METALLOGRAPHIC ASPECTS OF ARC-WELDED JOINTS.

By Mr. E. J. Rigby.

The lecturer gave an interesting address on the microstructure of arc welds, and showed a number of informative slides, a valuable series of which showed the deposition of electrodes with varying carbon content for rebuilding worn rails to their original section. The results of numerous tests of corrosion produced by weak acid showed that the weld was, if anything, electro-negative to the plate. But there was no evidence of any practical increase in the tendency to corrosion. Some lantern slides were shown of welded joints which had been subject to bending and re-bending, and the deduction made was that with careful welding the joint was as flexible and as strong as the plate.

DISCUSSION.

The President said they had listened with great interest to the lecture Mr. Rigby had given. It was due to him and to others who had experimented with different methods of electric welding and the use of various electrodes that they had been enabled to utilise those methods for constructional purposes. Mr. Rigby had earned their gratitude by the wonderful series of slides he had exhibited showing the structure of the metals. He had pleasure in moving a hearty vote of thanks to Mr. Rigby.

The vote was carried by acclamation.

The President said that the question of welding was a big one, and he would point out that the use of a new method such as welding necessitated an altogether different view of constructional methods. It necessitated throwing overboard all preconceived ideas of construction and re-design of the structure; and if welding had come to stay—as he believed it had—it opened up a vista such as engineers had never before contemplated.
MR. MOSS, Victorian Gas Managers' Association, thanked members for the invitation to be present. The lecture had been a most interesting one, which gas managers and engineers would do well to sift and digest.

MR. F. H. KNIGHT said he had taken a great interest in the new method of gas holder construction. It must be looked upon as a compliment to Mr. Reeson and his staff that the directors of the Gas Co. had adopted that new method. Of course, it had to stand the test of time, but they had taken all the precautions that could be taken in Melbourne before they sanctioned its use in such an expensive piece of work as a gasometer. The construction of the Fitzroy gasholder was a remarkable effort, and nobody had greater reason to be more proud of its staff than the Metropolitan Gas Co.

MR. WILFRED N. KERNOT said he had taken an interest in electric welding for a long time, and thought they must all realise the boldness of Mr. Reeson and his staff in undertaking such work. He thought they had been very successful in what they had undertaken. He did not think the question of the arc was perfectly known yet, but for work such as they had been shown it was a splendid thing. They were setting an example to people on the other side of the world.

MR. J. T. N. ANDERSON said he would like to record pioneer engineering work in Australia of the late Mr. Joseph Cowley, of Ballarat. He was one of the old boiler makers and rivetters. His first job was on the old “Alabama” in Liverpool. From the age of 15 years he worked as a boilermaker. To Ballarat was due the distinction that there he did perhaps the first work in the world in dispensing with riveting joints and using welding instead. He used, with the greatest ingenuity, methods of his own for welding the furnace in locomotive work. The work was worthy of being placed in an Australian museum. Before the question of the arc came into existence the boilermaker realised his own weakness.

MR. H. E. GROVE thanked the meeting for its appreciation of his lecture. They were continually testing. They had made hundreds of tests, and every month they devised fresh methods of test. They were getting away from the ordinary tension tests now, because in all their tests they were breaking the plates, but never the welds. They were now determining how little of the welding metal they could deposit and still maintain the full strength of the plate.
MR. E. J. RIGBY thanked members for their vote of appreciation. If Mr. Cowley, mentioned by Mr. Anderson, had been able to see electric welding as it was carried out today, all his troubles would have disappeared. The welding of the firebox to-day was an everyday occurrence. In most of the workshops in New Zealand to-day they electrically weld the steel fireboxes of the locomotives, and when a firebox becomes corroded or burnt out, they simply cut out the affected plates within an inch or so of the rivets and weld in a new section of plate. The trouble was when men tried to turn out a cheap job. If they tried how cheaply they could do the job they would make a failure. He had seen men using ordinary wire from a fence to do work on ships.

The discussion was declared closed.

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