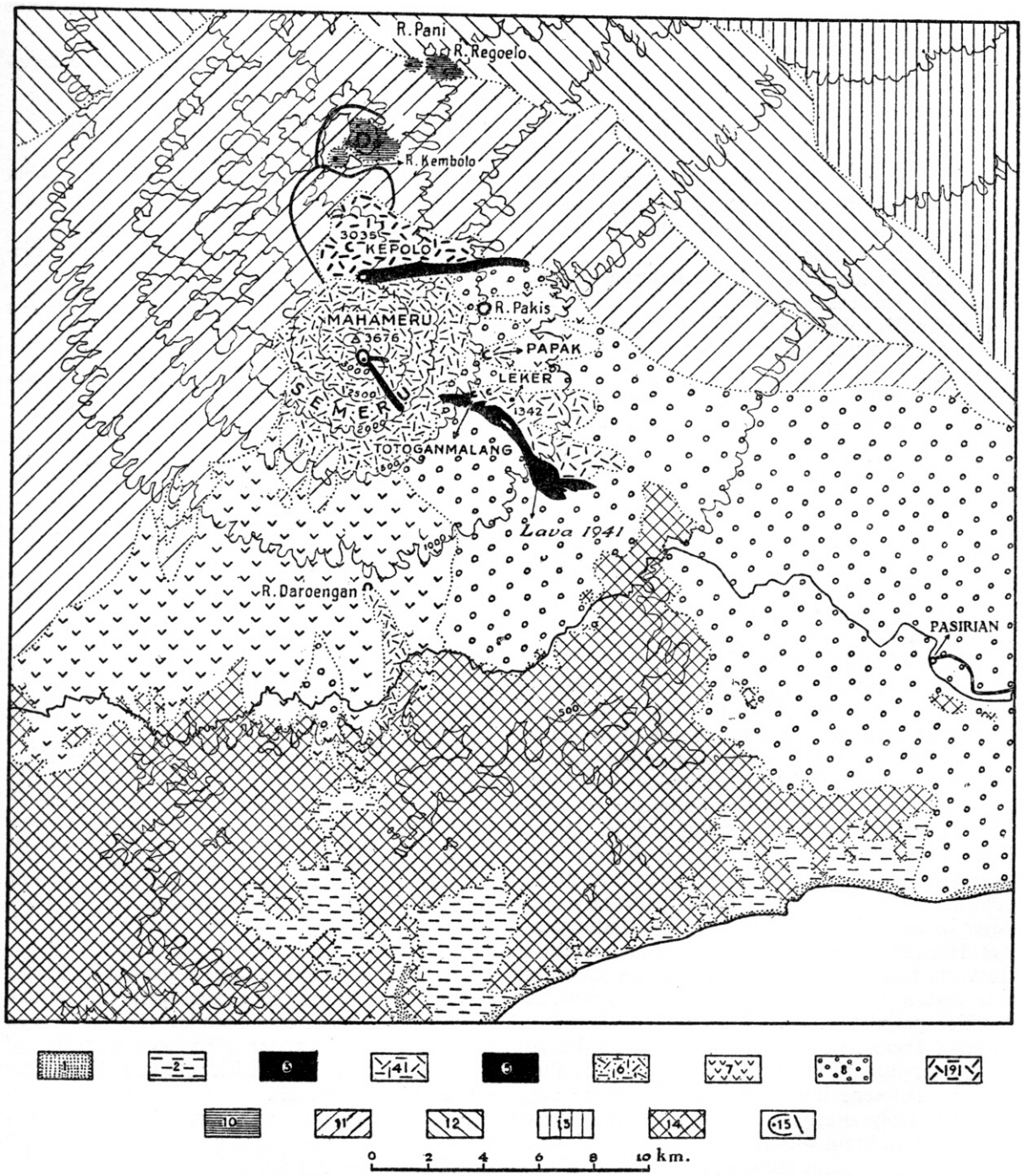

FIG. 261. *Geological sketchmap of the Semeru Complex.* (From VAN BEMMELEN, 1943, fig. 35)

Legend to fig. 261:

1. Alluvial sandy beach deposits along the South coast.
2. Alluvial deposits in the Southern Mountains.
3. Lava flows of 1885, 1895, and 1941.
4. Lava flows and lahar deposits of subrecent parasitic eruption centres (Ranu Pakis, Gunimg Papak, Gunung Totoganmalang, Gunung Leker, Ranu Darungan).
5. Subrecent lava flow between the Gunung Semeru and the Gunung Kepolo.
6. Central cone *of* the Semeru (andesitic).
7. Southern foot of the Semeru cone (basaltic).
8. Southeastern foot of the Semeru cone (basaltic and subordinately andesitic).
9. Kepolo volcano in the Djembangan caldera.
10. Small centres of eruption in the Ajek-ajek caldera, and North of it (near Ranu Pani and Ranu Kembolo).
11. The mantle of the Djembangan—Ajek-ajek volcano (oldest part of the Semeru-Tengger complex).
12. Southwest and Southeast foot of the Tengger volcano.
13. Basement of the Tengger volcano (older than 12, and younger than 11).
14. Old-andesite Formation of the Southern Mountains (older Miocene).
15. Caldera- and crater rims, and centres of eruption.

FIG. 262 on PLATE **32**. *N-S section across the Semeru-Tengger Complex* (from VAN BEMMELEN, 1943, fig. 38, p. 102)

5. THE NORTH COAST BELT

The Solo Zone *(sensu stricto)* is separated from some gently folded plio-pleistocene strata along the North coast by a narrow and indistinct depression zone (the eastern extension of the Ngawi Subzone in East Java; see the chapter on Physiography, and fig. 256 a). This folded strip along the North coast is for the greater part covered by alluvial deposits and some small volcanoes.

It begins in the East with the **Baluran volcano** (1,247 m), which is composed of calc-alkaline Pacific rocks. This volcano is probably situated at the point of intersection between a N-S transverse fault along Strait Bali and the NNE-extension of the arcuate WSW-ENE rent, underlying the row of volcanoes of the Idjen Complex (Raung-Pendil-Rante-Merapi).

From the Baluran westward the North foot of the Idjen shows a slight rise, which becomes more pronounced as it approaches the Ringgit-Beser group. Near Situbondo it becomes a gentle, though clear anticline which joins on the anticline of the Bcser (1,303 m).

The **Ringgit-Beser group** has been described by the author (1938 b). It is a remarkable example of a folded pleistocene volcano.

The Beser anticline is concave to the North and has a steep northern limb, probably with some northward upthrusts. Its core consists of neritic to littoral deposits, of young neogene or plio-pleistocene age (Menuran Layers, Patjalan limestone, Leprak Layers). These marine sediments are conformably succeeded by the volcanic series of the Ringgit volcano (Ringgit Series). This Ringgit volcano has produced leucite-bearing (Mediterranean) volcanic material, and is of lower quaternary age. After its extinction and partial erosion (Batungam-par Horizon, consisting of denudation products from the Ringgit), the South foot of the complex was covered by the younger pleistocene basaltic eruption products of the Ijang Complex (Djembur Layers). Thereafter, the whole complex was folded by a compressive force from South to North. Finally, the holocene Bagor Layers were spread out, unconformably overlying the older strata. These Bagor Layers begin with a basal conglomerate and end with a pumiceous breccia of white pumice and black, scoriaceous basalt.

The southern foot of the Ringgit volcano formed the above mentioned asymmetric Beser anticline. The marine plio-pleistocene strata in the core of this anticline are exposed as stratigraphical windows. However, the Ringgit cone itself was a more rigid structure. This cone burst open by the action of the compressive force, forming the typical E-W trending graben Tjurahmas-Kukusan on its crest, while the outer slopes at its North and its South flank became steeper.

FIG. 263 on PLATE **32**. *Geological map of the Lurus-Ringgit-Beser.* (From VAN BEMMELEN, 1938 b)

Legend:

1. Alluvial deposits.
2. Bagor Layers (Pumice tuffs).
3. Djembur Layers (basalt lavas and breccias from the Ijang.)
4. Batungampar Horizon (tuff sandstones).
5. Ringgit Series (Leucite-bearing volcanics).
6. Leprak Layers (marly tuff sandstones and conglomerates).
7. Patjalan-limestone Horizon.
8. Menuran Layers (globigerina-bearing tuffmarls and radiolaria-bearing clay marls).
9. Biotite-trachy-andesite.
10. Augite-hypersthene-hornblende andesite } Lurus
11. Augite (-hypersthene-hornblende) andesite (with olivine).
12. Leucite basanite.
13. Dikes and necks of alkali rocks.
14. Hypothetical magma chamber of the Ringgit.
15. Faults with escarpments.
16. Upthrusts.
17. Transverse fault.
18. Anticlinal axis.
19. Synclinal axis.
20. Crater rims of the Lurus.
21. Lava domes of the Lurus.
22. Numbers of the chemical analyses.

The late pleistocene folding of the Ringgit-Beser Complex probably had a gravitational character. It can be explained by the northward sliding of portions of the high volcanic complexes to the South. The old Idjen volcano broke off along an arcuate rent, which extended from the Raung, via the Idjen-Merapi to the Baluran and this volcanic massif slid northwestward over its marine tertiary foundation. Moreover, portions of the Ijang complex, viz. the Krintjing- and Saing blocks, broke off along NW-SE faults and glided northeastwards. Both gravitational gliding movements converged toward the Ringgit volcano on the North coast; the southern foot of the Ringgit was transformed into the arcuate, asymmetric Beser anticline with northward upthrusts, and the central Ringgit cone was domed up, breaking into two portions separated by an E-W rent.