SUMMARY
By A. C. Webber

It appears from these papers on tension testing of five different types of materials that the premise we started out with is probably true: the only similarity among them all is that we take hold of them and pull, measuring force, and sometimes elongation, and the rest of it adds up to diversity.

Looking over the diversities one gets a picture of how big our problem really is in trying to produce any kind of uniformity in tension testing of materials. Three of these materials were more or less isotropic. The other three, never at all isotropic.

If one looks at the properties of these materials in tension, one finds that the tensile strengths covered range from about 50 to 50,000 psi, perhaps higher, a range of 1000 in tensile strength. The modulus, even worse, from 100 psi or thereabouts, to approximately 10,000,000 psi approaching the moduli of metals.

The ultimate elongations, from 1 per cent to at least 1000 per cent, and perhaps more. Another factor with a range of 1000.

In spite of or perhaps because of all this, we have over 60 useful tension methods in the collection of ASTM tests, over 35 varieties of specimen. I do not believe I have even noted them all. That is what we are dealing with. Maybe we do not need so much variety. Perhaps after looking at what the other fellow does, we shall find that we can do something similar better than what we have been doing. The rates of crosshead motion in our tests—and these are in our routine tests, not in high-speed tests—vary from 0.002 in. per min to upwards of 20 to 40 in. per min. These, taking into consideration the specimens used, mean strain rates from 1 per cent per min. to greater than 1000 per cent per min.

At least two of the standard methods, instead of specifying straining rates or crosshead motions, specify rates of loading or times to break.

It may look almost too diverse a situation to do much with by way of uniform standardization, but there are two things that should be done:

We should and could arrive at a uniformity of nomenclature—terminology. I hope we can look at that in our committee work. The other, which seemed obvious in looking at the illustrations, is whether it would be possible to agree on a uniform way of presenting tensile data?

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