

Palomar sky survey

Progress is not our most important product

from Virginia Trimble

ALL of us who are old enough to remember will be quite sure that many things are not as good today as they were thirty years ago — tomatoes, the post office, operatic tenors . . . The chief exceptions, of course, are the products of industrial research and development, which are all much better. Or are they? Mitchell Struble and Christ Ftaclas (*Publ. astr. Soc. Pac.* **94**, 763; 1982) of the University of Pennsylvania report that recent prints of the Palomar Observatory Sky Survey (POSS) contain less information than the older prints and that the chief cause is graininess and specular reflection in the new photographic paper.

The POSS consists of 1,870 plates taken on the 48-inch Schmidt telescope from 1949 to 1958, and covers the sky north of -30° declination to a limiting stellar magnitude of about 21 (at the blue end of the spectrum) and 20 (at the red end). A similar survey of the southern sky, being carried out by the UK Schmidt Telescope Unit and the European Southern Observatory, and a second epoch survey of the northern sky

from Palomar are now in progress. The POSS is a major astronomical tool, used in the identification of radio and X-ray sources; selection of candidate objects for detailed studies; investigations of the morphology of nebulae, galaxies and clusters; and many other purposes.

The first paper print copies of the POSS were issued in 1954 on Eastman Kodak unicontrast double-weight paper. There have been several subsequent reprintings from the original glass plates, the most recent few on Polycontrast Rapid II RC paper, initially called Ektabrome SC and recognizable by multiple impressions of the words 'this paper manufactured by Kodak' on the reverse side (it also feels rather like plastic).

Struble and Ftaclas have studied images

of galaxies of varying angular size on both old and new prints (and, for comparison, on one of the much rarer sets of glass copies of the Survey). They find, on average, that images on the new prints are smaller (the outer regions of the galaxies have been lost) and rounder (that is, there has been some smearing or loss of angular resolution, equivalent to poor seeing) than those on the old prints. The effects are most conspicuous for the smallest images and are sufficient to distort properties of galaxies often measured in morphological studies using the POSS.

I happen to have old and new blue prints of the field including the Crab Nebula and would describe the new print (under $\times 10$ magnification) as looking softer than the old one. For instance, fewer of the discrete filaments near the edge of the Nebula can be resolved from the continuous emission. This would be a blessing in passport photographs for those of us who remember the tomatoes of thirty years ago. Its effects on assorted applications of the POSS deserve further study. □

Virginia Trimble is Professor of Physics in the University of California, Irvine, California 92717 and Visiting Professor of Astronomy in the University of Maryland, College Park, Maryland 20742.

100 years ago

CENTRAL AND WEST AFRICA

THE brilliant journey of Major Serpa Pinto across Africa from Loanda, by the Zambesi to Natal, must be fresh in the recollection of our readers. The present narrative may be regarded



FIG. 1.—A Muata of the T'chiboco.

as complementary of the major's exciting story. Captains Capello and Ivens were member sof the original expedition along with Major Pinto, and for the first part of the journey the three companions worked together. The object of the expedition, which was organised by the Portuguese Government, was to thoroughly survey the great artery which — a tributary of the Congo — runs from south to north between 17° and 19° E. of Greenwich, and is known as

the Cuango, as also to determine all the geographical bearings between that river and the west coast, and make a comparative survey of the hydrographical basins of the Congo and Zambesi.

The country traversed is mostly mountainous, cut up by innumerable streams and valleys, rich in many parts in vegetation,

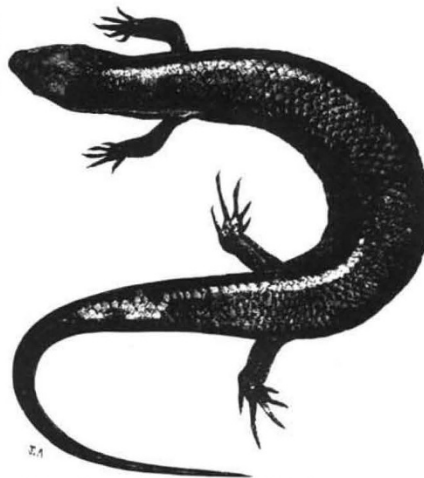


FIG. 5.—Euprepes Ivensi (new species), River Cuango.

and even in metals, and having a considerable population clustered in villages, each of which is ruled by its chief. With each of these chiefs much diplomacy had to be used in order that the explorers and their followers might obtain provisions and be allowed to pass. Among the people of this region we find the same elaborate methods of dressing the hair, so common in Central and Western Africa, and with which readers of recent African travel must be familiar. We have some interesting details as to the history of some of the leading tribes of the

region, from which it is evident that for centuries the various African peoples have been in a state of almost constant migration, that the so-called states are exceedingly unstable, and that even here it would be hazardous to regard any one race as unmixed. We give here two types: Fig. 1, a Muata, or ruler, of the T'chiboco; and Fig. 2, a woman of Cangombe.

The sources of the Cuango were found at a height of 4756 feet, at about $11\frac{1}{2}^\circ$ S., and a little



FIG. 2.—Woman of Cangombe.

east of 19° E., in one of the most extraordinary watersheds to be met with anywhere. It is thus described:

"An extensive tract of land, all hill and dale, marks this culminating point, a sort of St. Gothard of the African waters. On the north, running through a narrow and tortuous valley, appeared the Cuango, which, shortly after its birth, flows at the foot of the plantations of manioc and massanmabla, growing abundantly upon the slopes, and at that time filled with girls and women engaged in hoeing and other field labours".