

3, 4 and 5 Maps of the Vernagtferner

The five maps of the Vernagtferner were supplied free of charge by the Glaciology Commission of the Bayerische Akademie der Wissenschaften for "Fluctuations of Glaciers 1965-1970", Vol. 2. The PSFG wishes to express its special thanks for this generous gift.

The changes in the glaciated areas, the glacier volumes and the mean altitudes of the glacier surfaces for the periods 1889-1912, 1912-1938 and 1938-1969 were determined from Map 4, sheets 1, 2 and 3, and set out in Table 9.3.2, Part 1, for steps of 50 m equidistance for both the Vernagtferner and the neighbouring Guslarferner.

O. Reinwarth describes these maps as follows:

Five maps of the Vernagtferner ¹⁾ (Oetzal Alps) to a scale 1 : 10 000 showing the glacier topography of 1969, the variation of the glacier within distinct time intervals and the bedrock topography of the Vernagtferner and the nearby Guslarferner.

3. The map of the Vernagtferner 1969, 1 : 10 000, represents as a topographical map the state of the glacier at the end of the budget year 1968/69, based on an aerial photographic flight of 4 October 1969. Beside an exact reproduction of the glacier area, a large part of the ice-free surroundings is shown in great detail. All elevations are given in metres, the contour interval is 10 m.

The map is provided with red overprint showing position and type of scientific installations established in this area by the Commission on Glaciology of the Bavarian Academy of Sciences, including glaciological facilities such as stakes for ablation measurements, fixing the sites of accumulation measurements and serving for flow determinations, meteorological and hydrological facilities (weather hut, precipitation gages and location of a proposed runoff station) and geodetic facilities (station points for surveying the stake positions and station points for the terrestrial photogrammetric survey that is repeated almost every year).

4. Three maps with former states of the Vernagtferner demonstrate the variations of Vernagtferner and Guslarferner between 1889 and 1969, based on four complete surveyings by S. Finsterwalder (1888/89), O. v. Gruber (1912), H. Schatz (1938) and the Glaciology Commission (1969), with three map sheets for the corresponding time intervals:

Sheet 1 : period 1889 - 1912

Sheet 2 : period 1912 - 1938

Sheet 3 : period 1938 - 1969.

In these maps the boundary and contour lines (vertical distance 50 meters) of each older stage is printed in black, those of the younger stages in bluish green. The area free of ice is represented by grey contour lines.

The change in area of the glacier and in ice thickness is illustrated by coloured bands. Where diminution in area and thickness has taken place the bands have a flat tint of bluish green colour,

¹⁾ 'Ferner' is the local expression for a glacier

in case of increasing area and thickness a red one.

The coloured bands showing the change in area are printed in a light shade, those showing the change in thickness in a darker shade. This special designation of increase or decrease is restricted to the 100-meter contours to avoid superposition in the tongue region.

Finally the three sheets include the position of the glacier tongue for additional dates.

5. The map of the Vernagtferner with bedrock topography and geological survey shows in black the contour lines of the glacier bed and the ice-free surrounding area (vertical interval 20 meters).

The contour lines of the glacier bed are based on seismic refraction measurements, carried out by the Institute of Applied Geophysics of Munich University.

The refraction profiles and shot points are shown in a red overprint. The contour lines of the surface topography of the glacier with the same equidistance of 20 metres are printed in the map in blue, representing the state in October 1969 and thus allowing the determination of ice thickness. The ice-free area at that time was given a flat grey tint. In this area the geological formations are also designated by special signatures.

All five maps were produced at the Institute of Photogrammetry and Cartography of Munich Technical University on behalf of and in cooperation with the Glaciology Commission of the Bavarian Academy of Sciences. The cartographic work on the maps was supported by a grant from the German Research Association, Bonn. Printing of the maps was carried out by the Institute of Applied Geodesy, Frankfurt/Main. Our appreciative thanks are due to the Society of the Friends of the Bavarian Academy of Sciences for providing the financial support necessary for printing the maps.