

numbers" we'd have a million units, and the confusion would be similar to what the "English" system has been in the past.

There is no good reason for calling the color of the paper this letter is written on "white" other than that everyone else (who speaks English) is doing it. There is no "good" unit and there are no "good" numbers. We need a common unit by which to measure things if we are to understand each other, and the *only* requirement logically is that it be universal.

International groups of learned people have agreed on the SI system. It is not perfect, but comes nearer to being universal than any other system. One might agree that the day is a more universally used unit of time than the second, but the meter is certainly more universal than the foot.

RAYMOND E. HANSEN
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5/24/79

William Abler's letter, proposing a new human-scaled measurement system, is indeed novel and refreshing. However, in his proposal to define a new "foot" equal to 1/6000th of a nautical mile, "the unit that really will never change," he has neglected to specify which nautical mile is intended, the traditional British or Admiralty mile of 1853.200 meters, the newer American mile of 1853.248 meters or the recently accepted international mile of 1852.000 meters.

MARTIN LANDEY
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6/5/79

Patent incentives

I invite comments on the effectiveness of patent incentives in motivating inventive thinking and creative efforts, stimulating timely disclosure, improving inventor-employee morale, and improving profits for companies, universities or laboratories. Of particular interest are cases in which a change of incentive policy has led to a demonstrable change of profits. Respondents who request it will receive a summary of findings.

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3/19/79

Reactor power densities

Richard Post's editorial on "The road to fusion" is precise and profound, just like his other writings, and includes a lot of wisdom. I think many people agree with points mentioned by Post. I have a slightly different view on a rather small part of his remarks but this disagreement seems important with regard to the overall nuclear energy policy.

Post mentioned that we should "encourage a search for innovative approaches, particularly those that lead to simpler or more compact fusion-power systems." As a physicist, naturally I like simpler systems. But I would like to take issue with the "more compact" part. As Post says, people tend to be carried away by "fads." One of the fads, these days, is the idea "small is beautiful."

Now if we design a very compact, but high-power density fission reactor, then the system tends to be difficult to cool down under malfunction. That is the problem that plagues most of the present-day fission reactors. With some modifications of the present design and the additional construction cost, the fission reactor could be made less compact, but operate at low power density, thus avoiding the meltdown due to decay (after) heat. That, as an afterthought, seems to me a more logical approach for the fission-reactor design. We fusion people were previously accused that the power density in projected fusion reactors is too low. Maybe we should have pointed out the power density in fission reactors is too high.

Also, people argue that the optimum size for any nuclear plant should be not too large. This sounds convincing because the radioactive problem under the failure mode is more severe in a larger system. However the cluster of many 1GWe to 2GWe nuclear power plants located in a few sites is much easier to control than many plants located in many places. With a "few-sites" approach, the siting could be made far from the population center, but more importantly, the operation can be done by more well-trained personnel with enough reserve to back them up. Preferably the waste-disposal and reprocessing could be done within the same complex. The fusion power system, when finally developed, may end up in these nuclear power islands. The transmission loss of electric power to the population centers, contrary to some people's statement, should not be too large. To avoid the sudden power failure, causing blackout, either hydroelectric power plants or synthetic fuel power plants should be maintained as a back-up. It costs more, but we may not have any alternative in the future.

SHOICHI YOSHIKAWA
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5/9/79

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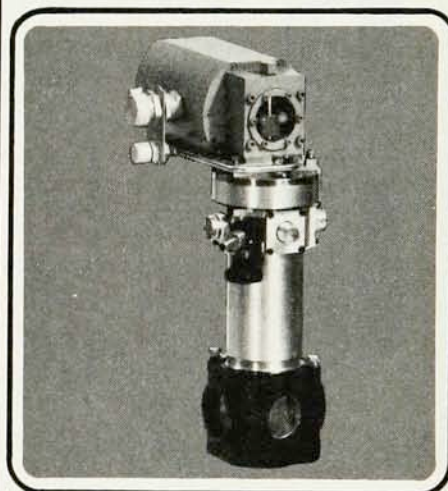
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