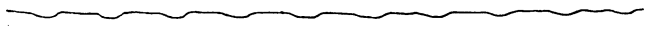

Fig. 4.

Fig. 5.

We desire to thank Professor D. J. Leech of Owens College, in whose department we did some of the work mentioned above. We are also indebted to the papers by D. Brown, F.C.S., printed in the *Pharmaceutical Journal* for September 17th, 1892, and March 25th, 1893; also to the Scientific Grants Committee of the British Medical Association, whose drum was employed in making the above tracings.

CHRONIC LEAD POISONING OCCURRING IN THE MANUFACTURE OF STEEL.

By FRAY ORMROD, L.R.C.S., L.R.C.P.Ed.

Chronic lead poisoning is not, so far as I am aware, commonly associated with the manufacture of steel. For many years I have been familiar with this connection. Certain manganiferous ores used in the manufacture of "Spiegeleisen," or "Spiegel," which is one of the ingredients used in the Bessemer process, contain several minerals, amongst which is lead. The ore is reduced in an ordinary blast furnace, and the spiegel is cast into pigs. A considerable quantity of the lead escapes by the slag hole, some also comes out with the spiegel at the time of "casting," which takes place every four or five hours. This is found beneath the pigs. In both instances, especially the latter, where the surface of molten metal is extensive, dense yellowish-white fumes are given off from the hot metal.

These fumes have been found by analysis to contain from 64.5 to 74.5 per cent. of lead oxide. The men employed at the front of the furnace are exposed to these fumes for variable periods; those employed round the slag hole almost the whole of the eight hours' shift; those on the pig beds at the time of casting—that is, once every four or five hours. The fumes are given off in greater quantity at the time of casting, and more men are exposed to their influence at that time. These fumes are inhaled, and produce symptoms of lead poisoning. It need cause no wonder that these symptoms are sometimes both sudden and severe, for, short of a surgical operation, poison could not be more effectually administered.

This method of lead poisoning, so far as I am aware, differs from others in that the poison enters the system as a vapour: volatilised metal it may be, but, if not, it is oxide finely enough divided so as to appear as smoke. When lead is melted, either in the process of reduction or in the course of its manufacture, a comparatively low temperature is required, but when it is reduced along with iron it is exposed to a high temperature, at least 1,000° above its own melting point; therefore it seems to me probable that it is volatilised, but in contact with air is immediately oxidised, and consequently is inhaled as lead oxide.

During a temporary stoppage of the works for three weeks, when it may be assumed that much of the lead previously absorbed would be eliminated, an opportunity occurred of judging of the rapidity with which the system became affected. Four men were soon disabled. A. worked seven shifts, B. three shifts, C. three shifts, and D. four shifts. The pathognomonic "blue line" on the gums is seldom absent, but we do not find that the severity of the symptoms corresponds invariably with the distinctness of the "blue line." It is rather remarkable that, with the exception of a fatal case of peripheral neuritis, none of the remote effects of lead poisoning have been observed. Colic, anæmia, and emaciation are what one has usually to treat. No local or general paralysis with the exception named has occurred, and yet for months at a time the men's systems have been under the influence of lead, some men having been laid up for a fortnight at a time at least a dozen times in two years.

Why should lead dissolved in water to the amount of 2.4 milligrammes per litre produce wrist drop as recorded by Dr. J. D. Mann,[1] and yet the enormous amount inhaled, as I have described, passing directly into the circulation produce no such effect? Our clinical experience agrees with Dr. Mann's chemical experiments—that the bowels are the most important eliminative organs. Many plans (which succeed under other conditions of lead working) have been tried to prevent the poisoning, but, so far, success has been very limited. We generally find that the richer the ore is in lead the more numerous are the cases of plumbism.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

A CASE OF INFANTILE SYPHILITIC PEMPHIGUS.

On April 13th, 1892, I attended Mrs. H. in her first confinement. She was delivered of a stillborn male child, the body being in an advanced stage of decomposition. Some time afterwards I had to treat her for mucous tubercles situated on the vulva, and she was put on a course of mercury. She did not, however, take the medicine as continuously as she ought to have done.

On April 4th, 1893, very nearly a year after her first confinement, she was again delivered of a male child, this child being born alive. When, soon after birth, the nurse went to wash the child, she noticed an eruption on the hands and feet. I did not observe it directly after delivery, not till I called the following day, when the sebaceous matter and discharge with which the skin was thickly coated had been removed. It was almost completely limited to the hands and feet, spreading a very little way up the wrists and ankles; the colour was a deep coppery red. There was a large bulla on the great toe of the right foot, and another on the outer side of the sole. Four bullæ were also to be seen affecting the sole of the left foot, and three more on the toes. On the hands there were many more, but smaller in size than on the feet.

I was surprised to find an eruption of this kind appearing so early. It must, I feel convinced, have been present at birth. Mr. Hutchinson has said: "I have never myself seen an infant born with a syphilitic eruption, or one in whom the evidence was clear that such an eruption was present at birth." Mercurial inunction was begun early, but was discontinued after a few days, and liq. hydrarg. perchlor. ♏iv. given by the mouth twice a day, and increased to ♏v. On April 7th, three days after birth, the rash had the appearance of fading. It was of a duskier hue. Some of the bullæ, more especially those on the soles, were distended by an exudation that appeared as seen through the unbroken cuticle to be of a greenish-yellow tint, while others, chiefly those on the dorsal surfaces, looked shrunken, as if their liquid contents were being desiccated or absorbed.

On April 9th a patch of erythema was to be seen on the nose, extending downwards on to the skin of the upper lip,

[1] British Medical Journal, February 23rd, 1893.