

sible to exist without the 'ration of scientists,' meagre as it is. I read in *NATURE* in 1920 a notice on the voyage of Mr. Wells to Petrograd and his opinion on the position of our men of science (*NATURE*, vol. 106, p. 352). He did not see much, as he was 'personally conducted,' and does not understand Russian. He estimates the number of men of science at four thousand; *NATURE* expresses some astonishment at this number—thinks there must be less, as many have died. Well, there is here an official commission, composed of Mr. Oldenburg and other learned gentlemen, who decide whether an applicant is a man of science or not. As it is often a question of life and death, the decision is usually in favour of the applicant, if certain formalities are fulfilled—if he has printed some learned articles, or even simply written one, etc. Professors are almost always included if they teach in higher schools. There are now very many proletarian "higher institutes"; for instance, a "Higher Institute of Anti-fire Technique" and a "Higher Institute of Plastic Arts"; the first turns out firemen for fire brigades, the second—dancers! "Professors" of these institutes are also "scientists"! Even among the professors of old high schools there are now some without scientific degrees called "red professors"; for now it is decreed that anybody can be a professor, just as anybody who is sixteen years of age can be a student. If he is quite ignorant he will attend a "preparatory course," but, like real students, will receive his ration and salary (students do not *pay* anything now, but receive salaries).

"Thus the question, 'What is a man of science?' is not so simple as it seems. The number of men of science would certainly exceed the four thousand of Mr. Wells if the Soviet of deputy workers and deputy red soldiers did not happen to fix the number of rations at two thousand. Of course, all this is very detrimental to the interests of real scientific workers, whose number, I should think, does not exceed several hundred; the more so as it is officially announced that scientific workers of England, France, and the U.S.A. have formed committees to help us. It would be a good thing if some representatives of these committees could come and preside over the distribution. Last year the Norwegian Government sent us a lot of presents, but the precise amount sent was carefully kept in the dark, so that we have more than a suspicion that we received only a part of the alms—and then only some coarser things, like herrings and cod—and that the dainties were taken by other parties for whom they were not intended.

"You see I write as a matter of course about receiving alms; we have long ago lost all sense of pride—beggars cannot be choosers—and we can only thankfully accept foreign help. As I express myself easily in English I could not resist the temptation to give to you just a very small epitome of what is meant by 'vivere' for us, but there are many other not very agreeable things which I cannot mention now. In spite of them, the habits of twenty-five years cannot be given up, and I still interest myself in the process of chemistry. . . .

"I have read over what I have written on the subject of 'primo vivere, deinde philosophari,' and see that there is enough unintentional humour about it—but there is precious little humour in living it through."

#### The Disaster to the Airship R38.

IN the article on "The Disaster to the Airship R38" in *NATURE* of September 1, the author laments that, in consequence of it, airship development is to

be abandoned by our Government, and airship design is referred to as being a matter of experience and guessing. In face of the general tenor of the article, it may be of interest to direct attention to six letters published in *Engineering* in November and December, 1901, which I wrote in a discussion of the torpedo-boat destroyer *Cobra*. Those letters are as applicable to the R38 as to the *Cobra*.

Some eminent scientific men then denied the possibility of the disaster to the *Cobra* being due to gyroscopic action of the propeller and engines; and the first of my letters was written merely to insist on the existence of such action, though I declared that I could not consider it sufficient to account for such an accident. The course of the discussion, however, led me to declare it to have been the sole cause of the disaster.

The important point is that all then existing destroyers had engines fitted into them after the ship had been built. I pointed out that such engines should be built with the bearings as an intrinsic part of the engines and extending the full length and breadth of the ship, and also strong enough to resist any force that could be exerted by the engines. I considered that a vessel and engines so constructed would not only be safer, but might also be lighter than one dependent on heavy plates and girders for strength to stand the stresses created by pitching and rolling.

By giving the airship's engines such bearings as above suggested it may be made safe against any such accident as that which has wrecked the R38.

The old destroyers offered, perhaps, more scope for saving weight than the airship, but by giving such bearings to the engines as above suggested at least three-fourths of the present weight of girders might be dispensed with.

WM. LEIGHTON JORDAN.

Royal Societies Club, September 3.

BEFORE dealing with the main contention of Dr. W. Leighton Jordan's remarks on the loss of R38, it is desirable to refer to the opening paragraph and to correct the impression that, "in consequence of it, airship development is to be abandoned by our Government." The policy of the Air Ministry was determined and announced many months before the accident, and therefore cannot have been influenced by the failure of R38. The campaign for economy in the public service, combined with a lack of enthusiasm on the part of the Air Council, is much more likely to be the explanation of the decision to abandon airships.

Dr. Jordan appears to attach much importance to gyroscopic action in relation to the breaking of R38. Such action is called into play when the airship turns, and, as is well known, the magnitude of the couple is proportional to the rate of turning of the ship. There is little difficulty in estimating the magnitudes of the forces to be resisted, and, since an airship turns slowly, in seeing that they are relatively small. It is not usual for engineering structures to fail against well known loads, and there is no reason to suppose that R38 is an exception. It is rather to those unknown effects supposed to be covered by a "factor of safety" that attention is drawn by failure. The less the scientific and technical preparation for construction, the greater the call on the allowance for ignorance. The scientific objection to full-scale tests to destruction is not to their effectiveness, but to their cost in life and material; they are, in fact, the result of false economy.

THE WRITER OF THE ARTICLE.