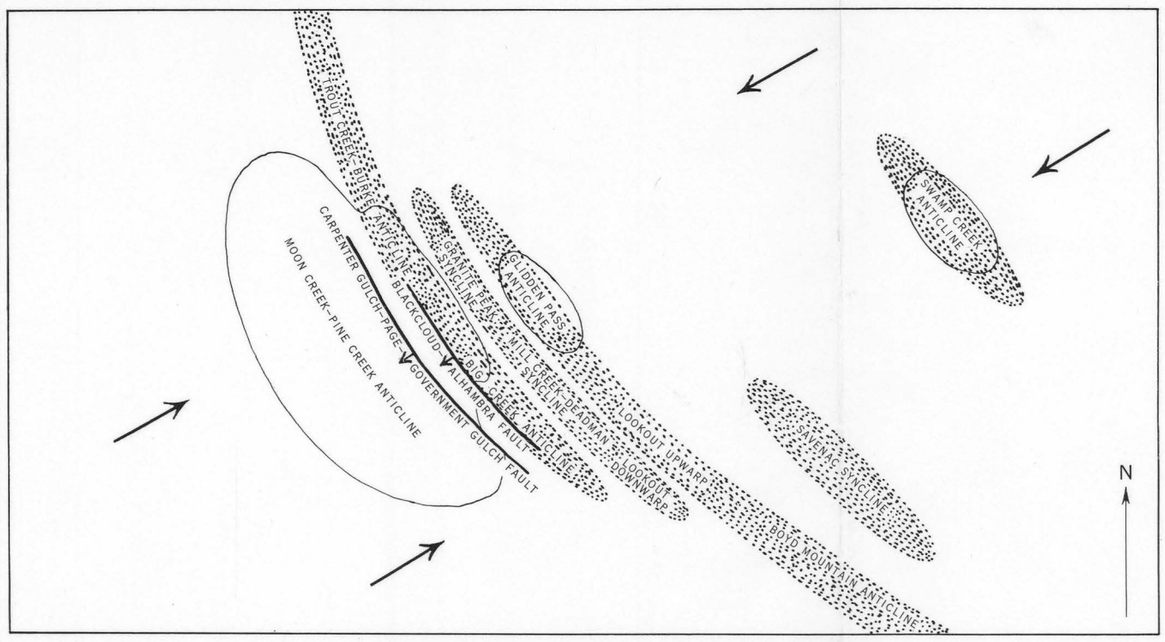
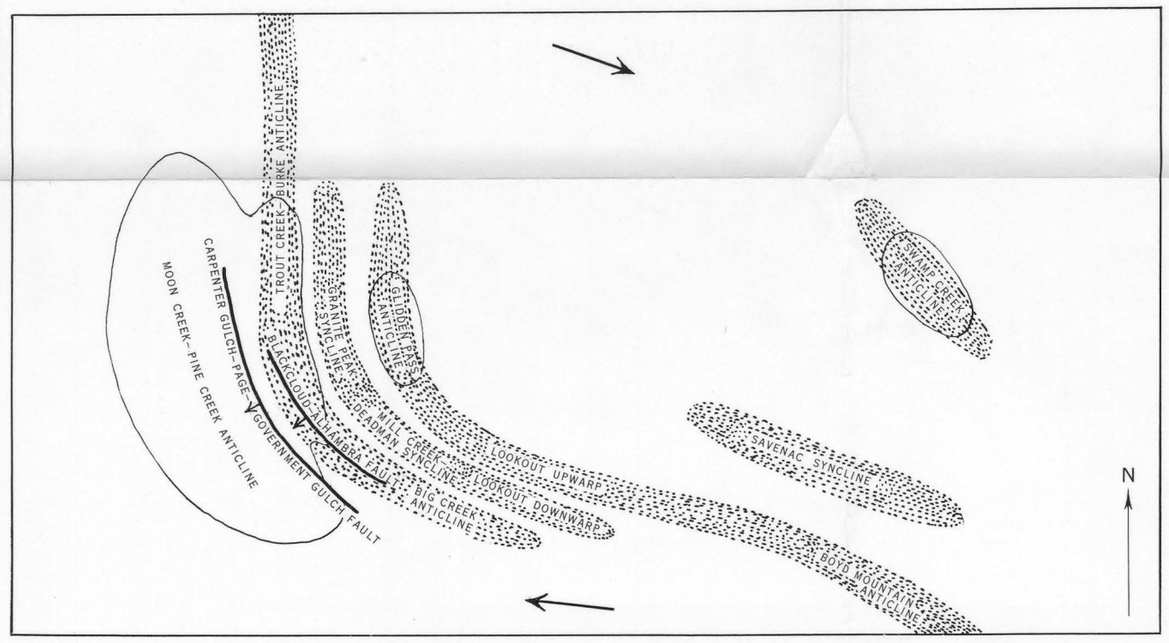
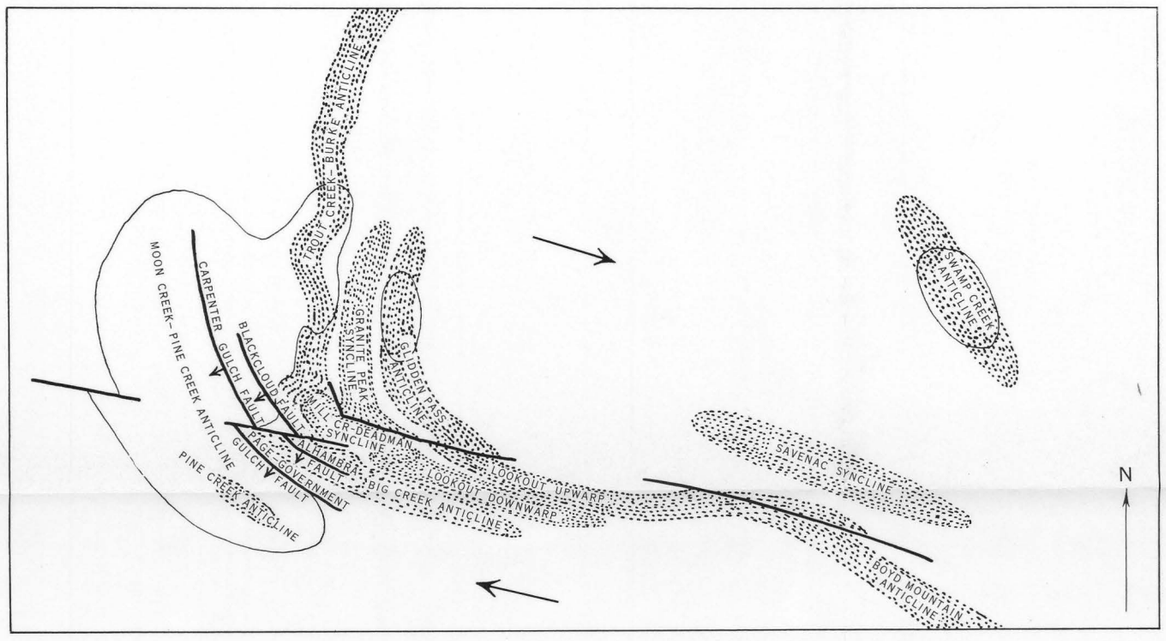


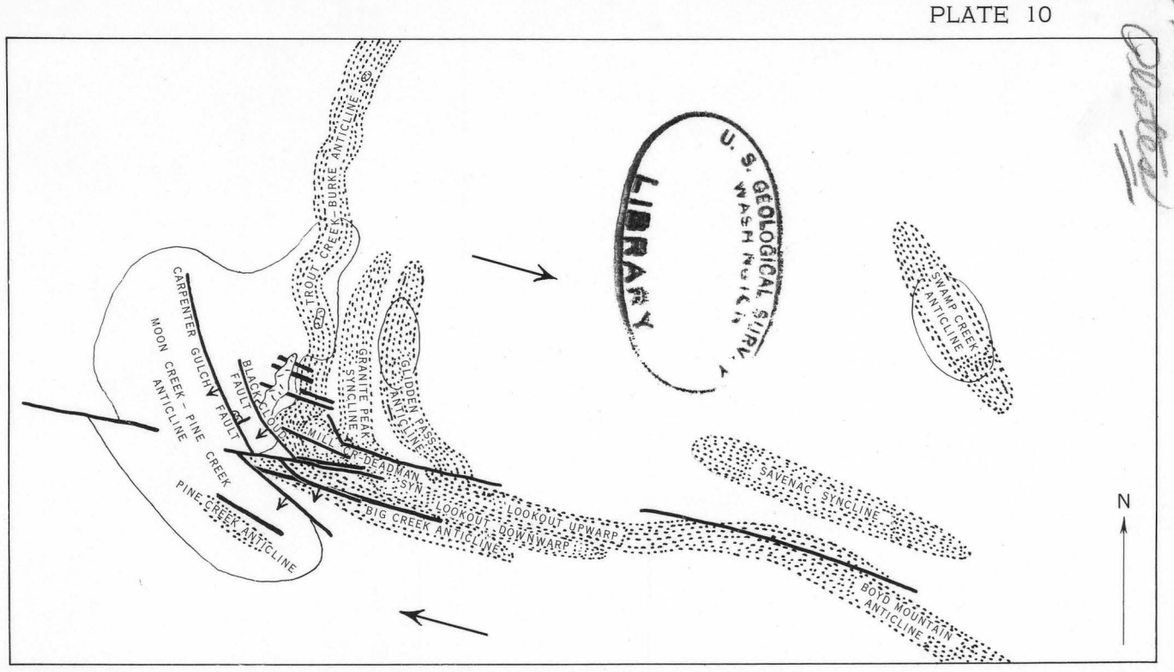
A, In the first stage of deformation the principal folds are formed by stresses oriented northeast and southwest. In the tighter segments the folds are overturned where reverse faults that strike northwest and dip southwest were formed. A large upwarp, the Moon Creek-Pine Creek anticline, lies elongated parallel to and west of the folds, which together with the Glidden Pass and Swamp Creek anticlines outlines a crude culmination of folding that transects the fold axes.



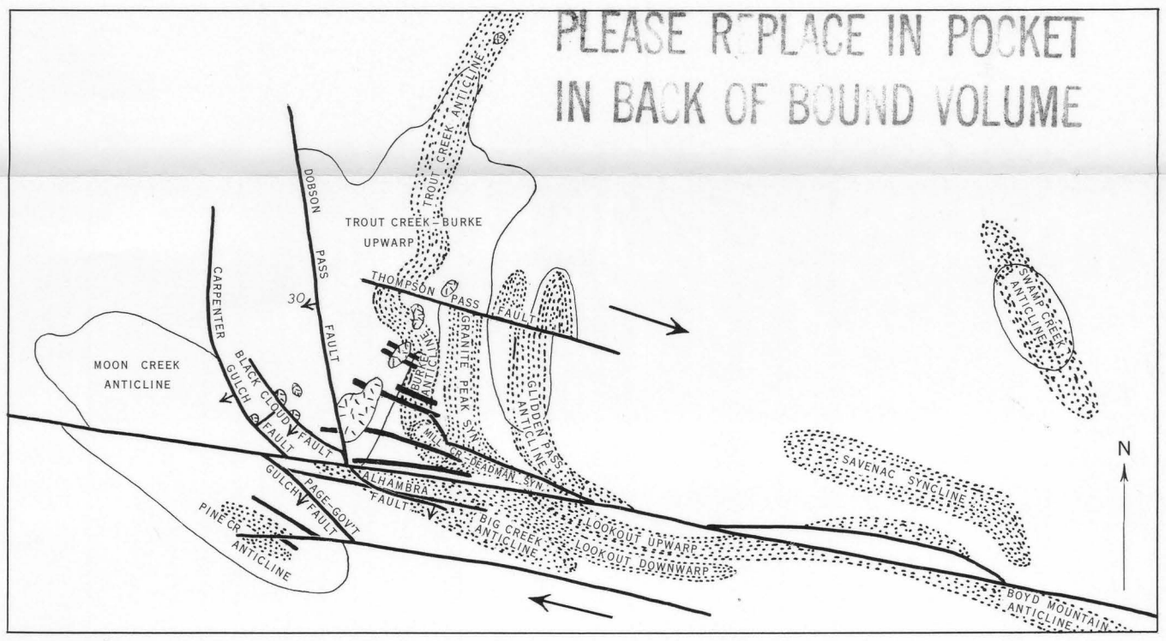
B, A major reorientation of the stress system begins to bow the axes of the folds. These stresses, rotational in plan view, drag the southern part of the region westward relative to the northern part. Stresses were probably distributed from below the crust.



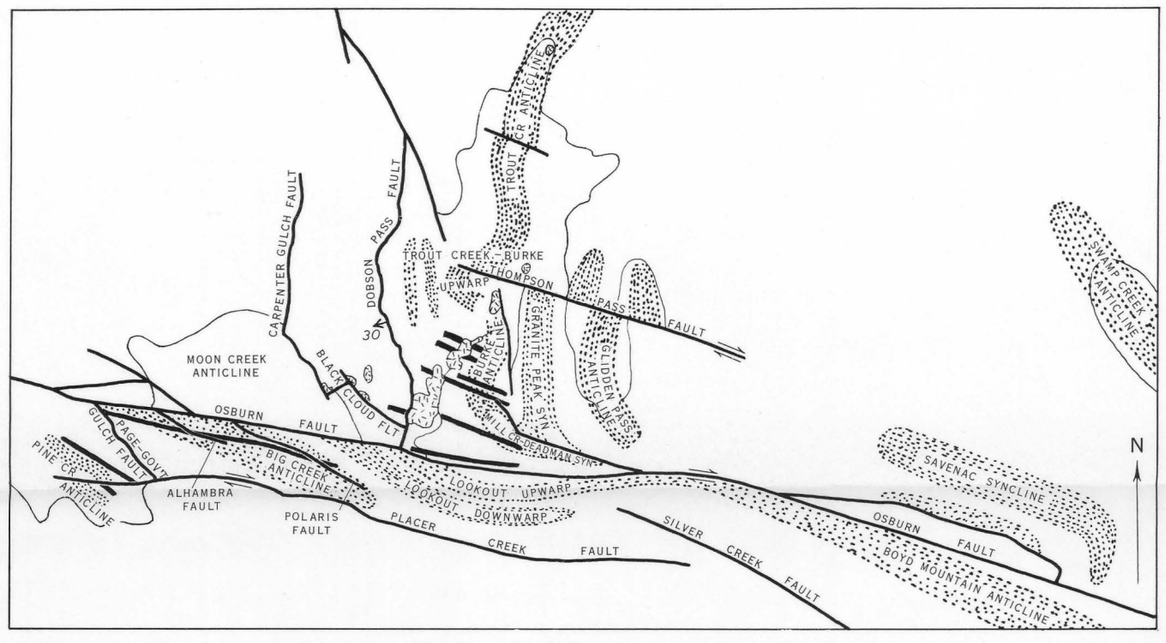
C, The rotational stress system has produced tight crenulations in fold axes and incipient strike-slip faults. A structural knot is thus produced in what is to be the heart of the Coeur d'Alene district. The Mill Creek and Deadman synclines have separated from the Granite Peak syncline and wrapped around the truncated end. The north flank of the Lookout-Boyd Mountain anticline is sliced off by an early segment of the Osburn fault which later becomes the north branch of the Osburn fault in Mineral County, Mont.



D, Monzonitic stocks have intruded the structural knot and are elongate almost parallel to folds. The major veins have formed, probably as a late phase of the igneous activity. Mineralizing solutions have passed into the crustal rocks through several parallel feeders in the basement that are linear and that possibly originated as incipient strike-slip fractures opened by clockwise rotational stresses. Veins in the crust above these feeders occupy fractures of several types and orientations, but most are subparallel to the feeder zones.



E, Rotation has continued and strike-slip shear zones have become continuous fault zones. These are more throughgoing than previous faults and more nearly represent a direct release of fundamental deep-seated stresses than do the earlier faults, which were more likely produced in the upper skin of the crust by secondary stresses indirectly transmitted from block to block and which were subject to the vagaries of local discontinuities. With the formation of such throughgoing faults, it is possible that most of the deep-seated stresses are accommodated by displacement along these and only a few other faults. The Thompson Pass fault has begun to offset the folds, and the Placer Creek fault has begun to offset the Pine Creek anticline and Yreka vein system. The Osburn fault has begun to offset the major folds and separate the northern vein systems from the southern ones. The original Moon Creek-Pine Creek anticline has been cut and partly offset.



F, Present position of structural elements. The Moon Creek-Pine Creek anticline and the two thrust-fault zones were displaced by the Osburn fault. Although this step in the displacement of the block west of the Dobson Pass fault from the block south of the Osburn fault is shown in *F* separately from *E*. the displacements shown in both probably took place, at least in part, concurrently. Some of the earliest faults to be activated as strike-slip faults are flexed when later strike-slip stresses are accommodated along slightly different planes. The Placer Creek fault and branches of the Osburn fault in Montana thus have somewhat irregular trends. The east end of the Savenac syncline and the early-formed north branch of the Osburn faults are sharply bent. The Polaris fault takes up strike slip after the Placer Creek fault has buckled.

STAGES IN THE STRUCTURAL EVOLUTION OF THE COEUR D'ALENE DISTRICT NORTHERN IDAHO AND WESTERN MONTANA

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