Condition of specimen	Impact tensile test: energy to fracture (ft. lb.)	Slow tensile test: U.T.S. (tons per sq. in.)	Dead-load tensile test: stress just producing rupture (over notched area) (tons per sq. in.)
1. As-rolled	4·1	49·5	47
2. Untreated, high cooling-rate simulated	8·1	111	93
3. Hydrogen-treated, high cooling-rate simulated	6·7	63	27
4. Hydrogen-treated, low cooling-rate simulated	4·7	64	57

the accompanying table. The results show the increased influence of hydrogen on the strength as the rate of straining is decreased; Petch and Stables observed a corresponding effect on ductility. The results are mainly for duplicate tests.

These results give a better understanding of the factors affecting the formation of brittle hard-zone cracks during the welding of this type of alloy steel. We have observed that cracks occur in welding this steel only when relatively high hydrogen contents and high cooling-rates occur in the weld zone together[2], that is, condition 3 in the table. This observation is based on tests made on a structure, in addition to laboratory tests.

The impact tensile test results do not show any deterioration in properties in any of the conditions 2, 3 or 4 when compared with the as-rolled plate material (condition 1). Therefore, formation of hard-zone cracks is not related to this property of the steel. In this rapid test there is probably no time for the diffusion of hydrogen to take place during testing and so to cause embrittlement.

The slow tensile test is also quite rapid, and the time available for the diffusion of hydrogen is limited. The strength of the material is, however, reduced considerably by the presence of hydrogen, as shown by a comparison of conditions 2 and 3. Similar tests with specimen of condition 3 on un-notched specimens gave a value of reduction in area of only 5 per cent, which indicates that considerable embrittlement is produced in the steel in this condition. In spite of this reduction in ductility, the slow-tensile strength in condition 3 is greater than that of the as-rolled material, and, therefore, this property also is not a direct index of the tendency to form hard-zone cracks.

The dead-load test gives a good indication of the liability to crack formation, since brittle cracks might be expected only when the minimum rupture stress of the heat-affected zone falls below that of the background plate material, namely, 47 tons per sq. in., which occurs in condition 3, combined also with the low reduction of area of 5 per cent mentioned above. With this condition, the fracture produced is completely brittle, and there is ample time for diffusion of hydrogen to occur during the test.

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[1] Petch, N. J., and Stables, P., *Nature*, **169**, 842 (1952).
[2] Cottrell, C. L. M., Jackson, M. D., and Purchas, J. G., *Welding Research*, **6**, 50 (1952).

Edmond About and the Technique of Freezing and Drying Tissues

In *Nature* of September 27, p. 547, Dr. L. G. E. Bell asks for the source of Edmond About's information on the technique of the preservation of tissues described in 1862 in About's scientific novel "L'homme à l'oreille cassée". The material that I am actually collecting for the purpose of writing the history, which covers nearly a century, of the Marine Laboratory at Concarneau, enables me, I believe, to reply.

Coste created this Laboratory in 1858 for the purpose of "la mise en culture des mers". In 1873, after his death, the work was continued by Charles Robin and Georges Pouchet, interesting scientific personalities who had strong links with the literary world.

Robin (1821–85) was professor of histology in the Faculty of Medicine in Paris, holding a chair created for him; he was a member of the Institut de France and of the Senate. The Goncourts have described him as "au cerveau tout à la fois nuageux et plein d'éclairs, et à la langue brouillée". He had been taken by Littré to the lectures of August Comte, had become a positivist and published with Littré the "Dictionnaire de Médecine", which ran to many editions. Robin carried out a considerable amount of work, chiefly in anatomy and cellular physiology. He had a number of followers, one of the more celebrated of whom was without doubt Clemenceau, who dedicated his thesis to him. His influence made its mark on a number of writers, as did that of Pouchet, of whom it was said that he was the scientific consultant of one literary generation.

Robin practised medicine at Mérimée; he documented Michelet's "L'oiseau", "L'insecte" and "La mer"; he was the friend of Taine and Sainte-Beuve, who like him had studied medicine at first. During these years, Sainte-Beuve, Robin and Pouchet met each week at Princess Mathilde's house, and then dined at Magny's, where they were frequently joined by Flaubert (he stayed with Pouchet one summer at the Concarneau Laboratory), the brothers Goncourt, Viollet-le-Duc, Théophile Gautier, Berthelot, Renan and many others. The "Journal" of the Goncourts is strewn with table-talk of Robin.

Among the convivial figures was Edmond About, who could thus have heard about topics which Robin was familiar with, such as the desiccation and the revival of the guinea worm which Robin studied in 1855, or the echo of discussions on the Tardigrades between Doyère and Pouchet's father, who was a partisan of spontaneous generation and against Pasteur. Further, the source of About's information is apparent: one of the principal characters of "L'homme à l'oreille cassée" is Dr. Nibor, an anagram of Robin, and they resembled each other. Also, the novel did not please Clemenceau, who criticized it. Another novel by About, "Le nez d'un notaire", is one story of van Helmont as recounted by Robin.

Further information can be found from the following works: G. Pouchet, "Charles Robin, sa vie et son œuvre", p. 195 (Paris, 1887); V. Genty, "Un grand biologiste, Charles Robin; sa vie, ses amitiés philosophiques et littéraires" (Lyon, 1931); and, concerning Pouchet, in C. Chassé, "Le biologiste consultant d'une génération littéraire: Georges Pouchet (1833–1894)", *La Grande Revue*, **28**, 295 (1924).

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