

## DISCUSSION.

Mr. German, in proposing a vote of thanks to Mr. Harricks for his paper, said that he would rather someone else, not connected with the C.S.R. Co., had undertaken this duty, for he felt it was almost incumbent upon the one who proposed a vote of thanks to also criticise the paper. He was scarcely in a position to do so, because he was closely connected with Mr. Harricks in business, and he was in accord to a great extent with his ideas on the subject matter of the paper. However, there seemed to him to be so much food for reflection in the matter just put before them that it would be a pity to let it go without being fully discussed, and he was afraid that before having seen the paper in print and having had time to digest it, it was impossible to do the author or ourselves justice in commenting in an extemporary manner only. He hoped, therefore, that the seconder of his resolution would move an adjournment of the discussion. Why he refrained from moving such an adjournment himself was that he wanted to be relieved of the duty of opening the discussion, because he thought the practice was that it devolved upon the mover of the adjournment to do so. Apart from moving the vote of thanks, he felt that he ought to compliment Mr. Harricks very highly, because he had brought such a large amount of information before them, and which he thought had been well presented. He felt certain that the paper would be a most important one to the Members of this Association. No one knew better than he did how busy Mr. Harricks had been during the last six months, and he well recognised the trouble and care that had been bestowed, in the author's own time, on the production of his paper. It brought to his mind the old adage, "If you want a thing done well, get the busy man to do it!"

It occurred to him that most of them who were unfamiliar with jet-condensers (at any rate as applied to the Sugar Industry) would marvel at the divergency of designs; and when it was remembered how successful the jet-condensers which were put into the spaces at the tops of air pumps some thirty years ago were, one began to wonder why people should go to such trouble to produce such a variety of designs. Of course, they were all striving for a high vacuum and very naturally, as the consequence was usually a saving of power. The engine at Pymont Refinery that drives the injection water pump develops something like 250 h.p.; it lifts 400,000 gallons of water an hour up to the condensing room, and the suction pipe at present is 2' in diameter—it was by no means large enough, and arrangements were being made for adding another—so that if only 5% of the power or water required could be saved, the economy would be material. One could imagine that if the drops of water were atomized, then very much less time would be required for the heat to penetrate the water, with a consequent saving in the quantity, and of course the power necessary to elevate it to the condensers.

He would not take up their time further, but he would be very pleased if the seconder were to be one of the C.S.R. Co.'s late engineers, as he had noticed that there were several present. He had very much pleasure in proposing a hearty vote of thanks to Mr. Harricks for his paper.

Mr. A. Stobo, in seconding the vote of thanks, remarked that he had listened to the paper with very great pleasure, and he thought that it must have given Members of the Association a great deal of information. Having been in sugar mills for many years, he had had a good deal to do with condensers, and one remark of Mr. German's appealed to him, viz., that the condensers of thirty or forty years ago probably gave nearly as good results as did those of the present day. One that Mr. Harricks described and illustrated—he thought it was the "Worthington"—was rather a compli-

cated condenser, and he felt sure that it would be very difficult to operate in working practice, because of the difficulty of cleaning it. All condensers gathered a certain amount of dirt. Of course they were all after "the last half inch of vacuum." It was a very important point in sugar work, because of the necessity to keep the boiling temperature as low as possible. In the vacuum pans he had always aimed at the maximum vacuum, and he was never satisfied with what he had got.

He thought that the N.M.T. vacuum gauge was excellent, and it was most important to get a truthful vacuum reading. In the mills they frequently used the common glass tube and mercurial column that had been relied upon for ages past. Mr. Thomas had certainly produced a very fine instrument, and one that could hardly get out of order. This was the first time he had seen it, and he hoped Members of the Association would look in to it very closely, because there must be many persons to whom it would be of great service.

He had to confess that this was the first time he had spoken at a meeting of the Association, although he had been a member for about twenty years. He would now conclude by expressing his appreciation of the paper which had been read that evening. He had very much pleasure in seconding the motion, and he also hoped that the discussion would be adjourned to enable members to discuss it more fully.

The President put the motion to the meeting. It was carried by acclamation, and he then declared the discussion adjourned to the next meeting of the Association.

Mr. Harricks, in responding to the vote of thanks, said that it was very gratifying to know that his paper had been favourably received. Mr. German remarked very kindly that if a thing was to be well done the busy man was the one to get to do it. He (the speaker) could not refer to

the quality of his paper, but he could certainly say that he was very busy, and if there were faults in the paper the reason would be partly because he had not had the time to devote to it he would have liked.

As the discussion was to be postponed, he would say very little just now, but he would like to add an historical note that next year would be the centenary of the use of the vacuum pan and condenser in sugar factories, while, as regards the general subject of vacuum, he had recently come across the following interesting passage in John Evelyn's Diary, written in the year 1662:—

“I waited on Prince Rupert to our Assembly, where I tried severall experiments in Mr. Boyle's vacuum. A man thrusting in his arm, upon exhaustion of the aire had his flesh immediately swelled, so as the bloud was neare bursting the veines, and drawing it oute we found it all speckled.”

With all their nowadays enthusiasm for high vacua he doubted if many engineers would be willing to submit to an experiment of such a nature in order to prove or disprove the assertion that “Nature abhors a vacuum.”

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