ries are given or suggested.

This listing can be recognized as exhaustive and complete; it clearly refers to 1972 technology, covering all its possible states. Had the drafters meant to cite the five categories merely as examples, they would—or should—have added "but not limited to" after the word "include".

The Soviet version of the treaty does not translate "include" by the most direct term, but uses instead the unambiguous *otnosyatsya*, which means "refers to." In the absence of a qualifier, such as "among others," there is no question that the Soviet version covers only 1972 technologies.

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Monitoring of Atmospheric Ozone

Richard Kerr (Research News, 10 July, p. 131) states that the Dobson spectrometer was not designed for trend monitoring and that there are problems with its maintenance and calibration. We agree (*1*) and believe that cross-referencing data from the Solar Backscatter Ultraviolet instrument with Dobson data must be inconclusive because both systems are subject to drifts of similar magnitude.

Dobson instruments are calibrated against a particular Dobson spectrometer chosen as a reference. The procedure is vulnerable because the reference instrument is also subject to drift and because changes occur during transportation. The precision of Dobson measurements is not readily calculable from instrument characteristics; rather it is established empirically and with difficulty. Checks on performance are intricate, time consuming, and demand dedicated, trained personnel. In practice, the checks are often not adequate and major malfunctions can go undetected, sometimes for years. The Dobson data include a high proportion of empirical zenith sky readings that are unsuitable for long-term trend studies.

The Automated Brewer spectrometer (*2*), unmentioned in Kerr's article, was designed in the early 1980s specifically for monitoring and has numerous fundamental and operational advantages over the Dobson instrument. The sun-tracking feature enables the Brewer to record a large number of direct sun observations and thus to avoid the zenith sky problem. Experimental evaluations of the measurement uncertainty, which are from two to three times smaller than those of the Dobson, confirm the values calculated from the instrument design. Brewer ozone measurements are not affected by sulfur dioxide and do not show dependence on the solar elevation. Instrument checks and self-characterizing procedures are programmed into routine operation of the Brewer, and the results are analyzed automatically. Consequently, malfunctions can be detected and rectified promptly.

The Brewer reference triad, to which the network Brewers are normalized, comprises three reference Brewer spectrometers operating continuously at Toronto. Each of these is independently and absolutely calibrated and can be replaced at any time without significant impact on the reference system. The transfer of calibration to the network spectrometers is usually effected by means of another Brewer that acts as a traveling standard.

In order to obtain better ozone data and to save a significant amount of manpower, Canada has put Brewer spectrometers into operation at six monitoring stations; Dobson instruments in the Canadian system are scheduled for decommission after 3-year periods of parallel measurement. Brewer spectrometers are now located in 11 countries. We believe the Dobson system should be replaced by the Brewer system throughout the global network and in the NASA net-

work for Stratospheric Change. Otherwise ozone trend monitoring will continue to be based on a set of instruments whose long-term stability is in doubt.

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Mitochondrial DNA in Sperm

Roger Lewin's parenthetical explanation of why sperm do not as a rule contribute mitochondria to the zygote (Research News, 2 Oct., p. 24) is, I'm afraid, incorrect. Rather like a machine capable of generating more energy than it consumes, a sperm without a mitochondrion would be a most remarkable sperm indeed. The maternal inheritance of mitochondrial DNA in most eukaryotes is caused by exclusion of the sperm's mitochondria from the zygote at fertilization.

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"Homology" Controversy

In relation to the controversy over the use of the term "homology" to express identity of sequences in proteins or nucleic acids, I found myself in agreement with the more classical biologists who protest that this word already has a precise meaning, and it is not being used in this sense by modern molecular biologists (Research News, 25 Sept., p. 1570). One wonders indeed what is wrong with "percent identity," since this is the obvious term to use. Is it perhaps too obvious or ordinary and an example of scientists' increasing reluctance to use simple words to convey their meaning and to coin noninformative new words or to arbitrarily redefine words already in use? Clearly science needs a precise, technical language that must be learned; but have we gone too far? The same problem applies to legal language and to that vast mass of deadening verbiage that emanates daily from one or another bureaucratic office. A recent *New York Times* article (*1*) began, "The Tower of Babel so annoyed the Almighty, the Bible tells us, that the Lord forced its builders to converse in a babble of mutually unintelligible languages. A glance at any of the thousands of scientific journals published these days is enough to tell the story; the titles alone are enough to sow confusion among all but a few initiates." We have indeed come a long way since Isaac Newton could write very clearly, "In the beginning of the Year 1666. . . . .I procured me a Triangular glass—Prisme to try therewith the celebrated Phaenomena of Colors" (*2*).

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