

Base map by Topographic Division,  
U. S. Geological Survey, 1946.

Geology compiled by W. S. White and J. C. Wright, 1954,  
from mining company records, U. S. Geological Survey out-  
crop and aeromagnetic maps, and unpublished dip-needle  
maps of the Michigan Geological Survey.

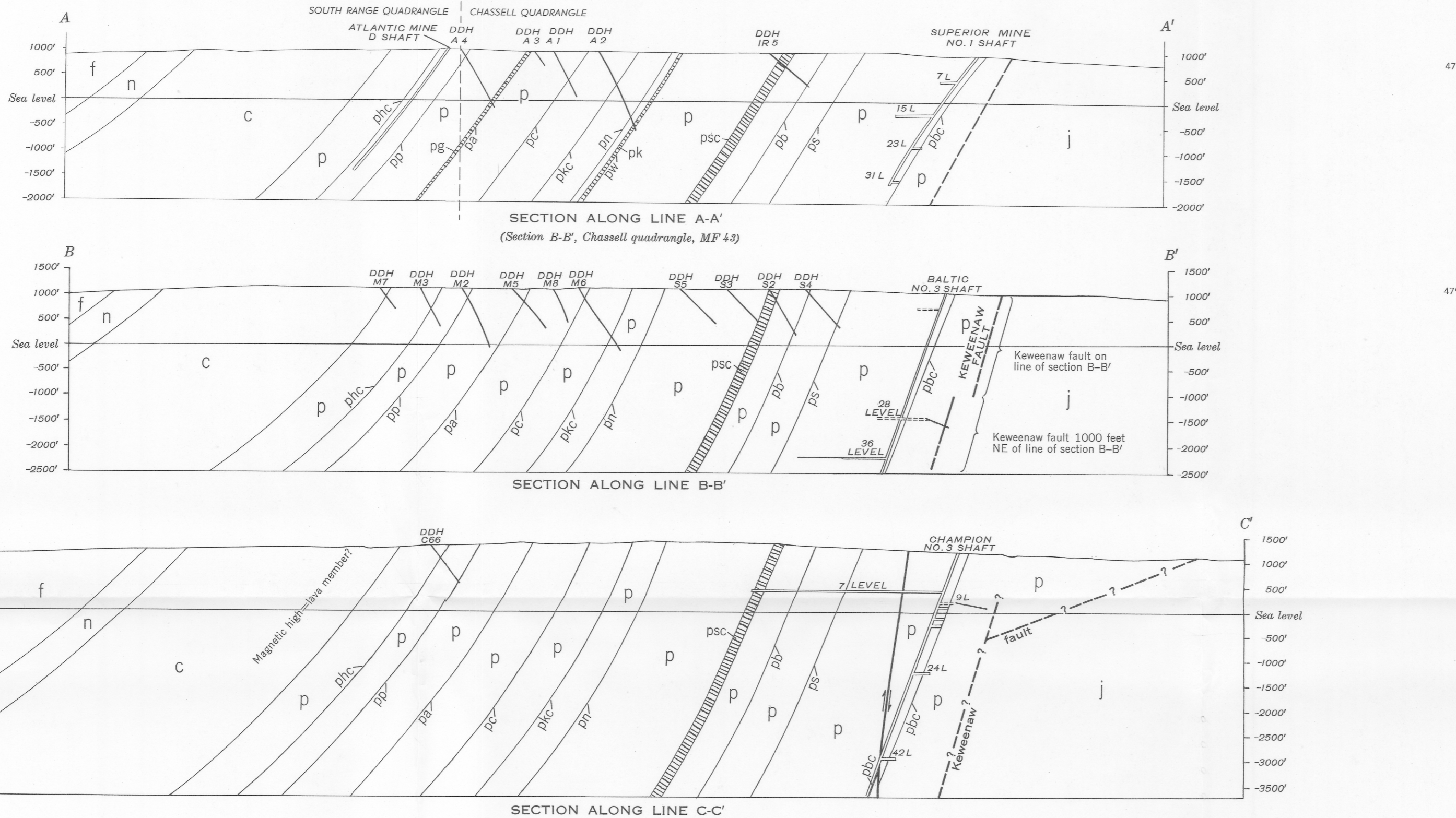
EXPLANATION

- j**  
Jacobsville sandstone  
Light-red to brown, medium-grained sandstone with subordinate amounts of fine-grained sandstone, shale, and thin conglomerate beds.
- f**  
Freda sandstone  
Fine- to medium-grained, gray to reddish-brown sandstone with interbedded reddish-brown laminated siltstone and shale.
- n**  
Nonesuch shale  
Massive and laminated, dark- to reddish-gray siltstone and shale with interbedded gray to reddish-gray, fine-grained sandstone.
- c**  
Copper Harbor conglomerate  
Red to brown boulder conglomerate with subordinate amounts of pebble conglomerate and beds of arkosic sandstone; most of detrital material is rhyolitic in composition; fragments of mafic lava are subordinate.
- p**  
phc  
pp  
pg  
pc  
pkc  
pn  
psc  
pb  
ps  
pbc  
Portage Lake lava series  
Basalt and andesite flows, with ophitic, glomeroporphyritic, porphyritic, or fine-grained equigranular texture in middle and lower parts, and amygdaloidal top; beds of conglomerate and sandstone, containing predominantly rhyolitic fragments, occur between a few of the flows. The Greststone flow, pp, and Sculer Creek flow, pbc, are distinguished on map. The following sedimentary rocks are identified: Hancock conglomerate (No. 17), phc, Peudic West conglomerate (No. 16), pp, Allouez conglomerate (No. 15), pa, Calumet and Hecla conglomerate (No. 13), pc, Kingston conglomerate (No. 12), pkc, National sandstone, pn, Bohemia conglomerate (No. 8), pb, St. Louis conglomerate of local usage, ps, and Baltic conglomerate (No. 3), pbc.

- Contact  
Dashed where approximately located. Dotted where concealed.
- Contact  
Located by magnetic lines traced with a dip needle.
- Contact  
Located by magnetic lines traced with the air-borne magnetometer.
- 485  
Fault, showing dip  
Dashed where approximately located. Dotted where concealed.
- 60  
Strike and dip of beds
- DDH  
CS  
Diamond drill hole
- Dashed line represents hole projected up the dip of bedding to surface; letters and numbers identify drill holes; letters are abbreviations of property names as follows: A, Atlantic; C, Copper Range; G, Globe; M, Mill Mine Junction; S, South Range; T, Trumountain. Drill holes are projected into line of section on the cross sections.
- 28 LEVEL  
Shaft
- Crosscut projected up the dip of bedding to the surface
- Area of copper mine stoping and development in amygdaloid and conglomerate
- (Note: Copper mines are identified by name and principal shafts by letter or number.)

PRECAMBRIAN OR  
CAMBRIAN

PRECAMBRIAN



GEOLOGIC MAP  
OF THE  
SOUTH RANGE QUADRANGLE, MICHIGAN  
By  
Walter S. White and James C. Wright  
1956