

Fig.9. Electron diffraction pattern and reciprocal lattice diagram of inner-core material.

Figures 9 and 10 comply with this restriction. The electron diffraction data show that an unusually high degree of crystalline order (for polyethylene) exists in the inner core of the strand. The crystallographic c axis, the axis parallel to the polyethylene chain backbone, was found to be oriented parallel to the long axis (within $\pm 5^\circ$) of the strand. This high degree of chain orientation is consistent with the c -axis orientation function $+0.996$ determined previously with wide-angle x-ray measurements.¹⁴ In contrast, electron diffraction studies of the 3000 Å diameter, fibrous morphology of the outer sheath produced only typical oriented fiber patterns similar to those obtained by Keller^{10,11} from stress-crystallized polyethylene. The resulting diffuse arcs may have been produced by the polycrystalline lamellar cross texture observed on the 3000 Å fibers.

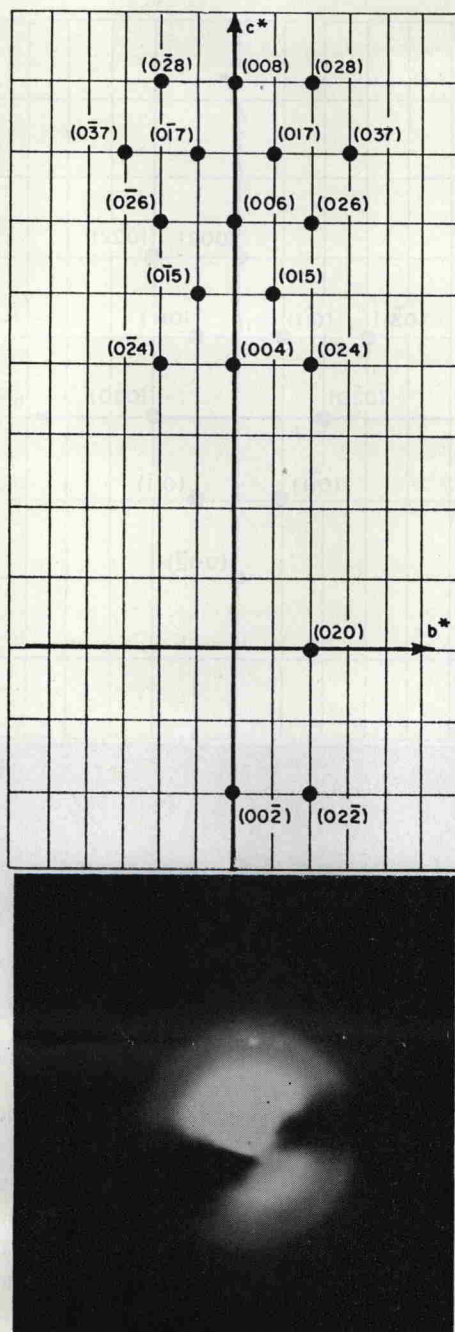


Fig. 10. Electron diffraction pattern and reciprocal lattice diagram of inner-core material (long exposure time).