

Fire-walking

AT the suggestion of the secretary of the Institute of Physics, I attended the demonstrations of fire-walking by the Indian, Kuda Bux, on September 9 and 17. Notes on some physiological aspects of the second demonstration were published in *NATURE* of September 21, p. 468. One important detail should, however, be added, the time of contact of the performer's feet with the fire, which was certainly much less than five seconds.

Observations made at the first performance indicated that the feat was merely another form of the fireside experiment of picking up a hot cinder and returning it to the fire, when the fingers are not burnt, if the action is performed quickly. It, therefore, seemed probable that measurements of the rise in temperature caused by contacts of a cold substance with the fire, of similar duration to those of the walker's feet, would test the correctness of this view, and preparations were made to do this at the second trial on September 17. On this occasion, Dr. T. E. Banks, of the Physics Department, St. Bartholomew's Hospital, and Mr. G. Smith, of the London School of Hygiene and Tropical Medicine, collaborated with me in making the observations.

These comprised the measurement of the total time of contact of each foot with the hot surface; counting the number of steps; and then pressing a thermal junction on to the fire intermittently so as to imitate the period of contact of each foot and the interval between each step, the rise in temperature then being noted on the indicator. The junction consisted of a thin disc of copper, to which wires of copper and eureka were fastened. The wires were passed through holes in a piece of uralite and pulled, so as to bring the disc into contact with the uralite, so that when the disc was pressed on the fire the conditions were favourable for the absorption of

heat and its retention when the junction was raised for another impact.

The arrangement was equivalent to a sensitive walking thermometer, and would certainly show a greater rise in temperature under the same conditions than the human skin, which is protected by the moisture it exudes.

Careful observation with a stop-watch having shown that the average time of contact of the walker's foot was half a second at each step, and it being noted that each foot rested twice on the surface during the passage, the junction was struck on to the surface twice in succession, a period of contact of half a second per impact being attempted. Actually, owing to the difficulty of working near the fire, this period was always exceeded, but a number of separate trials showed a rise of 15°–20°C. in the junction. This was conclusive evidence that the feet of the performer would not become hot enough for blistering to occur.

Fire-walking is really a gymnastic feat, and the agile way in which Kuda Bux walked across the fire compelled admiration, and would be difficult to imitate without much training. It would not be easy for a beginner to walk bare-footed over cold charcoal so as not to exceed the time of contact necessary for successful fire-walking. It was lack of training in this particular which prevented Mr. Moynagh and Mr. Sheepen from succeeding; but it was noticeable that even in their cases large portions of the feet were uninjured. Both were much heavier men than Kuda Bux, and this caused them to sink more deeply into the fire, and increased the time of contact. A temperature-measuring device conforming more nearly to the conditions of the skin could be made and tested on a fire, but the explanation of fire-walking is so obvious that this would be superfluous.

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Work of the Rothamsted Experimental Station

AN event of great importance in the history of the Rothamsted Experimental Station occurred in 1934, namely, the purchase of the farm and adjoining lands by the Rothamsted Trustees. Few people perhaps realise that hitherto this experimental centre, with its long-term trials known the world over, was held only on a lease, and that it was threatened by the encroachment of the builder. The sum necessary for purchase was speedily raised by public subscription. A glance at the subscription list gives ample testimony, if such were needed, of the high esteem in which the Station is held by farming organisations and business men. It is not out of place perhaps to mention here that unique organisation—the Society for Extending the Rothamsted Experiments—which was founded in 1904. This Society has not only helped financially, but, by looking ahead, has also enabled important work to be initiated without the delays that usually occur

if the money question is left until it is time to start work. Among the many old and modern documents in the Station library, the minutes of this Society will be among the most interesting in years to come.

The report for 1934* opens with an account of the continuation of the experiments on yield and quality in sugar-beet, potatoes, wheat and barley. In the sugar-beet work it is pointed out that most of the information available on this crop applies to Continental conditions, and that it by no means follows that recommendations suitable abroad are applicable in Great Britain. Thus, in these trials, potash and phosphate appear to have but little effect, a result that would scarcely be expected from the data that are available on this crop.

The work on organic manures continues, and shows

* Rothamsted Experimental Station: Lawes Agricultural Trust. Report for 1934. Pp. 259. (Harpenden: Rothamsted Experimental Station, 1935.) 2s. 6d.