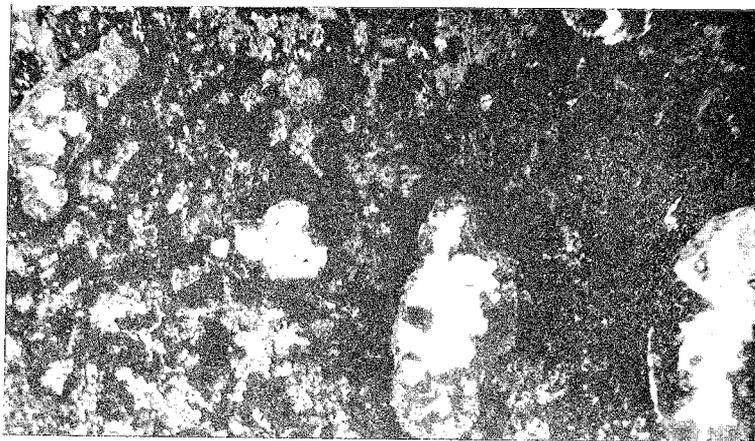
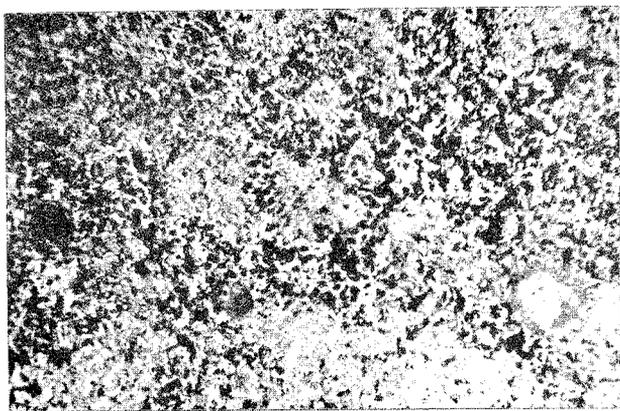


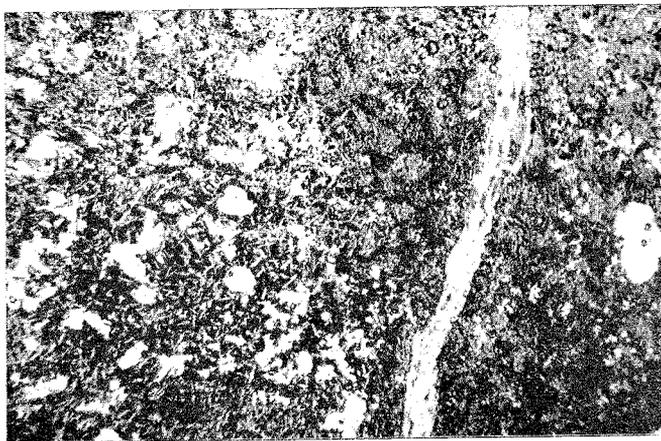
A. ALGOMAH LODE, ALGOMAH MINE, ONTONAGON COUNTY. PHOTOMICROGRAPH X 10. THIS IS A VERY VESICULAR PORTION OF THE LODE. SOME OF THE BLACK AREAS ARE MELACONITE, OTHERS THE DARK BROWN GROUND MASS OF THE ROCK. THE VEINLET AND SOME OF THE IRREGULAR AREAS ARE CHRYSOCOLLA.



B. BUTLER LODE, MASS MINE, ONTONAGON COUNTY. PHOTOMICROGRAPH X 10. THIS MICROSCOPIC SECTION SHOWS A FINE TEXTURED GROUND MASS AND AMYGDULES. THE LATTER ARE CHIEFLY COMPOSED OF RED FELDSPAR, QUARTZ AND CALCITE. THE DARK RED AND STAINED SEMIOPAQUE FELDSPAR FORMS THE OUTER PART OF THE AMYGDULE. THE CLEAR TRANSPARENT CALCITE AND QUARTZ WERE DEPOSITED AFTER THE FELDSPAR AND FILLED THE CENTRAL PART OF THE CAVITIES. THE COPPER IN THIS SECTION OCCURS IN FINE GRAINED GROUND MASS AND NOT IN THE AMYGDULES.



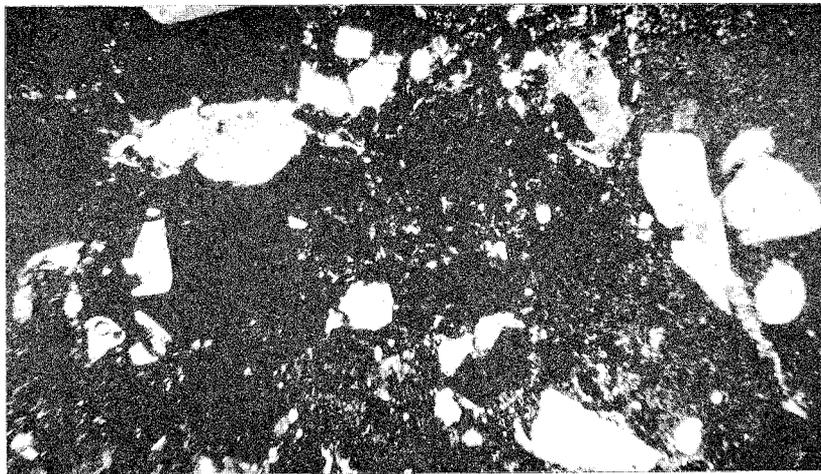
A. BALTIC LODGE, BALTIC MINE. PHOTOMICROGRAPH X 10. THIS THIN SECTION SHOWS FINE GRAINED ROCK WITH VERY FEW CAVITIES. IT ILLUSTRATES THE TEXTURE OF A LARGE PORTION OF THE BALTIC LODGE.



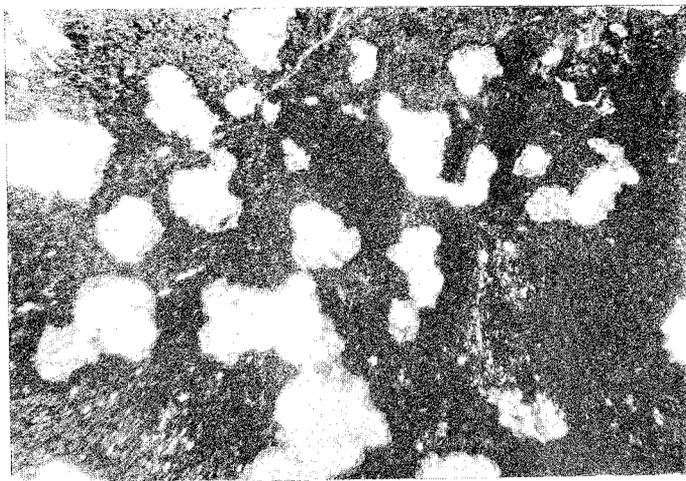
B. BALTIC LODGE. PHOTOMICROGRAPH X 8. THIS SECTION SHOWS THE VESICULAR PORTION OF THE BALTIC LODGE AND A VEINLET OF CALCITE. A CONSIDERABLE PORTION OF THE COPPER IS IN ROCK WHICH HAS BEEN FRACTURED AND LATER CEMENTED WITH CALCITE AND OTHER MINERALS. COPPER OCCURS IN FRACTURE FILLINGS BUT MORE LARGELY IN THE ALTERED ROCK NEAR THE FRACTURES.



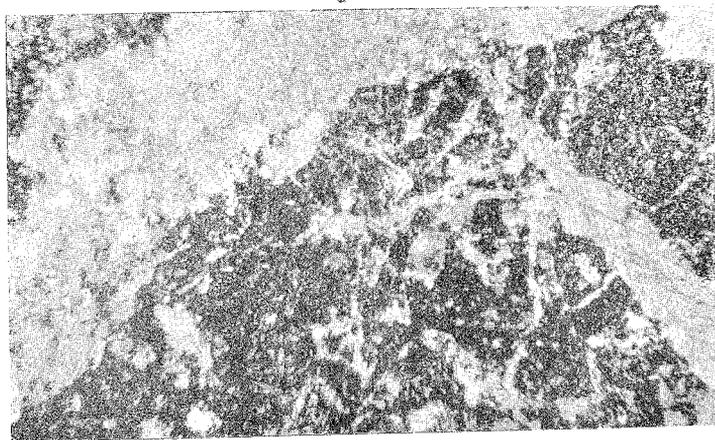
A. CALUMET CONGLOMERATE, CALUMET AND HECLA MINE. PHOTO-
MICROGRAPH X 12. THIS IS A TYPICAL SECTION OF THE QUARTZ PORPHYRY
OF THE CALUMET CONGLOMERATE SHOWING NUMEROUS CLEAR CRYSTALS
OF QUARTZ IN A NEARLY OPAQUE FELSITE GROUND MASS. THE QUARTZ
PORPHYRY PEBBLES CONTAIN SUCH NUMEROUS RED PARTICLES THAT THE
GROUND MASS IS TRANSPARENT ONLY IN VERY THIN SECTIONS.



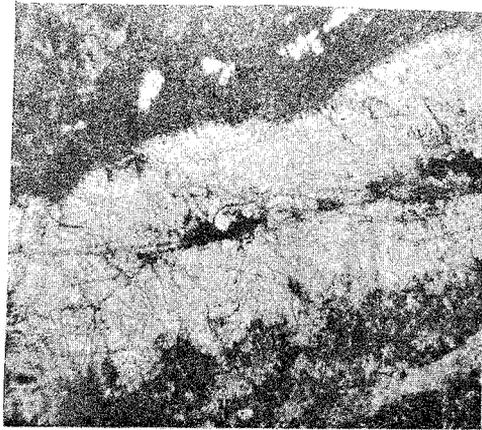
B. CALUMET CONGLOMERATE. PHOTO-MICROGRAPH X 8. THE CONGLO-
MERATE IS MADE UP LARGELY OF FRAGMENTS OF QUARTZ PORPHYRY BUT
THE ROCK CONTAINS SO MANY MINUTE RED PARTICLES THAT IT IS NEARLY
OPAQUE IN THIN SECTION. THE CLEAR TRANSPARENT AREAS ARE QUARTZ.



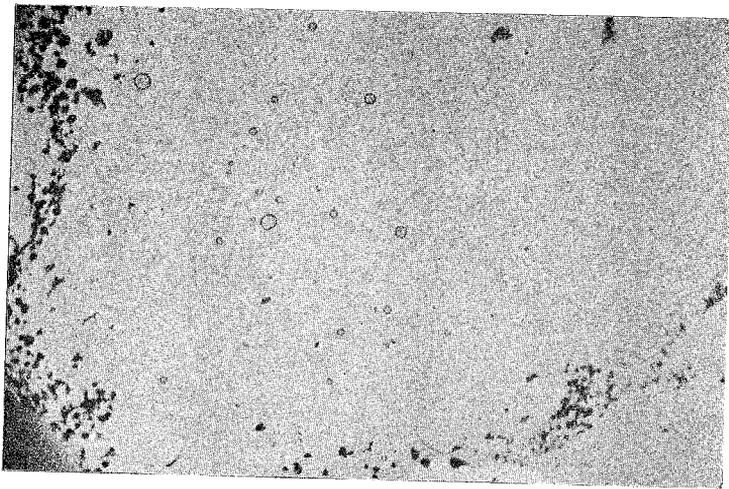
A. HANCOCK NO. 3 LODGE, HANCOCK MINE. PHOTOMICROGRAPH X 10. THIS LODGE IS A TYPICAL AMYGDALOID. THE AMYGDULES IN THIS PARTICULAR SECTION ARE COMPOSED OF CHLORITE, QUARTZ AND CALCITE. MOST OF THE SEMI-OPAQUE CHLORITE HAS BEEN DEPOSITED EARLIER THAN THE CLEAR TRANSPARENT QUARTZ AND CALCITE.



B. HANCOCK LODGE NO. 4, 34TH LEVEL. PHOTOMICROGRAPH X 8. THIS SECTION SHOWS VEINLETS OF CALCITE IN A NEARLY OPAQUE ROCK WHICH IS AN ALTERED PORPHYRITE.

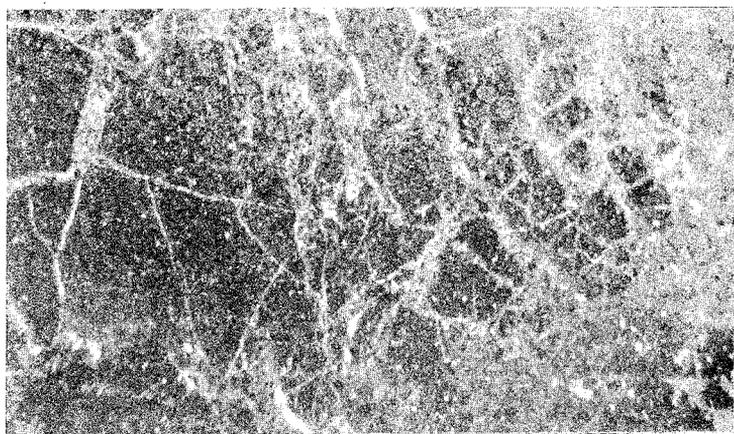


A. HANCOCK LODGE. PHOTOMICROGRAPH. THIS SECTION SHOWS NATIVE COPPER IN RATHER LARGE PARTICLES ALONG THE MIDDLE OF A VEIN OF PREHNITE. COPPER OCCURS ALSO IN SMALL PARTICLES IN THE ROCK ON EITHER SIDE OF THE VEIN.

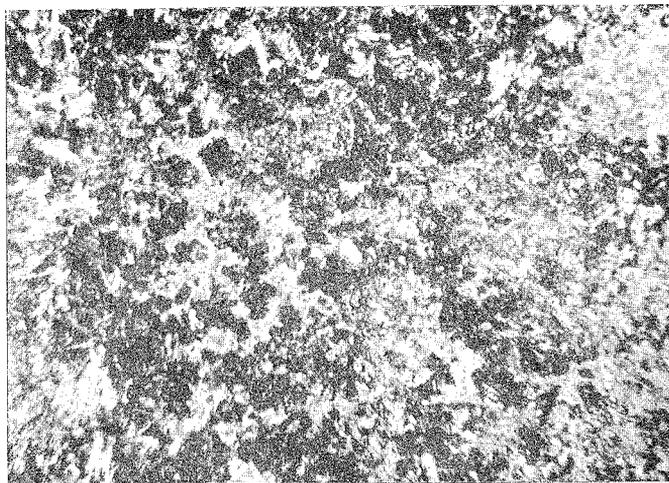


B. PHOTOMICROGRAPH X 9. THIS SECTION SHOWS MODE OF OCCURENCE OF NATIVE COPPER (BLACK) IN DATOLITE (WHITE). (RINGS ARE AIR BUBBLES IN THE BALSAM ON WHICH THE SECTION IS MOUNTED). FRANKLIN JUNIOR MINE.

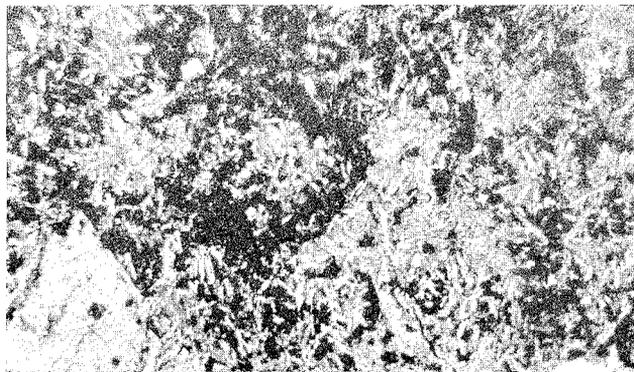
THE DATOLITE OF THE FRANKLIN MINE IS A WHITE VARIETY. IT OCCURS FREQUENTLY AS ROUNDED MASSES SEVERAL INCHES IN DIAMETER. THE CENTRAL PART OF THESE MASSES IS OFTEN FREE FROM COPPER, NEAR THE OUTER EDGE, HOWEVER, NUMEROUS SMALL PARTICLES OF COPPER OF IRREGULAR SHAPE, AS SHOWN IN THIS HALFTONE, ARE GENERALLY FOUND.



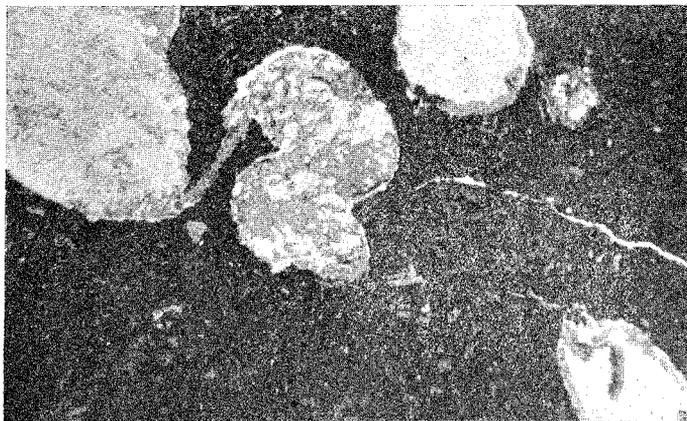
A. FELSITE, INDIANA MINE, ONTOGON COUNTY. PHOTOMICROGRAPH X 16. THE FELSITE IS SEMI-OPAQUE OWING TO THE ABUNDANCE OF DARK RED COLORED PARTICLES. SEVERE FRACTURING IS INDICATED BY NUMEROUS VEINLETS OF COLORED MINERALS WHICH HAVE FILLED THE FRACTURES.



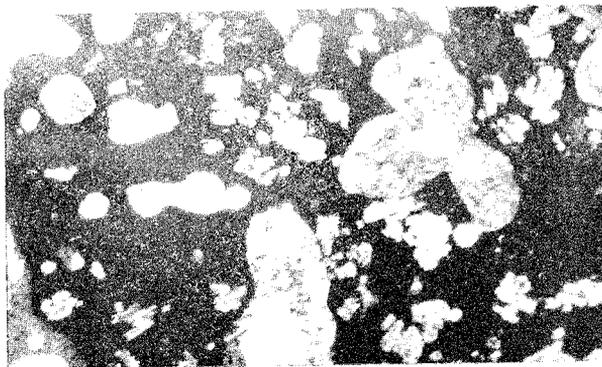
B. ISLE ROYALE LODE, ISLE ROYALE MINE. PHOTOMICROGRAPH X 8. THIS SECTION SHOWS A FINE TEXTURED ROCK WITH NO AMYGDULES. A CONSIDERABLE PORTION OF THE ORE HAS THIS TEXTURE. OTHER PARTS ARE QUITE VESICULAR.



A. KEARSARGE LODGE, MOULAWIK MINE. PHOTOMICROGRAPH X 8. THIS SECTION SHOWS A RATHER DISTINCTLY CRYSTALLIZED PORPHYRITIC ROCK. THE SPECIMEN WAS TAKEN NEAR THE FOOT WALL OF THE LODGE.



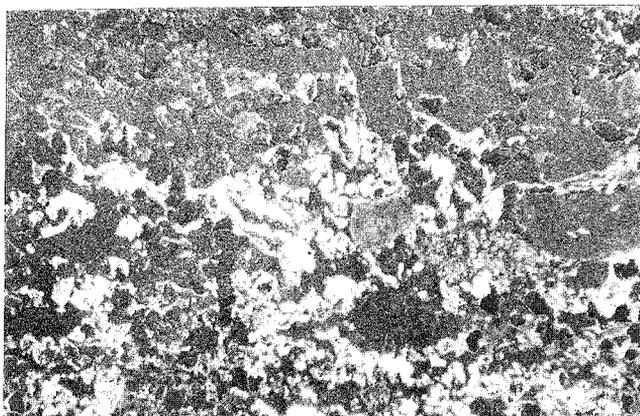
B. ISLE ROYALE LODGE, ISLE ROYALE MINE. PHOTOMICROGRAPH X 10. THIS SECTION SHOWS LARGE AMYGDULES AND A VERY FINE GRAINED GROUND MASS. THE SEMI-OPAQUE MINERAL IN THE AMYGDULES IS EPIDOTE. THE CLEAR COLORLESS MINERAL IS QUARTZ. IN TWO CASES THE EPIDOTE FORMS THE MARGIN; IN THE OTHERS IT IS IRREGULARLY INTERGROWN WITH QUARTZ.



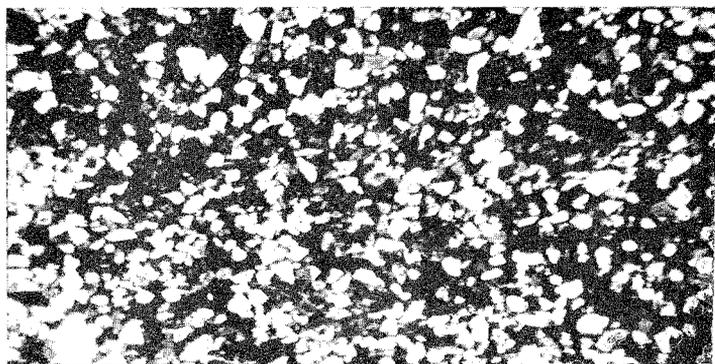
A. LAKE LODGE, LAKE MINE. PHOTOMICROGRAPH X 12. THIS SECTION SHOWS BOTH AMYGDULES AND PORPHYRITIC FELDSPAR CRYSTALS IN AN OPAQUE GROUND MASS. THE AMYGDULES SHOW CLEAR TRANSPARENT QUARTZ AND CALCITE AND SEMI-TRANSPARENT CHLORITE.



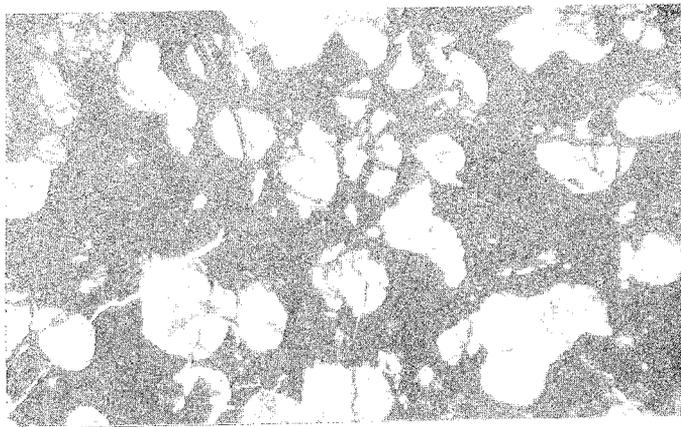
B. LAKE LODGE. PHOTOMICROGRAPH X 10. THIS SECTION SHOWS A PSEUDOAMYGDALOIDAL PORTION OF THE LODGE. THE CLEAR TRANSPARENT AREAS ARE CHIEFLY PALE GREEN CHLORITE. THE GROUND MASS IS DISTINCTLY CRYSTALLINE.



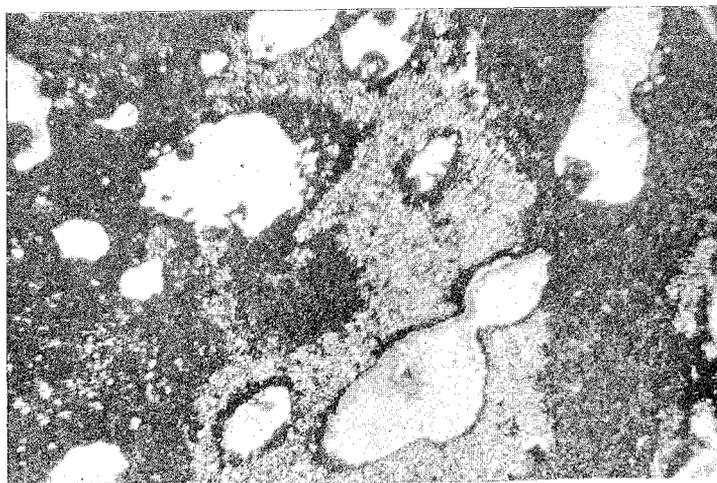
A. NONSUCH SANDSTONE, WHITE PINE MINE. PHOTOMICROGRAPH X 10. THIS SECTION SHOWS A FINE GRAINED CONGLOMERATIC ROCK. THE COLORLESS PEBBLES ARE QUARTZ. THE LARGE GRAINS ARE FELDSPAR AND MELAPHYRE. SOME OF THE SMALL OPAQUE PARTICLES ARE NATIVE COPPER.



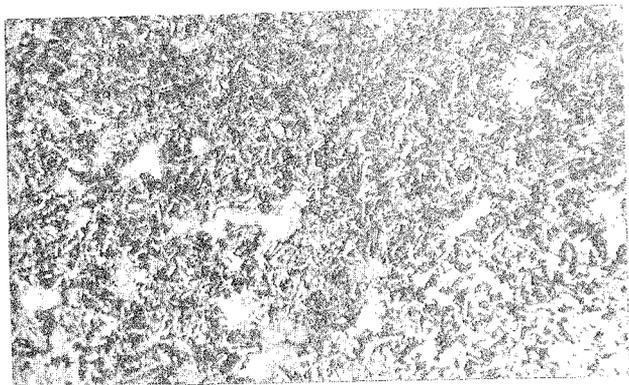
B. NONSUCH SANDSTONE, WHITE PINE MINE. THIS SECTION SHOWS A FINE GRAINED SEDIMENTARY ROCK COMPOSED CHIEFLY OF CLEAR COLORLESS GRAINS OF QUARTZ AND DARK COLORED ROCK PARTICLES. SOME OF THE OPAQUE PARTICLES ARE NATIVE COPPER AND SOME ARE MAGNETITE.



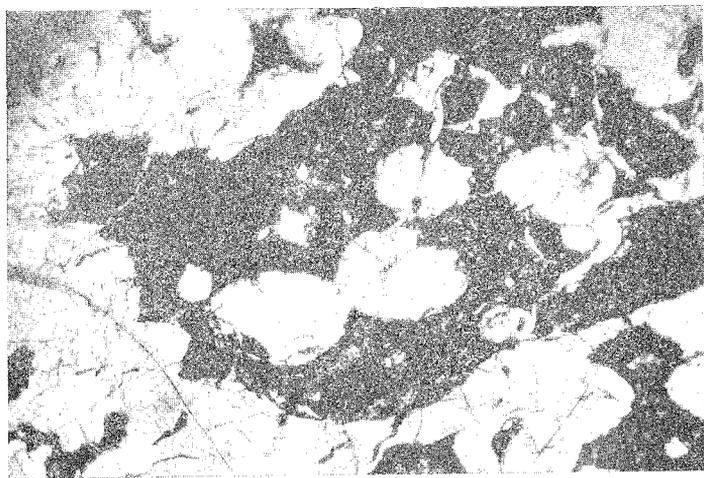
A. PEWAUIC LODGE, QUINCY MINE. PHOTOMICROGRAPH X 8. PREHNITE IS VERY ABUNDANT IN THE ORE AT THE QUINCY MINE. THIS SECTION SHOWS NUMEROUS AMYGDULES OF PREHNITE IN THE OPAQUE GROUND MASS. SOME OF THE OPAQUE PARTICLES IN THE PREHNITE ARE NATIVE COPPER.



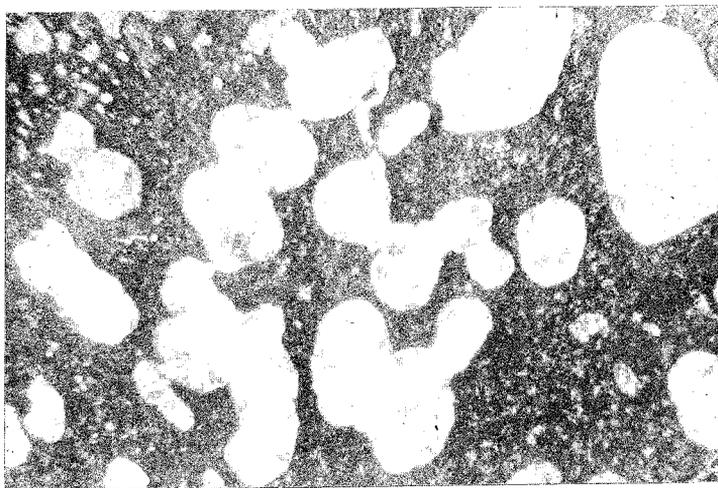
B. PEWAUIC LODGE, FRANKLIN JUNIOR MINE. PHOTOMICROGRAPH X 10. THIS SECTION SHOWS A TRUE AMYGDALOIDAL PORTION OF THE LODGE. CRYSTALS OF DELESSITE (SEMI-OPAQUE) APPEAR AT THE BORDER OF CLEAR TRANSPARENT QUARTZ WHICH IS THE CHIEF CONSTITUENT OF THE AMYGDULES IN THIS SECTION.



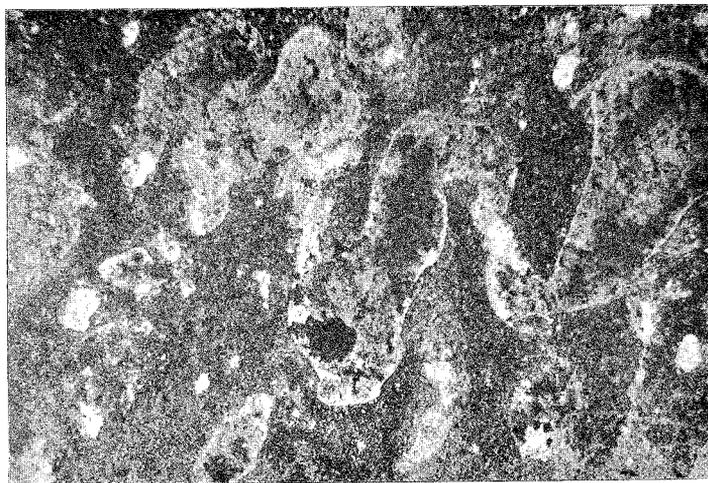
A. PEWABIC LODGE, QUINCY MINE. PHOTOMICROGRAPH X 16. THIS SECTION SHOWS A PSEUDO-AMYGDALOIDAL PORTION OF THE LODGE FROM NEAR THE FOOTWALL. THE LARGE TRANSPARENT PATCHES ARE SECONDARY CHLORITE. THEY HAVE NOT THE CHARACTER OF TRUE AMYGDULES.



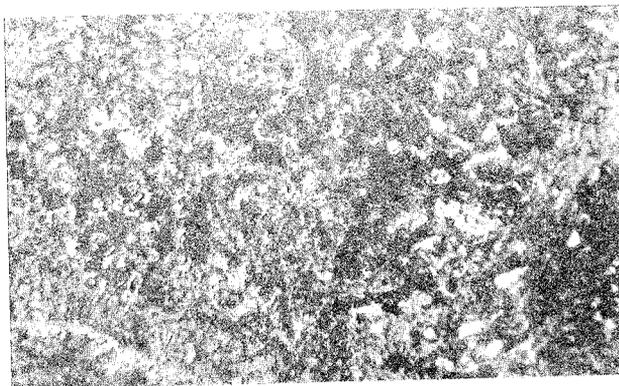
B. PEWABIC LODGE, QUINCY MINE. PHOTOMICROGRAPH X 8. NATIVE COPPER IN PREHNITE. THIS IS A PORTION OF THE LODGE WHICH HAS BEEN LARGELY REPLACED BY PREHNITE (WHITE IN PHOTOGRAPH). IN THE WHITE PREHNITE ARE SEVERAL IRREGULAR PARTICLES OF COPPER. THE MAIN DARK COLORED PART OF THE SECTION IS ALTERED ROCK CONTAINING PARTICLES OF NATIVE COPPER.



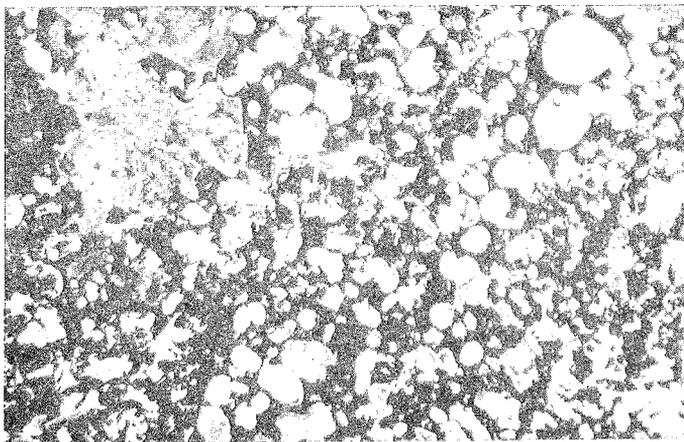
A. KEARSARGE LODGE, WOLVERINE MINE. PHOTOMICROGRAPH X 10. THIS SECTION SHOWS A TYPICAL AMYGDALOID WITH NUMEROUS LARGE AMYGDULES. THE CLEAR COLORLESS MINERAL IS QUARTZ. THE SEMI-OPAQUE CRYSTALS NEAR THE EDGE OF THE AMYGDULES ARE EPIDOTE.



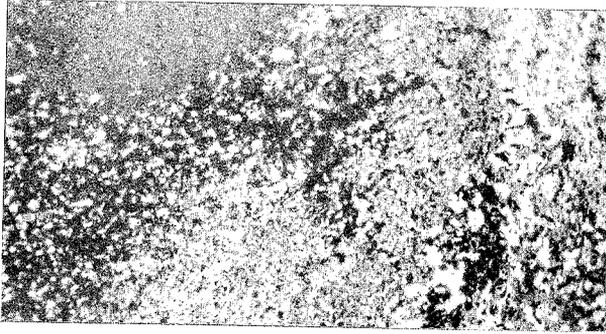
B. SUPERIOR LODGE, HOUGHTON MINE. PHOTOMICROGRAPH X 10. THIS SECTION SHOWS COARSE PARTICLES OF NATIVE COPPER IN LARGE AMYGDULES. IN THE DARK GROUND MASS THERE ARE NUMEROUS FINE PARTICLES OF METAL. THE LACK OF CRYSTALLINE STRUCTURE IN THE GROUND MASS IS NOTEWORTHY.



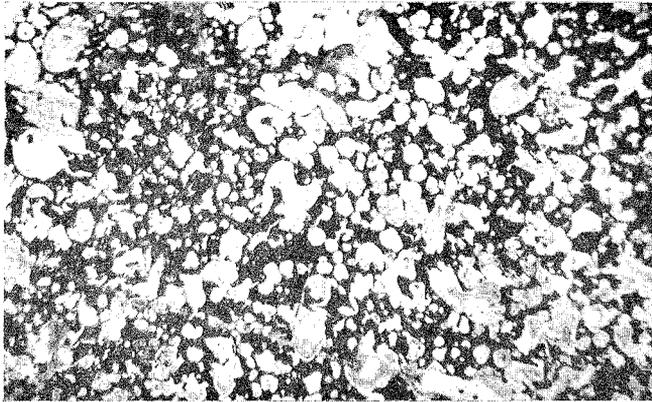
A. SUPERIOR LODGE, SUPERIOR MINE. PHOTOMICROGRAPH X 12. THE COPPER IN THIS SECTION IS IN VERY SMALL PARTICLES SCATTERED THROUGH A FINE GRAINED ROCK.



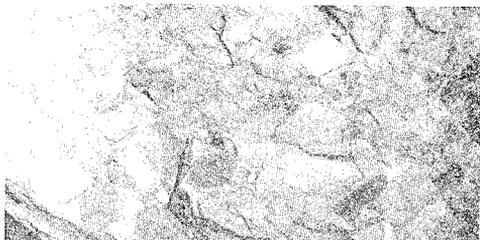
B. SUPERIOR LODGE, SUPERIOR MINE. PHOTOMICROGRAPH X 10. THIS IS A REMARKABLY VESICULAR COPPER BEARING ROCK. THE AMYGDULES ARE CHIEFLY CALCITE. THE OPAQUE GROUND MASS IS MADE UP OF A CONFUSED AGGREGATE OF PARTICLES TOO SMALL FOR IDENTIFICATION.



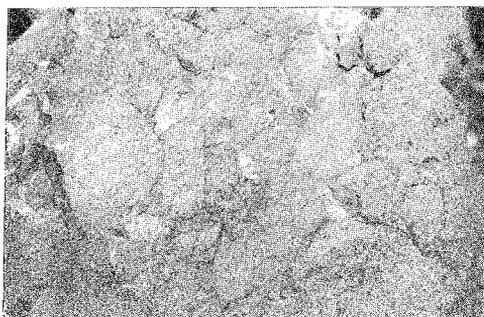
A. SUPERIOR LODGE, SUPERIOR MINE. PHOTOMICROGRAPH X 10. THIS IS A DULL BROWN MASSIVE ROCK SHOWING NO COPPER TO THE NAKED EYE. NUMEROUS SMALL GRAINS OF COPPER ARE, HOWEVER, READILY OBSERVED UNDER THE MICROSCOPE. THE ORIGINAL TEXTURE OF THE ROCK HAS BEEN OBTSCURED BY SECONDARY ALTERATION.



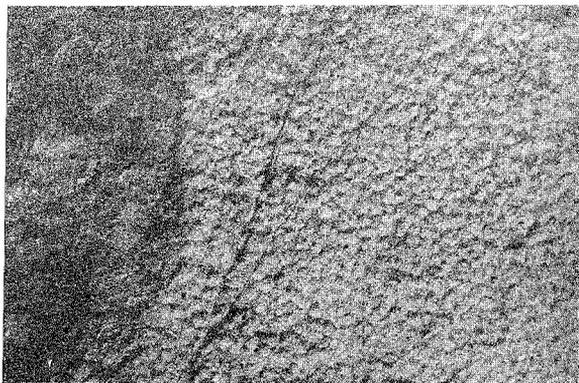
B. SUPERIOR LODGE, SUPERIOR MINE. PHOTOMICROGRAPH X 10. THIS SECTION SHOWS A VERY VESICULAR ROCK. AMYGDULES ARE CHIEFLY CALCITE AND CONTAIN LITTLE COPPER. NATIVE COPPER OCCURS ABUNDANTLY IN VERY SMALL PARTICLES IN THE DARK GROUND MASS.



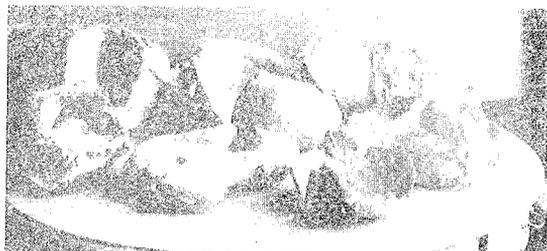
A. ALLOETZ CONGLOMERATE, FRANKLIN
JUNIOR MINE.



B. CALUMET CONGLOMERATE, TAMARACK MINE.



C. OPHITE, WEATHERED AND FRESH SURFACES,
FRESH FRACTURE SURFACE AT LEFT.



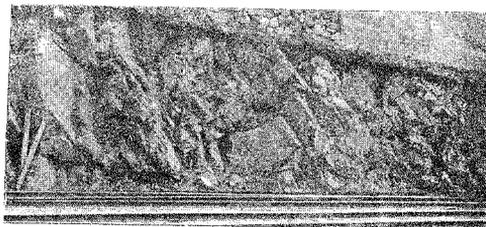
A. COPPER SHELLS FROM CALUMET CONGLOMERATE.



B. MASS COPPER, AHMBEEK MINE.



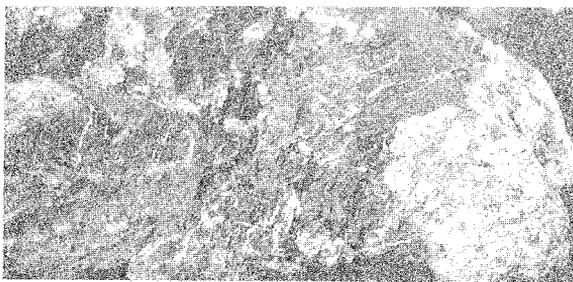
C. SANDSTONE OVERLAIN BY TRAP, EAGLE
RIVER.



D. EXPOSURE OF TRAP BED, HOUGHTON.



A. DOMEYRITE VEIN, ISLE ROYALE MINE.



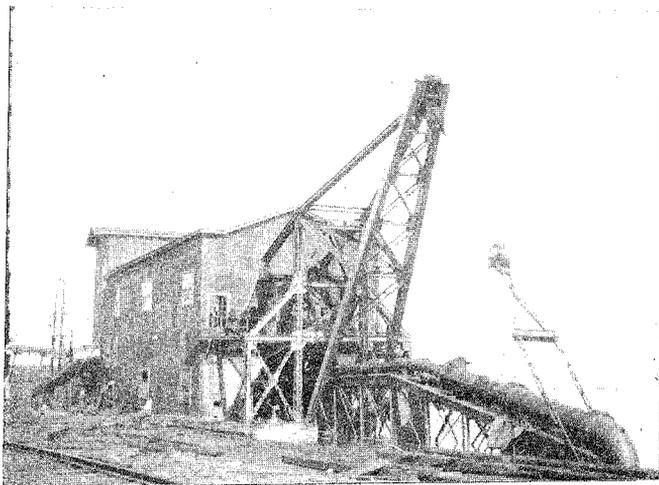
B. MASS COPPER AND FISSURED COUNTRY ROCK,
AUMBERG MINE.



C. MASS COPPER, MICHIGAN SMELTER.



A. FOUNDATIONS OF THE TAMARACK RE-CRUSHING PLANT AND THE STAMP SAND IN TORCH LAKE.



B. THE LARGE DREDGE FOR HOISTING THE CALUMET AND HECLA STAMP SAND FROM TORCH LAKE.