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of the Jovian atmosphere are not well represented by an Earth model.

In addition, in 1875, Henry Rowland demonstrated that a rotating insulator (he used ebonite) with an electrical charge on it behaves exactly as does a conductor carrying a current; thus counterrotating insulators may develop large voltages and associated currents.

Finally, the night-side photographs of Jupiter reveal a large amount of electrical activity in the form of auroral and lightning displays.

It seems clear that our understanding of the Jovian atmosphere will be better when we have obtained more high-resolution data in the form of direct measurements, and it may then be more meaningful to evaluate the use of the Navier-Stokes viscous fluid equations on the similar Chapman-Cowling magnetohydrodynamic equations to understand this atmosphere.

Our next opportunity for direct measurements will be the flight of the Galileo spacecraft, and those measurements are eagerly awaited. I hope that all of the members of the scientific community will pressure NASA to ensure that there are no unnecessary delays in the flight of this spacecraft. If there are problems with the primary launch vehicle (space shuttle) which may not be ready as scheduled, a more traditional launch vehicle would do.

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MIS solar cells

I enjoyed Henry Ehrenreich and John H. Martin's article "Solar Photovoltaic Energy," (September 1979, page 25). The authors have addressed several important questions, which are of great importance in the ultimate commercialization of photovoltaics. However, in my opinion the authors could not bring to the attention of readers a very important photovoltaic device, namely the metal-insulator-semiconductor (MIS) solar cells.^{1,2} Such cells rely on an ultra-thin interfacial layer (approximately 10–30 angstroms) between the top conducting contact (metal or oxide semiconductor or their combination) and the base semiconductor. These cells have advantages over conventional p-n junctions:

- ▶ device processing at lower temperature results in longer minority carrier lifetimes
- ▶ the collecting junction is located right at the surface of the base semiconductor
- ▶ elimination of heavy doping effects.

Efficiencies as high as 17.6% (area = 3 cm², AMI, 28°C) have been reported for single-crystal silicon MIS solar cells.³ The open-circuit voltage (660 mV) observed in these devices is the highest that

has been reported for any other p-n junction solar cells.⁴ These developments are very encouraging and offer one of the best prospects for the production of cheap photovoltaic electricity.⁵

References

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10/16/79

Incident at IAU

As an invited participant of the US National Committee at the General Assembly of the International Astronomical Union last August in Montreal, I am shocked and outraged by the actions and attitudes of certain officials of the Canadian Organizing Committee in connection with an incident that occurred on Monday 20 August. In a truly multinational effort I and my colleagues Leo Goldberg, Gerhard Herzberg and Arno Penzias were collecting signatures on a petition of support for two of our Soviet colleagues, Jacob Alpert and Vladimir Dashevsky. Alpert and Dashevsky were fired from their positions after applying to emigrate some years ago, and now find themselves in the untenable position of being allowed neither to emigrate nor to continue their scientific work, in contradiction to the Universal Declaration of Human Rights, the Helsinki Final Act, and all principles of scientific freedom. Dashevsky in particular is in a very precarious situation, facing possible charges of "parasitism" and its attendant prison term. We felt that a direct expression of concern by the world's astronomers meeting in Montreal, would help alleviate their plight.

I would like to stress that our efforts during the IAU meeting in collecting signatures for the petition were not sponsored or endorsed by either the IAU or the Canadian Organizing Committee. This was solely an action taken by free individuals during breaks from the scientific meetings. It was conducted in such a way as to cause no embarrassment to either the Canadian Organizing Committee or any of the conference participants. On Friday 17 August I put copies of the petition on a table outside the cafeteria near the meeting rooms so that conference participants, of their own free will, could see it and sign it if they wished to do so. Goldberg and Herzberg had been assured