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SER C NR 749 AVHANDLINGAR OCH UPPSATSER ÅRSBOK 72 NR 11

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IN SOUTHERNMOST SWEDEN

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ABSTRACT

The Vånga granite in northeastern Scania (Skåne), southernmost Sweden (Fig. 1), is a red to red grey gneiss-granite (Fig. 2) rich in red, felsic, granitic neosome and frequently containing potassic feldspar porphyroblasts. Especially the latter are extremely perthitic (Figs. 5—11, 13—15). Some antiperthite also occurs in the rock (Fig. 12), the main strike of which is between north and northwest (Fig. 1). Eleven rock samples with predominant potassic neosome have given a reference line representing an Rb/Sr age of 1 485 Ma. This means that the original gneiss-granitic character of the rock (Fig. 2) might be Svecofennian whereas a sparse late shear foliation also affecting the neosome (Fig. 18) should have been developed in Dalslandian time.

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INTRODUCTION

Vångaberget (Mount Vånga) and the smaller Oppmannaberget (Mount Oppmanna) towards southwest are closely linked together and are situated in northeastern Scania (Skåne), southernmost Sweden, about 20 km northeast of Kristianstad city. Since the beginning of the twentieth century a red foliated and afterwards migmatized granite called Vånga granite has been quarried as a monumental building stone both here and on the northwestern part of Ivö, an island in Ivösjön (Lake Ivö) immediately to the east of Vångaberget. In 1976 eight quarries were operated on Vångaberget. The locations of these and the greatest quarries now abandoned have been marked in Fig. 1, which is a map also showing the areal distribution of the Vånga granite as far it is known today. Isolated masses of Vånga granite also occur in the north and the west. Moreover, the neighbouring gneiss and more or less foliated granitoids have frequently suffered from migmatization. The boundaries of Vånga granite sketched in Fig. 1 are thus in part rather diffuse.

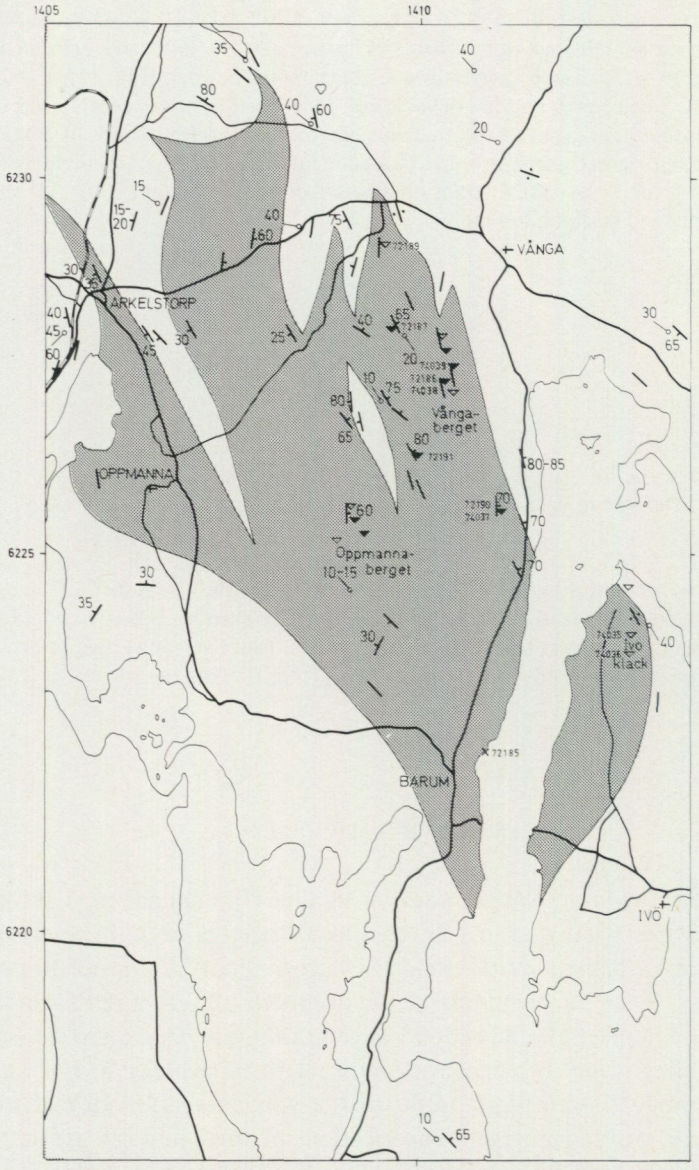

Fig. 1. Map showing the approximate distribution of Vånga granite (grey) in the central part of the Vånga district. Scale 1:100.000, official Swedish coordinates at the margin. Numbers indicate localities of age determination samples, most of which have also been analysed chemically and mineralogically (Tables 1 and 2).

The paleosome, or foliated part, of the Vånga granite shows the same petrographic character as medium-grained to coarse foliated granites, or gneiss-granites (orthogneisses), in the south and the east, such as the rocks of Kjuge kull (Mount Kjuge) and Fjälkinge backe (Mount Fjelkinge) to the south of Vångaberget. The paleosome might be referred to a group of foliated granitoids represented by the Tving, Farabol, and Fridafors granites. (See U. Wiklander, 1973 and 1974.) As early as in 1937, H. G. Backlund classed these granitoids as Svecofennian, viz. older than c. 1 800 Ma (E. Welin and G. Blomqvist, 1964). They have been penetrated by the Småland granitoids, which according to schemes of the Precambrian rock evolution in Fennoscandia originally given by W. Wahl (1936) and N. H. Magnusson (1936) belong to the early Gothian. The Småland granites are genetically associated with the Småland porphyries. The radiometric Rb/Sr whole rock age of the latter has been determined by G. Åberg (1972). 14 samples of porphyries have yielded an age of 1 695 $\pm$ 20 Ma.

Småland granite occurs immediately to the east of the northern part of Vångaberget. As shown by the analyses given in Tables 1—4, it differs from the Vånga granite both mineralogically and chemically. In addition, it is mainly medium-grained and most frequently not foliated.

The neosome of the Vånga granite consists mainly of perthitic feldspar and is associated with small irregular masses of granite lacking foliation as well as some minor patches and dikes of red pegmatite. R. Norin (1959) has classed the Vånga granite as post-orogenic and belonging to the same group of rocks as the Karlshamn and Eringsboda granites. Obviously Norin has the neglected the foliation of the Vånga granite. However, Norin might nevertheless be correct in his interpretation of the Vånga granite as an entirely rather young, viz. post-Svecofennian, rock. As a matter of fact, the foliation of the granite runs parallel to the boundaries of the massif (Fig. 1), which are in general directed towards north to northwest. This could imply that the structure does not necessarily belong to an old and probably Svecofennian gneiss-granite paleosome but might have been developed by strong pressure during the earlier stages of crystallization of a homogeneous intrusive granite magma. The supposed metatekt should then have been separated by squeeze from the crystallizing magma as a residual melt or solution able to act as a regional migmatizer and solidifying when pressure had been reduced or eliminated.

This interpretation of the complicated genesis of the Vånga granite is in agreement with the following statement by Eric Welin.

"Radiometric age determinations have been attempted (11 samples, localities in Fig. 1). A Rb-Sr whole rock dating shows a partial open system behaviour, and only a reference line representing an age of 1 485 Ma can be calculated. The geological significance of this reference line can so far not be envolved, but further investigations are in progress."

PETROGRAPHY OF THE VÅNGA GRANITE

The Vånga granite is a felsic, grey to bright red, coarse to medium-grained rock. Most part of it shows foliation and should thus be classed as a gneiss-granite (Figs. 2—3). Narrow gneissose zones, probably to be interpreted as recrystallized holoclastites, are sometimes met with (Figs. 3—4). Main minerals are microcline perthite, quartz, plagioclase, and, though in quantities frequently below 5 % by volume, biotite.

The foliation has been followed by recrystallization. Simultaneously the gneiss-granite, or the paleosome, was invaded by melts or solutions, possibly residual (cf. above) and very rich in feldspar components. These melts or solutions have acted as a migmatizing neosome. In the Vånga granite the compound added appears as porphyroblasts of microcline perthite and mesoperthite or penetrative, in part confluent patches, schlieren and irregular, most frequently small masses of an entirely felsic granite consisting nearly exclusively of perthite, mesoperthite and quartz (Figs. 5—11). Sparse grains of antiperthite have also been observed (Fig. 12).

Fluorine has acted as a prominent mineralizer in the added compound (cf. Table 1). Accordingly the Vånga granite contains significant quantities of fluorite and topaz (Tables 2 and 4). The latter mineral is known as a characteristic component of tin-bearing rocks. The Vånga granite would thus be suspected to contain tin minerals, especially as a greenish grey variety occasionally encountered in the massif and described below might suggest a greisen development. S. Hjelmqvist (1959) has analysed 481 detrital grains of ore minerals from the kaolinite deposit in the northernmost part of Ivö (Fig. 1). Most grains seem to originate from the neighbouring Vånga granite. Only five cassiterite grains were observed, however. The tin content of the Vånga granite seems thus to be very low, an impression which has been confirmed by the analyses given in Tables 1 and 3. Besides, no cassiterite has been found in the thin sections of Vånga granite examined up to date.

The normal younger part, or neosome, of the Vånga granite is rather uniformly distributed and shows a beautiful red colour caused by numerous rounded hematite microlites in the feldspar. Although the potassium content is not very high (Tables 1 and 3), microcline is the main mineral added. However, as already mentioned, the microcline has been strongly and variably perthitized (Figs. 5—11). The perthite mineral is a sodic plagioclase, most frequently albite.

The Vånga granite as a rule lacks xenoliths disregarded from sparse zones and rounded inclusions of greenish reddish grey to green grey, coarse to medium-grained syenite grading into very feldspar-rich granite. No distinct contacts have been found to separate this rock from the surrounding Vånga granite, which is here a neosome kind of rock lacking foliation. The chemical composition differs, however, especially regarding the contents of silicon, aluminium and potas-

sium (Tables 1 and 3). The grey colour would indicate an alteration of Vånga granite to greisen, but no significant increase of the tin content has been established in the syenitic rock (Table 1), nor any rise of the contents of fluorite and topaz (Tables 2 and 4). Besides, the microcline of the syenitic rock is as perthitic as that of the common Vånga granite (Figs. 13—15).

The feldspar-rich granite and syenite of Vångaberget differ essentially from the syenite to the north of Glimåkra and in other parts of northeastern Scania regarding their contents of mafic minerals, as evident from the following point count analysis of samples from the greatest syenite deposit of northeastern Scania, the Görbjörnarp—Ekeröd area to the north of Glimåkra (analyst: Birgitta Byggham-mar).

Microcline perthite	50.0 % by vol.
Plagioclase	22.4
Clinopyroxene	8.5
Hornblende	4.7
Clinozoisite	3.3
Apatite	2.8
Biotite	2.8
Ore	2.6
Garnet	1.7
Quartz	1.2
Total	100.0 (N = 1 230)

Thus it seems most reasonable to interpret the green grey rock as an early variety of the Vånga neosome kind of granite characterized by a lower degree of oxidation and a still higher content of feldspar as compared with the common neosome granite.

In 1976, I. Klingspor determined the age of the Görbjörnarp—Ekeröd syenite by means of the Rb/Sr method. The figure obtained, 1 210 $\pm$ 38 Ma, contradicts any relationship between this rock and the syenitic Vånga granite.

Locally the Vånga granite contains spots and narrow dikes of red pegmatite originating from final residual solutions. At various places groups of longitudinal joints (see below) have opened and become filled with crystalline quartz of late formation (Fig. 16).

STRUCTURES OF THE VÅNGA GRANITE

The oldest and main structure of the Vånga granite is the foliation (Fig. 2), which runs parallel to the boundaries of the massif. Its general strike is north to northwest. The structure most frequently dips towards east to northeast. It is visualized in the first hand by the biotite of the rock but considerably also by the quartz and occasionally by early feldspar crystals.

Lineation is rare. The structure has been developed along planes of foliation and has a very low plunge. A number of foliations and lineations observed in the field have been recorded in Fig. 1.

The foliation of the Vånga granite corresponds well with structures of Dalslandian age in Värmland county. (See P. H. Lundegårdh, 1977.) However, it also coincides with the foliation of the surrounding older and probably in part Svecofennian granitoids.

The neosome or younger part of the Vånga granite, as well as the pegmatite, have suffered from no other tectonizations than shearing along sparse narrow zones (Fig. 18) and a regional, most frequently regular jointing (Figs. 16—17). The shear zones wind more or less. They strike most frequently N 5—25°E, their dips are high. A few zones run approximately E—W. Most shear zones have been cut by the regular joints described below.

Similar zones have been observed in the Görbjörnarp—Ekeröd syenite but not in the youngest intrusive rock of the region, viz. a black dolerite frequently with fragments of quartzite and characterized by Rb/Sr ages around 900 Ma (P. J. Patchett 1978). The zones ought thus to have been developed in Dalslandian time, by the Sveconorwegian orogeny. (Compare P. H. Lundegårdh, 1977.)

Three regular sets of joints and cleavages have been developed, viz. a longitudinal set approximately parallel to the foliation, a cross set approximately perpendicular to the weak occasional lineation, and a flat-lying set (Fig. 17). Groups of longitudinal joints have locally opened and permitted residual siliceous solutions to enter and crystallize as quartz (Fig. 16).

LITERATURE

GFF = Geologiska föreningens i Stockholm förhandlingar
SGU = Sveriges geologiska undersökning

ÅBERG, G., 1972: An Rb/Sr age of the Småland porphyries. — GFF 94.
ANDERSEN, O., 1926: Feltspat I. — Norges geol. undersökelse Nr. 128 A.
BACKLUND, H. G., 1937: Die Umgrenzung der Svekofenniden. — Bull. Geol. Instit. Upsala XXVII.
BARTH, T. F. W., 1969: Feldspars. — Wiley-Interscience.
HJELMQVIST, S., 1959: Förekomsten av tungmineral i kaolinen på Ivö. — SGU C 569.
KLINGSPOR, I., 1976: Radiometric age-determination of basalts, dolerites and related syenite in Skåne, southern Sweden. — GFF 98.
LUNDEGÅRDH, P. H., 1977: The Gräsmark Formation in western central Sweden. — SGU C 732.
MAGNUSSON, N. H., 1936: Om cykelindelningen i det svenska urberget. — GFF 58.
NORIN, R., 1959: Några genetiska relationer inom södra Sveriges urberg. — GFF 81.
PATCHETT, P. J., 1978: Rb/Sr ages of Precambrian dolerites and syenites in southern and central Sweden. — SGU C 747.
WAHL, W., 1936: Om granitgrupperna och bergskedjeveckningarna i Sverige och Finland. — GFF 58.
WELIN, E., and BLOMQVIST, G., 1964: Age measurements on radioactive minerals from Sweden. — GFF 86.
WIKLANDER, U., 1973: Blekinges urberg. — Blekinges Natur 1973.
— 1974: Precambrian geology, geochemistry and age relations of northeastern Blekinge, southern Sweden. — SGU C 704.

Fig. 2. Typical Vånga granite. Old Nilsten quarry 2 km SSW of Vånga church, Vångaberget (coordinates 141 045/622 715). Length of knife 7.5 cm. Photo P. H. Lundegårdh 1975.

Fig. 3. Narrow aplitic gneissose zone in Vånga granite, probably recrystallized holoclastite. Old Nilsten quarry (cf. Fig. 2). Length of capsule opener 11 cm. Photo P. H. Lundegårdh 1973.

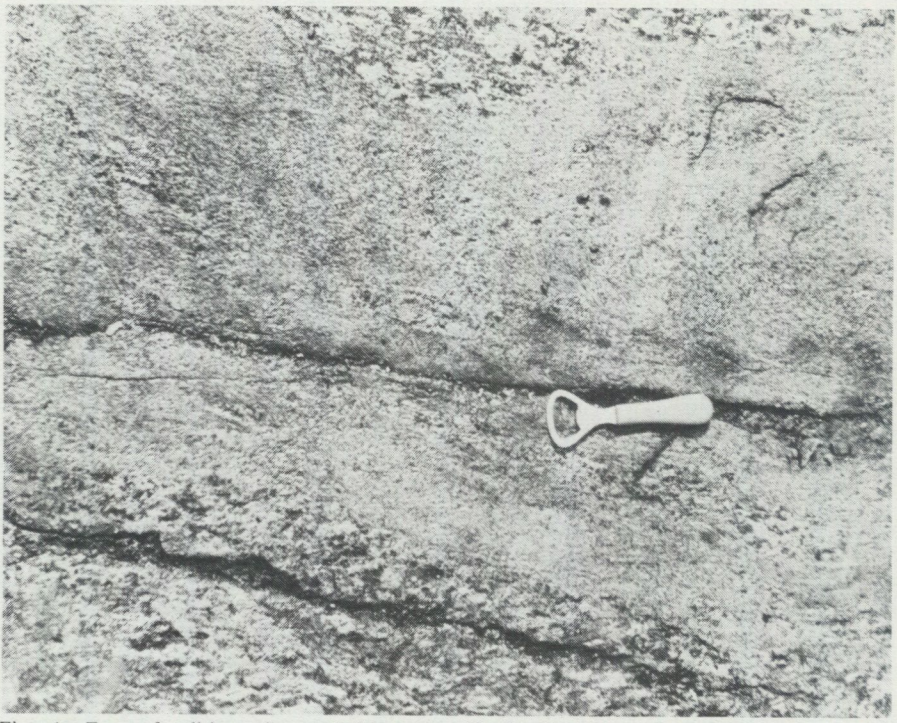

Fig. 4. Zone of aplitic gneiss, probably recrystallized holoclastite, in Vånga granite. Old Nilsten quarry (cf. Fig. 2). Photo P. H. Lundegårdh 1973.

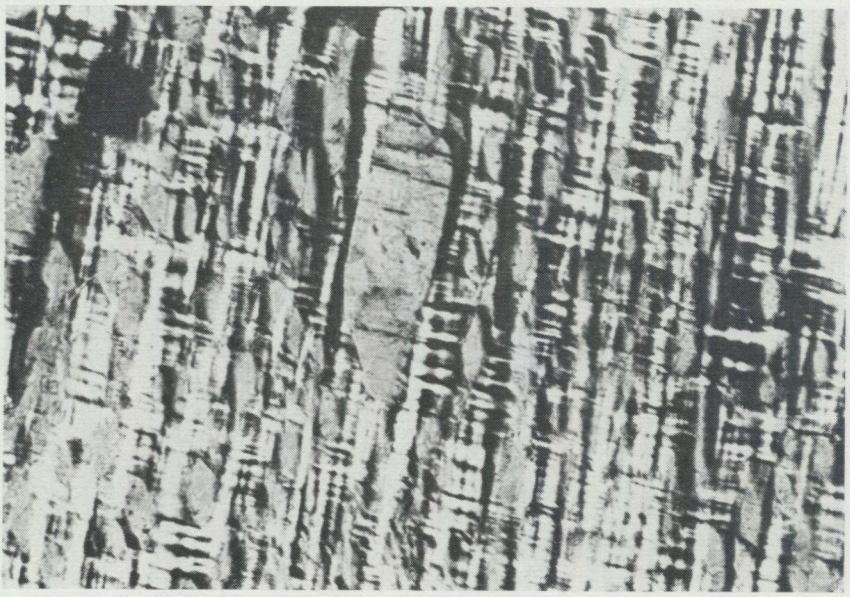

Fig. 5. Cross-hatched microcline with inclusions of exsolved albite. Crossed nicols, 625 x. Vånga granite, Ivö klack, northern part of Ivö island. Photo Lars Persson 1975.

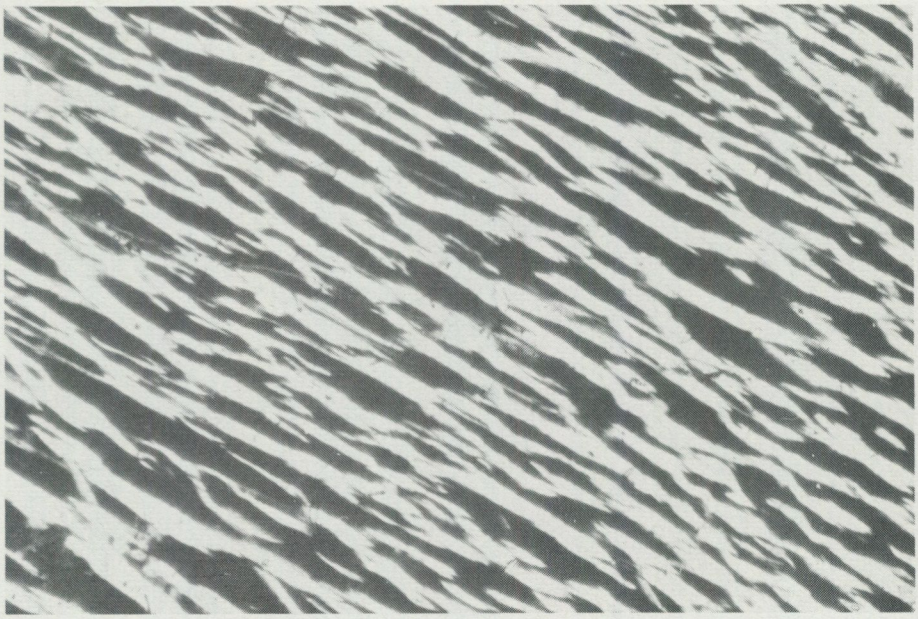

Fig. 6. Mesoperthite. Crossed nicols, 365 x. Vånga granite, southern end of Oppmannaberget. Photo Hugo Wikman 1975.

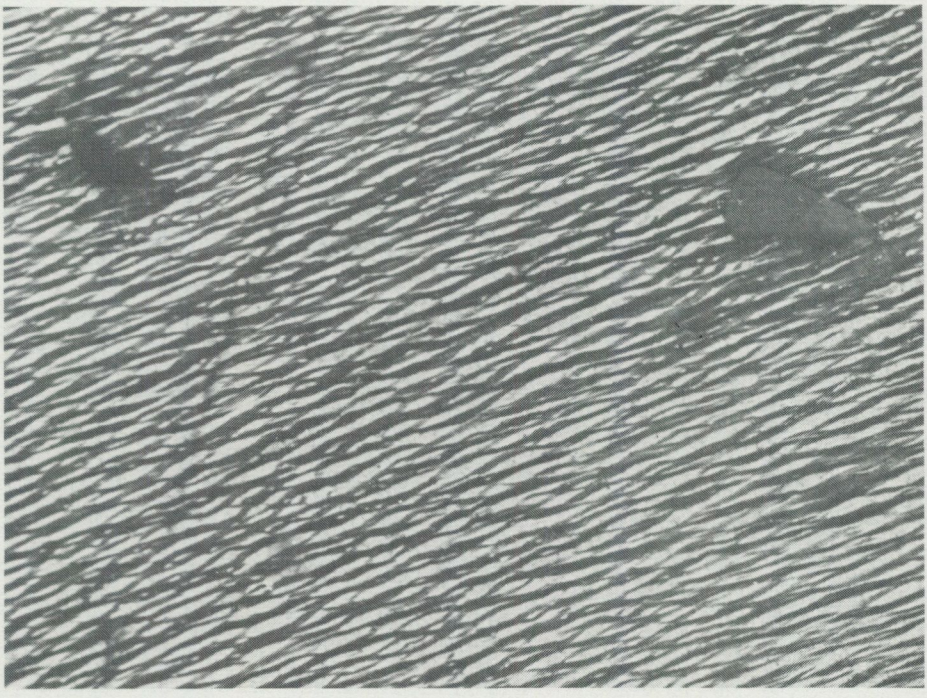

Fig. 7. Mesoperthite. Crossed nicols, 450 x. Vånga granite, locality 74039 in Fig. 1, Vångaberget. Photo Hugo Wikman 1975.

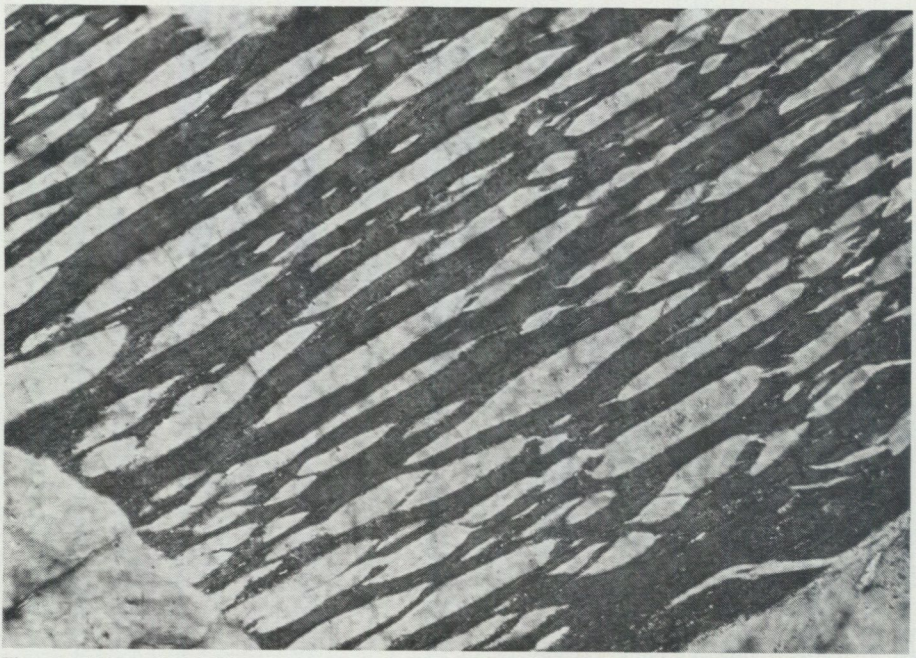

Fig. 8. Microcline rich in exsolved albite. Crossed nicols, 365 x. Vånga granite, locality, see Fig. 7. Photo Hugo Wikman 1975.

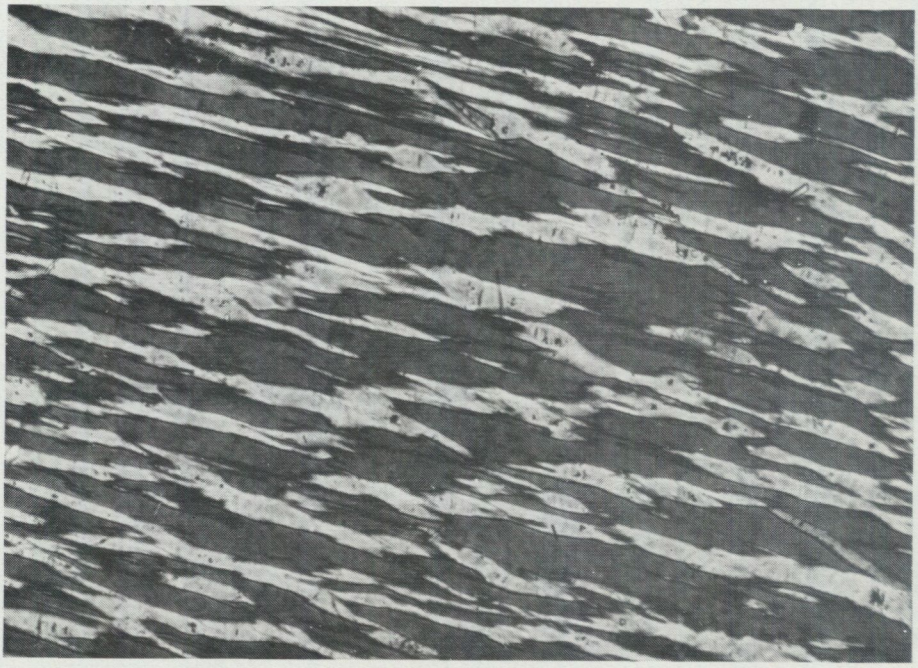

Fig. 9. Microcline rich in exsolved albite. Crossed nicols, 365 x. Vånga granite, southern end of Oppmannaberget. Photo Hugo Wikman 1975.

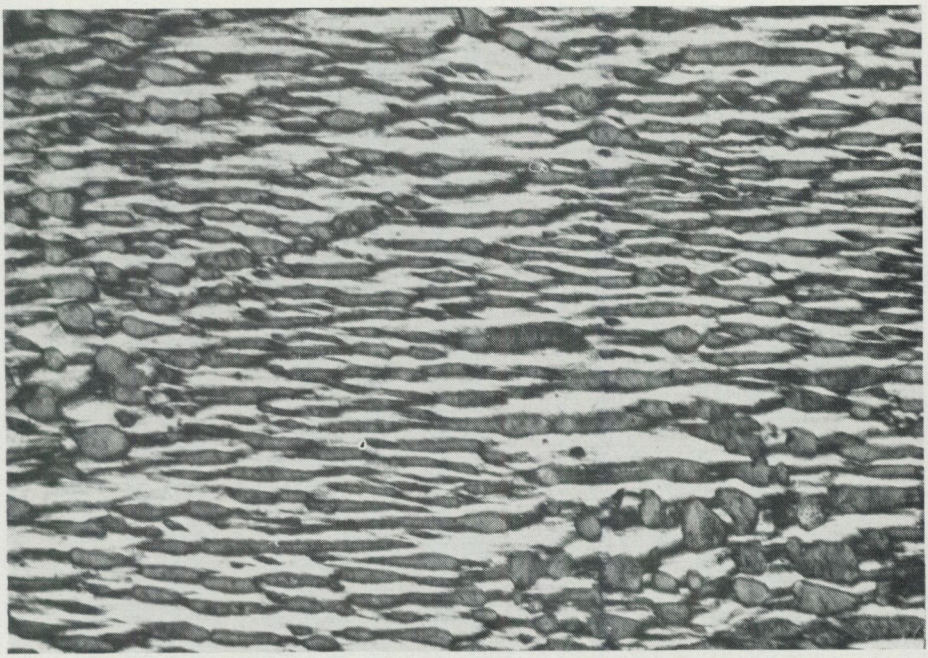

Fig. 10. Mesoperthite. Crossed nicols, 610 x. Vånga granite, northwestern part of Oppmannaberget. Photo Lars Persson 1975.

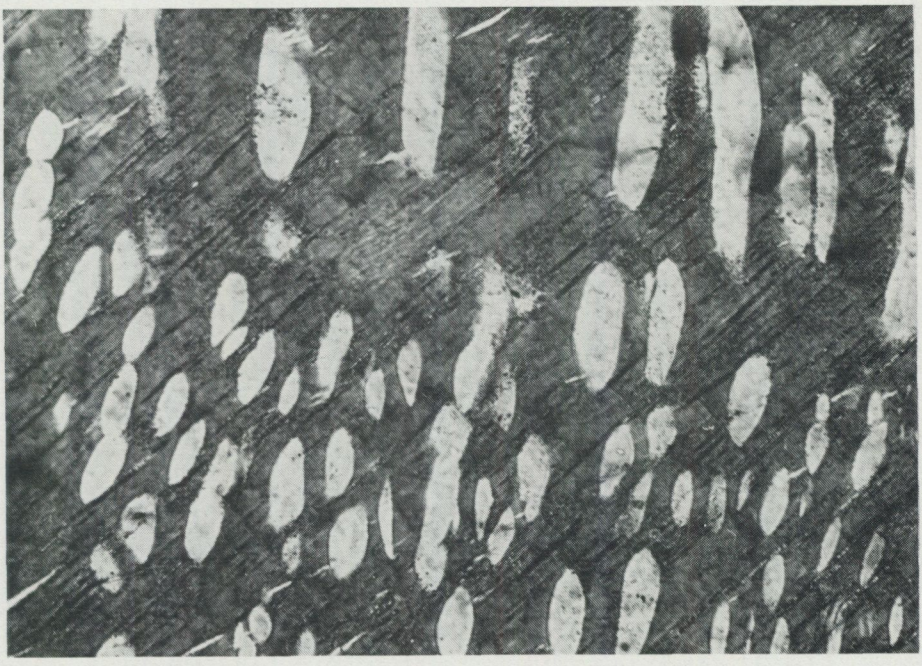

Fig. 11. Microcline rich in exsolved albite. Crossed nicols, 365 x. Vånga granite, 3 km SSW of Vånga church. Photo Hugo Wikman 1975.

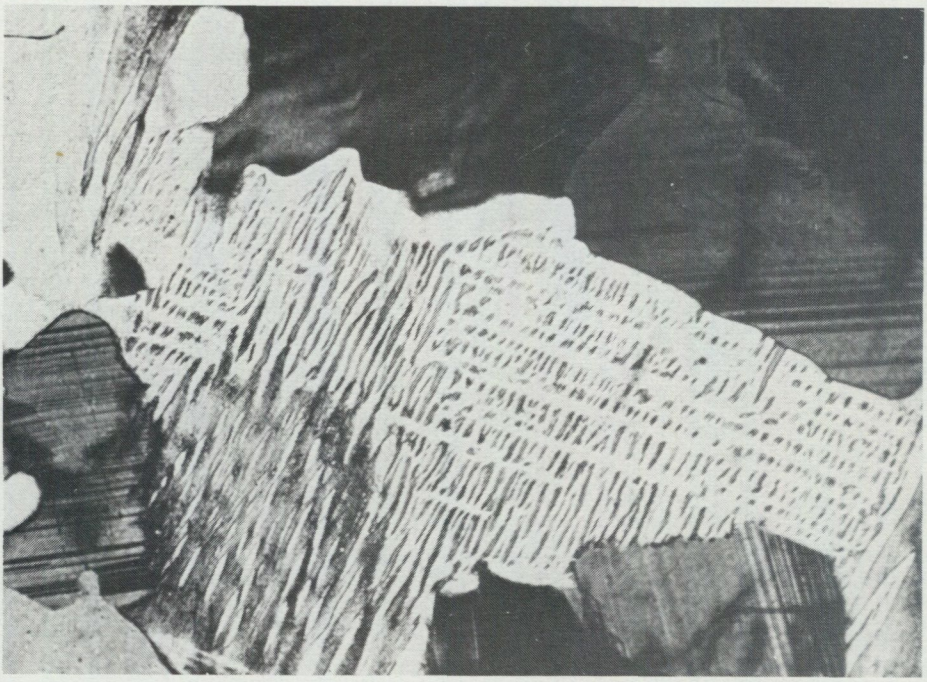

Fig. 12. Antiperthite. Crossed nicols, 650 x. Vånga granite, locality 74039 in Fig. 1, Vångaberget. Photo Lars Persson 1975.

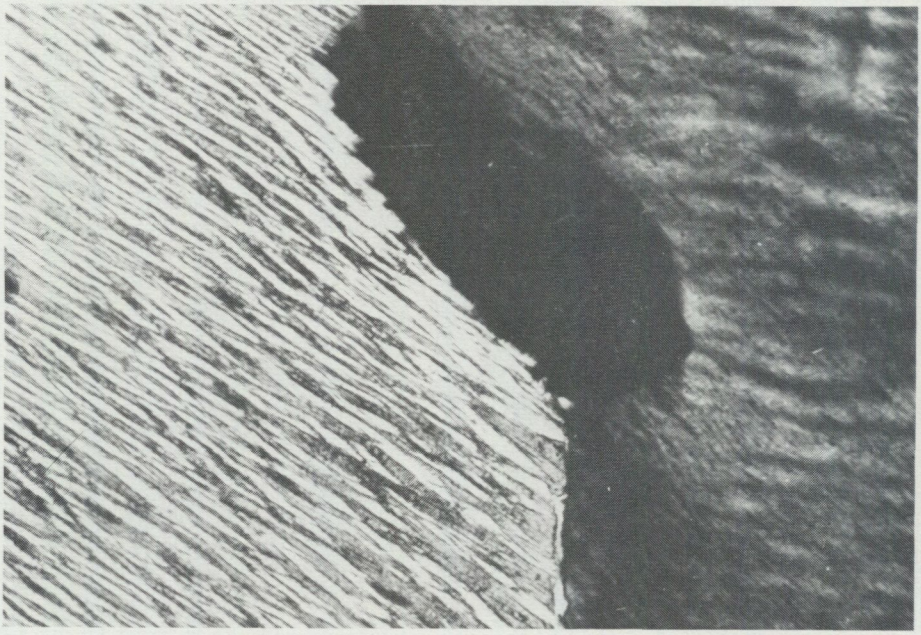

Fig. 13. Microcline (to the right) and mesoperthite (to the left). Crossed nicols, 570 x. Syenite, locality, see Fig. 12. Photo Lars Persson 1975.

Fig. 14. Perthite. Crossed nicols, 600 x. Syenite, 600 m WNW of triangular point Vångaskog, Vångaberget. Photo Lars Persson 1975.

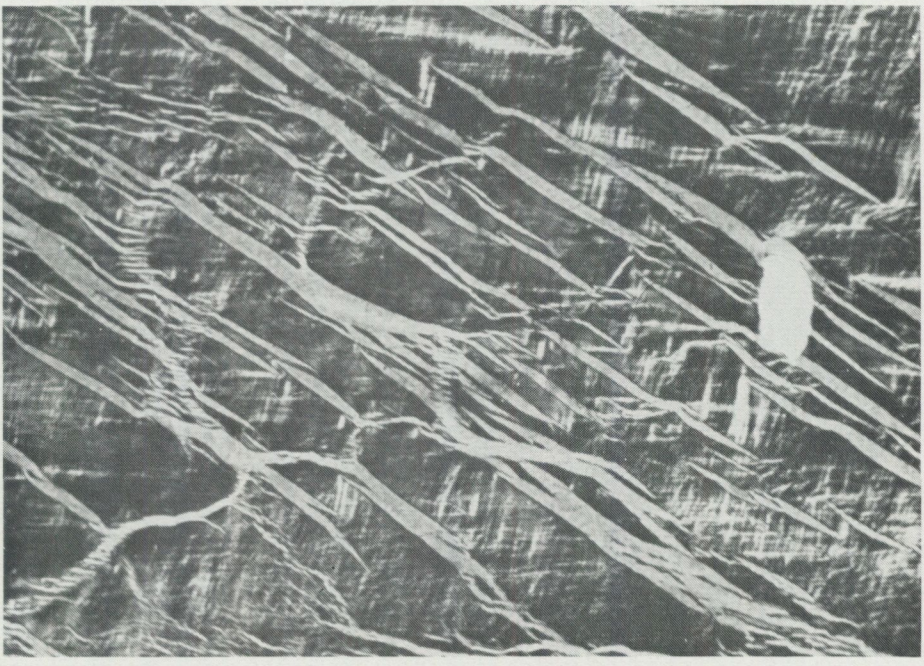

Fig. 15. Perthite. Crossed nicols, 635 x. Vånga granite, locality 74039 in Fig. 1, Vångaberget. Photo Lars Persson 1975.

Fig. 16. Longitudinal joints filled with quartz. Vånga granite, Old Nilsten quarry 2 km SSW of Vånga church, Vångaberget (cf. Fig. 2). Length of knife 7.5 cm. Photo P. H. Lundegårdh 1975.

Fig. 17. Persson in Bjärlöv quarry in Vånga granite. 3.5 km south of Vånga church, southern end of Vångaberget (coordinates 14 111/62 256). Photo P. H. Lundegårdh 1973.

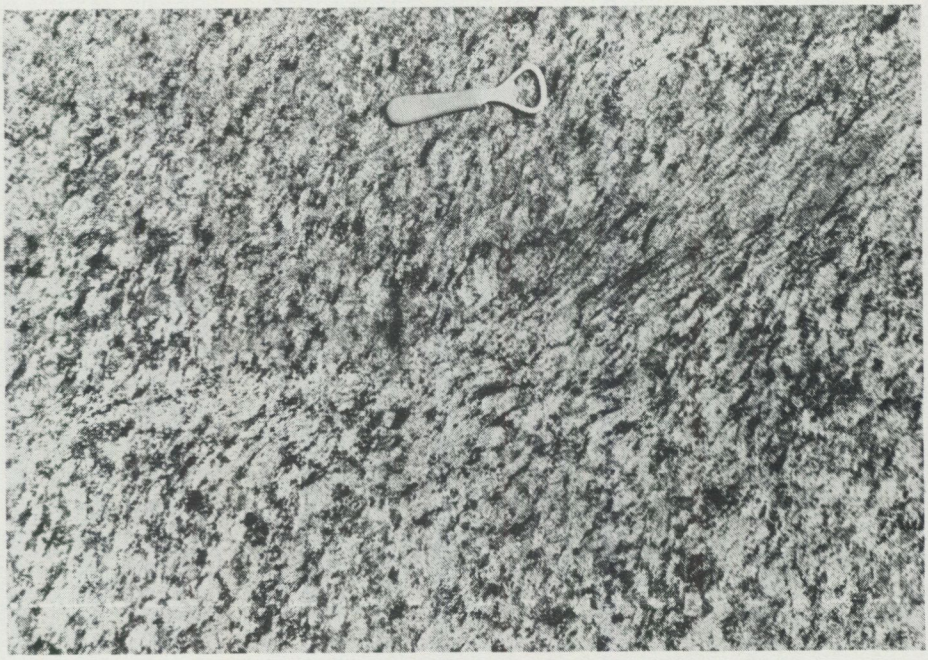

Fig. 18. Shear zone. Vånga granite, Old Nilsten quarry (cf. Fig. 16). Length of capsule opener 11 cm. Photo P. H. Lundegårdh 1973.

TABLE 1. Total chemical analyses of granitic rocks from the Vånga district (% by weight)

Rock	Migmatized gneiss-granite	Feldspar-rich granite	Migmatite granite	Migmatite granite
Loc. in Fig. 1	72 186	72 186	74 038	72 191
Top. map	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV
Coordinates	14103/62273	14103/62273	141045/622715	14100/62263
SiO_2	77.4	69.8	76.3	75.2
TiO_2	0.04	0.12	0.06	0.07
Al_2O_3	11.1	16.0	12.0	12.4
Fe_2O_3	0.2	<0.1	0.1	0.2
FeO	1.0	1.4	1.0	1.0
MnO	0.04	0.03	0.03	0.04
MgO	0.07	0.04	0.10	0.08
CaO	0.6	0.3	0.6	0.7
BaO	<0.01	0.02	0.01	0.01
Na_2O	2.9	4.0	3.2	3.2
K_2O	4.1	7.2	4.6	4.6
H_2O+	0.3	0.3	0.3	0.4
H_2O-	0.2	0.2	0.2	0.3
P_2O_5	<0.1	0.02	<0.1	<0.1
CO_2	0.01	0.07	0.02	0.03
F	0.40	0.41	0.33	0.32
S	0.02	0.25	0.02	0.02
V	<0.001		<0.001	<0.001
Cr	0.0005		0.001	<0.0005
Co	<0.0005		<0.0005	<0.0005
Ni	0.001		0.001	0.0005
Zn	0.001		0.001	0.001
Sr	0.002		0.003	0.004
Sn	0.001	0.002	0.001	0.001
Total	98.4	99.92	98.9	98.6

Analyst: Geochemical dept., Geological Survey of Sweden

TABLE 1, continued. Total chemical analyses of granitic rocks from the Vånga district (% by weight)

Rock	Migmatite granite	Migmatized gneiss-granite	Syenite	Granite
Loc. in Fig. 1	72 190	72 189	72 187	1 200 m SE-ESE of Vånga church
Top. map	KARLSHAMN NV	KARLSHAMN SV	KARLSHAMN NV	KARLSHAMN NV
Coordinates	14111/62256	14128/62239	140965/622795	14122/62285
SiO_2	75.3	76.4	63.8	66.2
TiO_2	0.06	0.08	0.15	0.85
Al_2O_3	12.4	12.0	19.5	14.1
Fe_2O_3	0.3	0.3	< 0.1	2.9
FeO	1.0	0.8	1.4	1.6
MnO	0.04	0.02	0.05	0.10
MgO	0.08	0.07	0.06	1.1
CaO	0.7	0.7	0.5	2.3
BaO	0.01	0.02	0.05	0.13
Na_2O	2.9	3.2	4.9	2.6
K_2O	4.4	4.9	8.7	5.4
H_2O+	0.5	0.5	0.3	0.7
H_2O-	0.2	0.2	0.2	0.3
P_2O_5	< 0.1	< 0.1	0.03	0.32
CO_2	0.06	—	0.13	—
F	0.39	0.31	0.18	0.18
S	0.01	0.03	0.14	0.07
V	< 0.001	< 0.001		0.0045
Cr	0.001	< 0.0005		< 0.0005
Co	< 0.0005	0.0005		0.001
Ni	0.001	0.0005		0.0005
Zn	0.001	0.001		0.0055
Sr	0.003	0.003		0.016
Sn	0.002	0.001		< 0.001
Total	98.4	99.5	99.98	98.9

Analyst: Geochemical dept., Geological Survey of Sweden

TABLE 2. Mineral compositions of the granitic Vånga rocks chemically analysed in Table 1

Rock	Migmatized gneiss-granite	Feldspar-rich granite	Migmatite granite	Migmatite granite	Migmatite granite	Migmatized gneiss-granite	Syenite	Granite
Loc. in Fig. 1	72 186	72 186	74 038	72 191	72 190	72 189	72 187	1200 m SE-ESE of Vånga church
Top. map	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN SV	KARLSHAMN NV	KARLSHAMN NV
Coordinates	14103/62273	14103/62273	141045/622715	14100/62263	14111/62256	14128/62239	140965/622795	14122/62285
Quartz	35.4	20.5	40.2	38.4	45.8	30.8	5.5	27.8
Microcline perthite	51.4	68.5	35.2	38.7	27.1	46.5	74.7	35.8
Plagioclase	8.1	8.0	9.6	10.5	16.8	18.7	16.4	13.0
Biotite	2.8	1.6	12.1	8.1	6.5	3.4	2.8	4.7
Chlorite	0	0.6	0	0	0	0	< 0.1	0
Muscovite, sericite	0	0	0	0.8	0.3	0[1]	0	9.5
Epidote	0	0	0	0	0.1	0	< 0.1	6.5
Ore	0	0.3	0	0.2	0	0	0.3	0.7
Titanite	0	0	0	0	0	0	0	1.4
Fluorite	0.4	0.1	2.1	3.1	3.3	0.4	0.2	0
Topaz	1.7	0.2	0.8	0	0	0.2	0.2	0
Zircon	0.3	0.2	< 0.1	0.2	0.1	0	0	0
Apatite	0	0	0	0	0	0	0	0.7
Total	100.1	100.0	100.0	100.0	100.0	100.0	100.1	100.1
N of points	1135	503	1680	1776	996	954	831	1195
An, % of plagioclase	23—25		25—28	28	25			10

Point count analysis by Birgitta Bygghammar

[1] Included in plagioclase

TABLE 3. Partial chemical analyses of granitic rocks from the Vånga district (% by weight)

Rock	Migmatized gneiss-granite	Feldspar-rich granite	Migmatized gneiss-granite	Migmatized gneiss-granite	Granodiorite
Loc. in Fig. 1	Vångaberget	Vångaberget	Vångaberget	Central part of Ivö island	350 m NW of Vånga church
Top. map	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN SV	KARLSHAMN NV
Coordinates	14091/622565	141035/62277	141035/62277	14129/62225	141085/62293
SiO_2	79.0	67.4	77.5	76.5	66.4
TiO_2	0.12	0.10	0.08	0.08	1.0
Al_2O_3	12.2	17.2	11.9	12.2	14.3
Fe_2O_3[1]	1.2	1.8	1.0	1.0	5.2
MnO	0.03	0.06	0.04	0.04	0.11
MgO	0.11	0.04	0.03	0.10	1.2
CaO	0.9	0.9	0.5	0.5	2.4
BaO	0.02	0.01	0.01	0.01	0.19
Na_2O	2.9	4.7	3.2	3.4	2.8
K_2O	4.9	6.7	4.7	5.2	5.3
Total	101.4	98.9	99.0	99.0	98.9
Sn	<0.001	0.002	0.001	0.001	0.0005

Analyst: Geochemical dept., Geological Survey of Sweden

[1] Incl. divalent iron determined as trivalent

TABLE 4. Mineral compositions of various rocks from the Vånga district (five rocks from the neighbourhood of the central Vånga granite massif)

Rock	Red gneiss	Grey gneiss	Red grey gneiss-granite	Grey do, migmatized	Granodiorite
Top. map	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV
Coordinates	14031/62362	14098/62295	14049/62267	140975/66294	14108/62293
Quartz	24.0	46.4	21.8	40.4	31.4
Microcline perthite	55.7	45.4	16.2	48.5	28.9
Plagioclase	15.8	1.8	33.2	4.3	22.0
Muscovite, sericite	0	3.2	5.4	2.7	2.5
Biotite	0.1	2.1	11.3	3.8	11.3
Chlorite	0.6	0.5	1.4	0	< 0.1
Epidote	0	0	7.1	0	0
Ore	3.5	0.1	1.5	0	2.1
Titanite	0	0	0.8	0	1.1
Fluorite	0	0	0	0	0
Zircon	0	0.5	0	0.4	0.1
Apatite	0.3	0	1.3	0	0.6
Calcite	0	0	0	0	< 0.1
Total	100.0	100.0	100.0	100.0	100.0
N of points	983	1372	789	1168	947
An, % of plagioclase		25—27		25—27	

Point count analysis by Birgitta Bygghammar

TABLE 4, continued. Mineral compositions of various rocks from the Vånga district (five rocks from the central Vånga granite massif)

Rock	Migmatite	Migmatite	Migmatite granite	Migmatite	Migmatite
Top. map	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN NV	KARLSHAMN SV	KARLSHAMN SV
Coordinates	14069/62297	141025/66276	14091/622565	14096/62239	141095/62243
Quartz	37.6	41.2	39.2	30.5	26.8
Microcline perthite	36.8	41.7	37.3	39.6	53.8
Plagioclase	10.6	12.9	21.6	21.7	13.4
Muscovite, sericite	1.2	0	0	1.1	0.2
Biotite	8.5	3.5	1.5	5.7	4.6
Chlorite	0.7	0	< 0.1	0	0
Epidote	0	0	0	0.5	0.2
Ore	0.5	0	< 0.1	0.4	0.3
Titanite	0	0	0	0	0
Fluorite	1.7	0.7	0.4	0	0.6
Zircon	2.3	0	< 0.1	0.5	0
Apatite	0	0	0	0	0
Calcite	0	0	0	0	0
Total	99.9	100.0	100.0	100.0	99.9
N of points	1278	1222	528	1279	1240
An, % of plagioclase	23—25	22—25		23—25	25—28

Point count analysis by Birgitta Bygghammar

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