GEOLOGIC MAP OF MASSACHUSETTS AND RHODE ISLAND

BY B. K. EMERSON

1916

Scale 250000

Contour interval 100 feet

Datum is mean sea level

LEGEND

SEDIMENTARY ROCKS

QUATERNARY

- Qal — Recent deposits where bedrock is unknown.

TERTIARY

- T — Clays and marls

UNCONFORMITY

CRETACEOUS

- K — Marls and greensand

UNCONFORMITY

TRIASSIC

- Tr — Chicopee shale (Black and red sandy shale)
- Tg — Granby tuff (coarse volcanic tuffaceous of Feldspar, pinkish-gray fine-fragmental sandstone)
- Tm — Longmeadow sandstone (reddish-brown sandstone with shale and fine-pebble conglomerate members)
- Tmt — Mount Toby conglomerate (very coarse conglomerate composed largely of slate fragments)
- Tsf — Sugarloaf arkose (coarse feldspathic sandstone, composed largely of fragments of granite)

UNCONFORMITY

CARBONIFEROUS

- Cs — Cumberlidge slate (hard gray argillite)
- Cbr — Roxbury conglomerate (coarse conglomerate of quartzite, sandstone, and slate, with some interbedded lenses)
- Ghm — Hoosac and Hawley formations (Gneissoid mica schist, with many beds of quartzite and calcareous schist)
- Gbm — Bellingham conglomerate (washed granitic conglomerate)
- Gmq — Merrimack quartzite (Gneissoid quartzite with phyllite, and schist)
- Gq — Oakdale quartzite (Lightly banded quartzite with calcareous lenses)
- Gg — Goshen schist (dark graphitic flaggy mica schist, with biotite and garnet)
- Ggh — Hornblende schist in Goshen schist
- Gq — Quabbin quartzite (very sugary quartzite)
- Gw — Erving hornblende schist (black finely quartz-hornblende schist)

UNCONFORMITY ?

ORDOVICIAN

- Ghw — Hawley schist (sericite and chlorite schists, with many beds of hornblendic schist)
- Ghh — Hornblende schist in Hawley schist

DEVONIAN

- Dr — Rowe schist (sericite schist, with garnet and chloritic locally developed)
- Dc — Chester amphibolite (dark fine-grained hornblende schist, in places changed to serpentine, and emery)
- Dr — Rowe schist (previous article added)
- Dh — Hoosac schist (chloritic-sericite schist)

UNCONFORMITY

SILURIAN ?

- Sl — Leyden argillite (dark coarse slate or fine-grained mica schist)
- Sw — Conway schist (dark graphitic mica schist, with lenses of limestone, calcareous schist, and many beds of dark fine-grained limestone and sandy quartzite)
- Sch — Hornblende schist in Conway schist
- Scq — Quartzite in Conway schist
- Scl — Limestone in Conway schist
- Sg — Goshen schist (dark graphitic flaggy mica schist, with biotite and garnet)
- Sgh — Hornblende schist in Goshen schist

UNCONFORMITY ?

ORDOVICIAN

- Shw — Hawley schist (sericite and chlorite schists, with many beds of hornblendic schist)
- Shh — Hornblende schist in Hawley schist

DEVONIAN

- Dr — Rowe schist (sericite schist, with garnet and chloritic locally developed)
- Dc — Chester amphibolite (dark fine-grained hornblende schist, in places changed to serpentine, and emery)
- Dr — Rowe schist (previous article added)
- Dh — Hoosac schist (chloritic-sericite schist)

Middle Cambrian

Lower Cambrian

Newark group

- Cgr — Greylock schist (sericite-chloritic quartz schist)
- Ddv — Dalleywidge limestone
- Db — Berkshire schist (chloritic-sericite schist)

ORDOVICIAN AND CAMBRIAN

- Cbs-Ocw — Stockbridge limestone (blue and gray limestone and white marble, with local beds of mica schist, Cbs,m)

CAMBRIAN

- Cb — Braintree slate (hard gray and black slate)
- Cw — Weymouth formation and Roxbury slate (very fine-grained gray and red sandstone and argillite)
- Cc — Cheshire quartzite (white sugary quartzite)
- Cd — Dalton formation (hard conglomerate with sericite schist)

UNCONFORMITY

ALGONKIAN ?

- Am — Marlboro (In Essex County and in Essex County) other Algonkian ? rocks are included.
- Amh — Hornblende schist and green hornblendic schist, with some amygdaloid.
- Amq — Westboro ("Cranberry") quartzite (impure quartzite and ferruginous, with mica schist)

UNCONFORMITY

ARCHEAN

- Aw — Washington gneiss (rusty garnetiferous-hinegnaris gneiss and quartzite)
- Ac — Culve Brook limestone (coarse crystalline limestone)
- Ah — Hinsdale gneiss (coarse granitoid biotite gneiss)

AGE UNDETERMINED

- g — Gneisses and schists of undetermined age. (Divisions of igneous origin and one belt of limestone, L, are included).

IGNEOUS ROCKS

TRIASSIC

- Tdg — Diabase dikes and sills (Black diabase in bodies too small to map)

LATE CARBONIFEROUS OR POST-CARBONIFEROUS

- Pg — Pegmatite
- Mg — Middlefield granite (porphyritic biotite granite)
- wg — Williamsburg granodiorite (coarse-grained gray granodiorite, with pegmatite and albitic granite veins)
- Nb — Northfield (pure, granular vein quartz-barite on Pelham granite)
- Pg — Pelham granite (gray biotite-bearing granite)
- dd — Dana diorite (Quartz, with diorite schist and gneiss, and a little granite, border on Mount Prospect)
- nsg — New Salem aplite
- mgd — Motgon granodiorite (light-gray pyroxene granodiorite)
- cg — Coys Hill granite (coarse porphyritic granite)
- fmg — Fitzwilliam granite (white muscovite-biotite granite)
- hg — Hardwick granite (blue biotite granite around Pleistocene granite)
- hg — Hubbardston granite (pegmatitic granite full of large crystals of black Paxton schist, followed by muscovite)
- fg — Fitchburg granite (white muscovite-biotite granite)
- sbg — Shutting granite gneiss (Westerly granite in Rhode Island is included) (coarse muscovite granite and pegmatite gneiss)
- agr — Ayer granite (coarse porphyritic biotite-muscovite granite)
- abg — Dracut diorite and hornblende-gabbro (diorite and gabbro)
- sg — Andover granite (coarse porphyritic biotite-muscovite granite)
- shd — Sunny Hollow diorite
- sp — Saxonite and peridotite
- pd — Pyroxenite diorite
- s — Serpentine and steatite
- Hb — Hornblendite and pyroxenite in Peridotite complex
- sc — Belchertown granite (granitoid hornblende gneiss)
- Gpt — Tern quartz of Diamond Hill
- Gm — Marlboro volcanic complex (Ash, tuff, breccias, and dikes)
- sg — Squam syenite
- ns — Nepheline syenite
- sy — Quartz syenite
- bv — Beverly syenite
- sp — Rice Hill granite porphyry and chief rhyolite (Quartz-porphyry, Diabase-quartz rhyolite porphyry)
- Qmz — Quincy granite (salbroid-riebeckite-hastingsite granite)
- dg — Bedford granodiorite (dioritic-biotite granodiorite)
- wt — Newburyport quartz diorite
- wd — Wolfpen tonalite (Quartz diorite associated with Indian granodiorite)
- sb — Sharon syenite
- sd — Salem gabbro-diorite (diorite and olivine-diorite)
- Qabbro — Qabbro at Nahant
- mg — Milford granite (Biotite granite with blue quartz)
- Ivq — Ironstone quartz diorite (border on Milford granite)

SILURIAN OR DEVONIAN

- Dn — Newbury volcanic complex (Lava, breccia, tuff, and dikes)

ARCHEAN ?

- Agn — Northbridge granite gneiss (porphyritic granite largely crushed in places)

ARCHEAN

- Ato — Becket gneiss (fine gray biotite granite gneiss)
- Ag — Lee quartz diorite
- Adr — Titanite-diopside diorite aplite
- Ass — Stamford granite gneiss (coarse porphyritic blue-quartz biotite granitoid gneiss)

Note. The order of formations in this legend is not precisely the order of age. For more exact information as to the order of age, see correlation table in text.

- Probable fault
- Transitional or indefinite boundary

Base reduced from United States Geological Survey topographic sheets

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