vincing evidence so far for two steps[12]. Finally, if steroid receptors are indeed weakly held non-histone nuclear proteins, what are the implications for the 'two-step' hypothesis? Clearly, the greatest damage will be to the countless slides and book diagrams of steroid hormone action which will need to be replaced. The potential economic benefits to laboratory illustrators and photographers are thus not inconsequential. However, to the rest of the world the change may be more cosmetic than substantive. It remains undeniable that hormone agonists do alter gene expression, and hence some aspect of the receptor structure must change by interaction with its ligand. That change, once widely believed to result in a compartmental shift, may now be even more subtle. Perhaps receptors are permanently associated with the genes they regulate, and thus have only to rotate or change conformation to achieve their effects. Seen in this context, there still are two identifiable states of a steroid receptor: an active (ligand-associated) state and an inactive (unliganded) one. The real significance of the original two-step idea is retained; steroid-receptor complexes are nuclear regulatory elements wherever they originate in the cell.

The recent findings thus renew old problems, but at least may serve to incite us to the more difficult questions of receptor function in molecular terms. □

William T. Schrader is at the Department of Cell Biology, Baylor College of Medicine, Houston, Texas 77030.

1. Toft, D.O. & Gorski, J. *Proc. natn. Acad. Sci. U.S.A.* **5**, 1574 (1966).
2. Jensen, E.V. *et al. Proc. natn. Acad. Sci. U.S.A.* **59**, 632 (1968).
3. King, W.J. & Greene, G.L. *Nature* **307**, 745 (1984).
4. Welshons, W.V., Lieverman, M.E. & Gorski, J. *Nature* **307**, 747 (1984).
5. Pietras, R.J. & Szego, C.M. *J. Steroid Biochem.* **11**, 1471 (1979).
6. Linkie, D.M. & Siiteri, P.K. *J. Steroid Biochem.* **9**, 1071 (1978).
7. Snow, L.D. *et al. J. Steroid Biochem.* **9**, 1017 (1978).
8. Walters, M.R., Hunziker, W. & Norman, A.W. *J. biol. Chem.* **255**, 6799 (1980).
9. Jensen, E.V., Greene, G.L., Closs, L.E., DeSombre, E.R. & Nadji, M. *Rec. Prog. Horm. Res.* **38**, 1 (1982).
10. Barrack, E.R., Hawkins, E.F., Allen, S.L., Hicks, L.L. & Coffey, D.S. *Biochem. biophys. Res. Commun.* **79**, 829 (1977).
11. Ciejek, E., Tsai, M.-J. & O'Malley, B.W. *Nature* **306**, 604 (1973).
12. Munck, A. & Foley, R. *Nature* **278**, 752 (1979).

Goe and catche a falling starre

ACROSS the arcs of background stars, followed over a three-hour exposure, streaks a brilliant fireball trail. The picture below left, which brings to mind the words of John Donne in the title of this article, documents the first time that photography successfully pinpointed the site of a meteorite fall from the trail of a plummeting meteor and only the second time that it facilitated calculation of the orbit prior to Earth encounter.

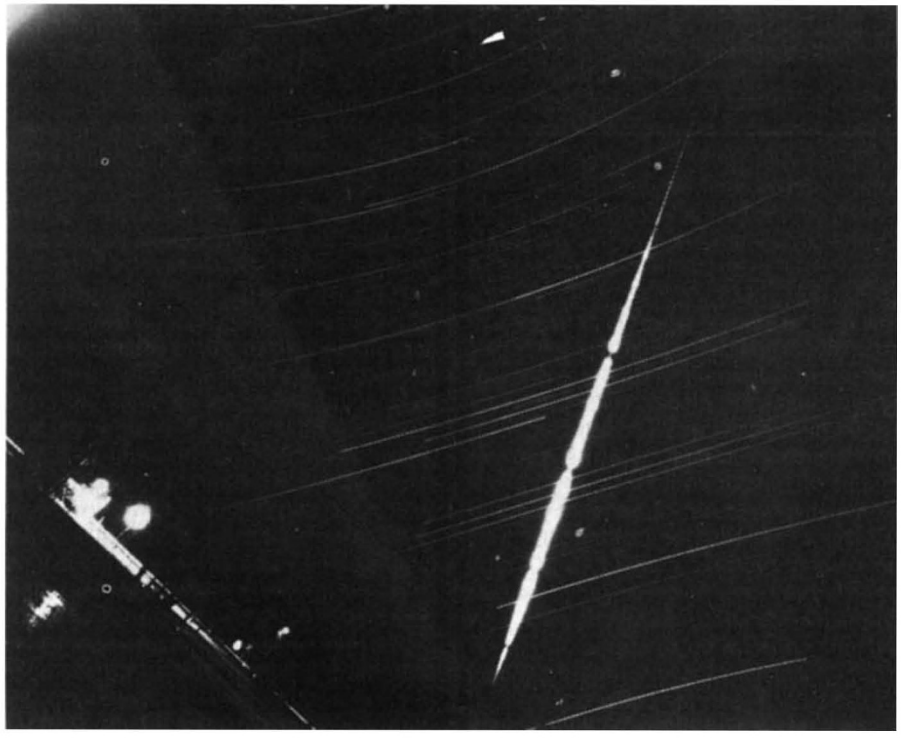
A single photograph like this one, of course, provides limited information — the magnitude of the meteor, its duration and its direction of motion. The dashed trajectory results from a chopping camera shutter which further indicates the velocity and rate of deceleration. But any hopes of recovering whatever meteoritic debris may have survived the swift passage through the atmosphere must depend on triangulation using a set of photographs from several stations.

It was for just that purpose that the sixteen stations of the Prairie Network were built in the American mid-west in 1963 by the Smithsonian Astrophysical Observatory. Each station functioned automatically, a twilight photometer triggering four aerial T-11 cameras, one directed to each cardinal point. Save for a blind spot at the zenith, the whole sky ws covered at every station by the f/6.3 Planigon lenses with an 85° field of view. Plate-glass windows kept the cameras proof against rain and snow, and a cloud detector avoided waste of film. In thirteen years of scanning the skies nightly, the Prairie Network logged over 2,700 meteors (excluding bright meteor showers) but produced only one photographic recovery: the Lost City meteorite pictured below right.

The probable location of the meteorite was deduced from four photographs recorded on 3 January 1970 at two stations in Kansas and two in Oklahoma (including the one below left from Hominy). The meteor looked a good candidate for a surviving meteorite because of its low initial velocity (14.2 km s^{-1}; it can be as much as five times faster), its very low terminal velocity (3.5 km s^{-1}) and terminal height (19.5 km) and its relatively long duration (9 s).

Several factors conspire to determine the point of impact. Aside from the triangulated position and velocity inferred from the trajectory, the meteorite hunter needs to take account of the body's density and shape (to calculate the aerodynamic drag coefficient), the air density and local winds. A radiosonde flown over Oklahoma City provided the latter, but in the absence of better information one could only assume that the body itself was spherical and of normal meteoric density (3.4 g cm^{-3}). The predicted fall lay a few kilometres east of Lost City, Oklahoma.

The meteorite was duly recovered from a roadside snow bank only 600 m from the target. Three more fragments were subsequently located — 17 kg altogether. Lost City turned out to be a bronzite chondrite, chemically and radiogenically dated at 4.8 to 5.5 x 10^9 yr BP. Orbital calculations place aphelion inside the orbit of Jupiter. An asteroidal origin should not be glibly inferred, however, since both Jupiter and the Earth may have severely modified its primaeval orbit. **Jon Darius**



Selected from Beyond Vision *by Jon Darius of the Science Museum, London (to be published in April by Oxford University Press). Photographs reproduced by courtesy of C.-Y. Shao, Smithsonian Astrophysical Observatory.*