cana limestones, radiolarites, white graded calcarenites and limestone breccias. Typically these rocks do not form continuous strata, but occur as blocks up to some kilometers across set in a matrix of volcanic sandstone or in places of calcarenite. Complex deformation seems to be a primary or penecontemporaneous feature of this association, however, the emplacement of the overlying Peridotite Nappe has largely altered the structural fabric. The thickness of the Diabase Nappe never exceeds 300 m.

The lower contact of the Diabase Nappe appears to be a normal and progressive sedimentary contact: within a few meters the sandy matrix of the wildflysch (Karabörtlen Formation) grades into a tuffitic matrix in which the exotic blocks are embedded. This, and the presence of olistoliths of diabase, radiolarite and pink pelagic limestones in the Karabörtlen Formation, suggests that the Diabase Nappe has been emplaced in the depositional basin of the wildflysch during the latest Cretaceous or the Early Tertiary. The upper contact with the Peridotite Nappe is clearly a nappe contact of first order. In the internal parts (region of Karabörtlen), this contact is characterized by slices of metamorphic rocks, amphibolites, quartzites, micaschists, gneisses and marbles of unknown provenience which are imbricated with or embedded in a matrix of serpentinite. Serpentinites and fragments of doleritic dikes are clearly derived from the Peridotite Nappe and are in turn imbricated and mixed with the rocks of the Diabase Nappe: the whole association forms a typical tectonic mélange (GRACIANSKY 1973) comparable to the "coloured mélange" described from other places in the Alpine-Himalayan chains (GANSSER 1959).

On the small Aegean islands, no remnants of the Diabase or the Peridotite Nappe have been found. Small relics of the latter, however, seem to occur on the island of Rhodes (MUTTI et al. 1970), and on Crete equivalents of both the Diabase Nappe and of the Peridotite Nappe (cf. CREUTZBURG and PAPASTAMATIOU 1969; BONNEAU 1970, 1972a, 1972b, 1973) can be recognized. Their former presence on the more internal islands can therefore safely be assumed.

4. The structural style of the Intermediate Complex

In southwestern Turkey the Intermediate Complex consists of a number of thrust-slices and imbrics between the underlying, apparently autochthonous sequence and the originally more internal Peridotite Nappe (Fig. 30). The size and structural relations of the single elements vary considerably; however, a number of common characteristics can be recognized: 1. folding occurs only occasionally and is usually absent and 2. the different elements are bound by even surfaces following decollement levels or cutting obliquely through the stratigraphic sequence. These basal shear planes ("troncatures basales", ELLENBERGER 1967) also cut across older thrusts.

The larger units of the Intermediate Complex are of the order of ten to fifteen kilometers across representing small nappes of a second order (TERMIER's "nappes du deuxième genre", TERMIER 1907–1922). The smaller units are sometimes in the order of only a few hundred meters: they are accumulated in a chaotic way between the larger units or between the latter and the autochthonous sequence or the Peridotite Nappe.

It appears to us that the chaotic style of deformation, characterizing the nappe system of the Intermediate Complex, is closely related to the interrelation of tectonic

and erosional processes and this style seems, in fact, to be typical for a superficial structural level.

The structural relations between the wildflysch and the overlying Diabase Nappe suggest that the latter was emplaced in the depositional basin of the wildflysch at the end of the Cretaceous or in the Early Tertiary. As the youngest sediments in the underlying autochthonous sequence are of Miocene age, it becomes clear that the Mesozoic sequences of the Köyceğiz Series have been positioned together with their earlier emplaced cover of the Diabase Nappe ("fausse couverture") on the more external, autochthonous unit. This superposition of two different phases of nappe transport may, at least partly, explain the extreme structural complications observed in the Intermediate Complex of southwestern Turkey.

In the Aegean Islands, the sequences of the Intermediate Complex occur as isolated remnants and no contacts with underlying or overlying units are observed. Accordingly, there is no direct stratigraphic evidence for different phases of nappe transport. The existence of a complex nappe system, however, results from the general geological situation both in the internal and external Hellenides and Taurides. The underlying units, characterized by carbonate sedimentation throughout the Mesozoic and the earliest Tertiary, are exposed in the islands of Saforà, Chamili, and Di Adelphi; these units in turn make part of the composite nappe structure of the Hellenides if one accepts the nappe structure in the Gavrovo Zone and the so-called crystalline basement in Crete (see above, p. 42). Although the overlying units are not preserved, the former presence of the Ophiolite Nappe can be deduced from its remnants in Crete (BONNEAU 1970; VICENTE 1970) and Rhodes (MUTTI et al. 1970).

The region of Bodrum shows a heavy tectonic style along two prominent, nearly orthogonal directions: an east-west trend is clearly apparent with a pinched syncline of wildflysch a few kilometers north of Bodrum and the general monoclinal style of the Oyuklu Tepe region. On the other hand, a north-south direction is indicated by the western edge of the Kişla Dağ limestones, which are somewhat thrusted against the wildflysch towards the West.

In the islands, the Intermediate Complex is characterized by internal imbrication and thrusting (e.g. Stakida, Fig. 31). In the Gereme Limestone no folding has been observed and the tectonic style seems very much to resemble the one in southwestern Turkey. In the Çal Dağ Limestone small-scale chevron-folds are most obvious on the island of Sirna, larger folds occur in the Çamova Formation (Sirna).

As everywhere in the Hellenid and Taurid nappe system, the nappe structures are deformed by later warping and faulting. Gentle folding during the Late Miocene following nappe transport has been recognized on the island of Rhodes (MUTTI et al. 1970), but in the Lycian Taurus or in the more internal Aegean Islands this could not be proved as there are no postorogenic, Upper Miocene to Lower Pliocene sediments preserved. Later, during the Late Pliocene and the Quaternary the entire nappe pile was cut by normal faults that are responsable for the present-day morphology and coast-lines. In southwestern Turkey the fault pattern determines the distribution of the outcrops of the different tectonic units: in the depressions, remnants of the (upper) Peridotite Nappe are preserved, whereas in the uplifted blocks, the Intermediate Complex and the autochthonous sequence are exposed (Figs. 1 and 30). In the Aegean Sea the faults are associated with the breakdown of the Aegean realm

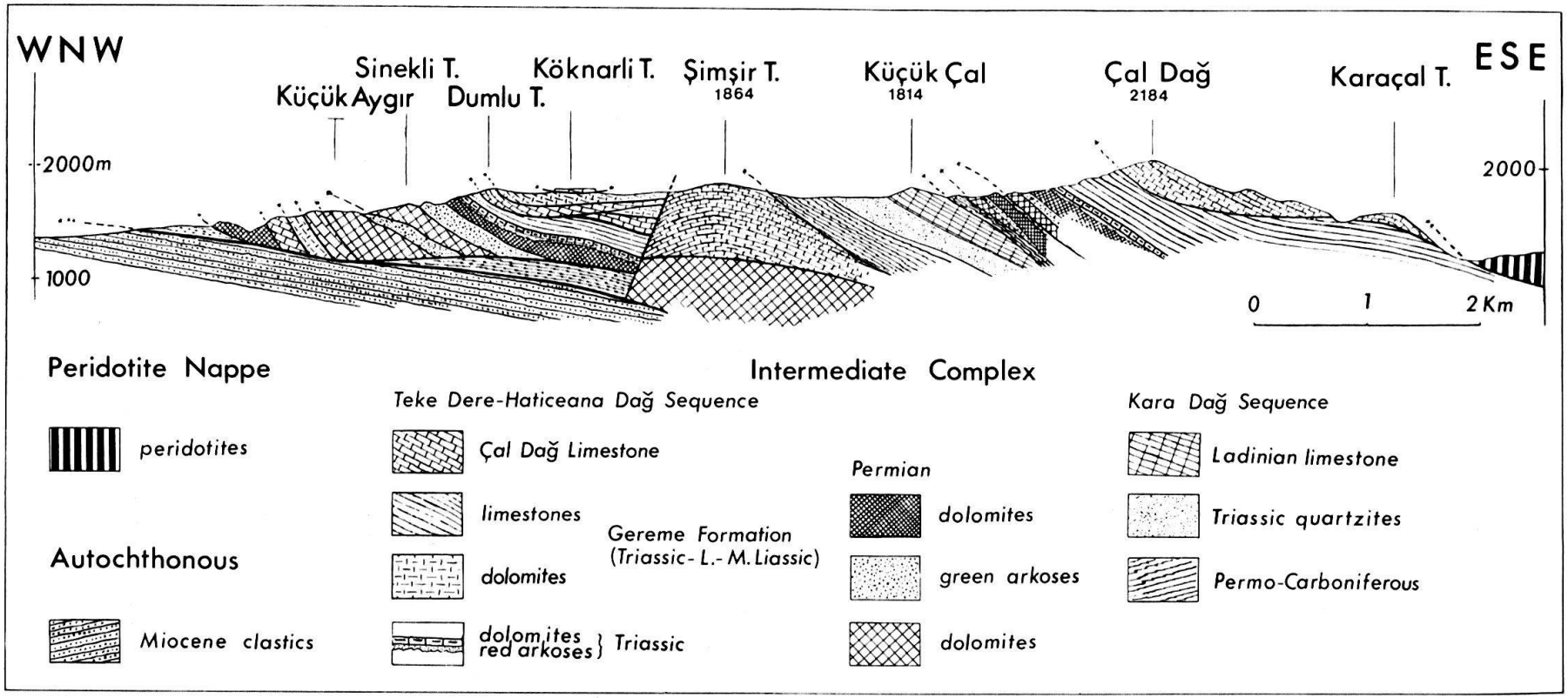

Fig. 30. Tectonic profile through the Intermediate Complex of the Lycian nappes. The profile shows the style of tectonic imbrication that brings into contact two sequences that are derived from different depositional realms: the Karadağ sequence comprising Permo-Carboniferous to Ladinian rocks and the Teke Dere sequence ranging from Permian to Upper Cretaceous (cf. Fig. 5). The Intermediate Complex is underlain by the Miocene clastics of the autochthonous sequence of Göcek and overlain by the Peridotite Nappe.

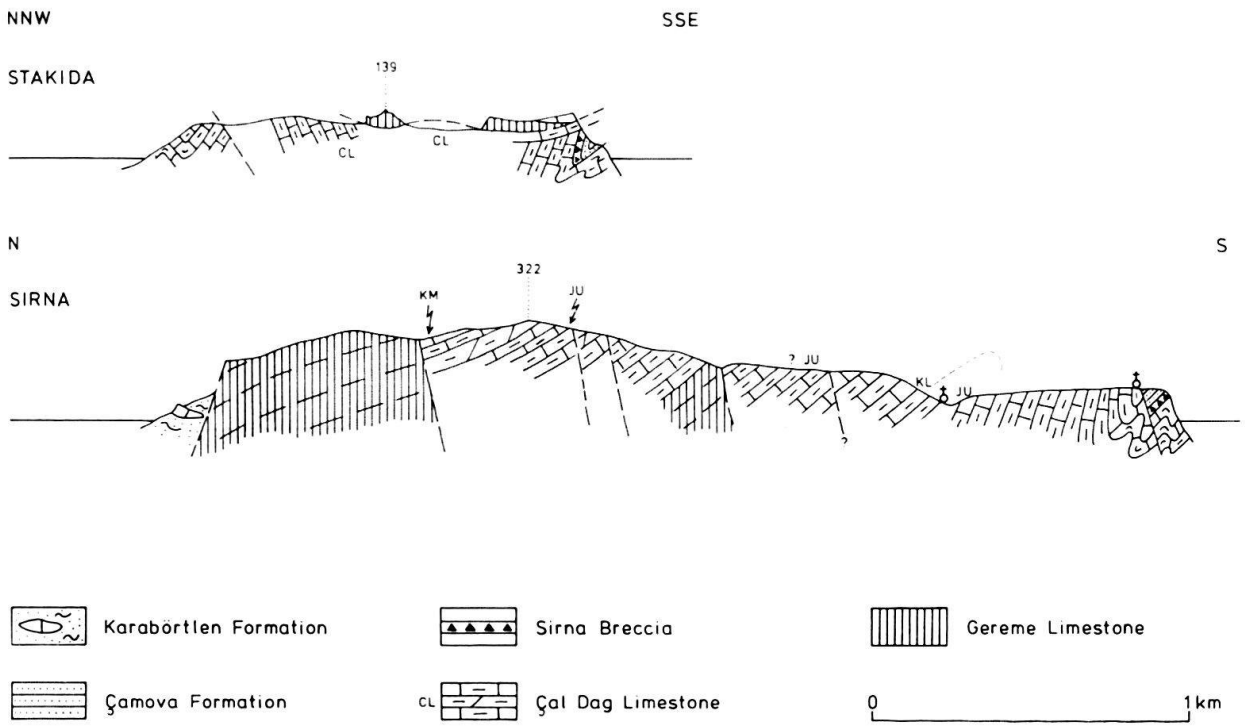

Fig. 31. Tectonic profiles through the islands of Sirna and Stakida.

and the Quaternary transgression. Still active faulting is suggested by young fault scarps hardly modified by erosion and by the general seismicity of the region.

5. The extension of the Lycian nappes in the Aegean region

The obvious region to investigate for the continuation of the Lycian nappes of southwestern Turkey is the area between the small Aegean islands, the Bodrum peninsula and the region of Fethiye-Köyceğiz. In this area stratigraphic sequences which closely ressemble the ones already described are found in the Datça Peninsula, on the islands of Symi and Tilos and possibly on the island of Rhodes.

Datça Peninsula

The sedimentary sequence of the Datça Peninsula has been described by OROMBELLI et al. (1967). The oldest stratigraphic unit, the Yelimlik Limestone, a massive, partly dolomitized limestone of Late Triassic to Liassic age, corresponds stratigraphically and lithologically to the Gereme Limestone. The uppermost part of this formation (as defined by OROMBELLI et al.) comprises thick-bedded cherty limestones with *Globochaete*, a planktonic form of unknown systematic position that indicates a definite pelagic influence and suggests a correlation with the lowermost Çal Dağ Limestone (? Upper Liassic). Above this, Middle to Upper Jurassic radiolarites (Sariabat Radiolarite) and marls and marly limestones with interbedded calcarenites (Kuru Dağ Marl) are found. Judging from OROMBELLI's descriptions, they could be compared with coeval rocks of the Bodrum peninsula (see p 60.). The overlying Cretaceous Mandalya Cherty Limestone is composed of pelagic limestones with bands and nodules of chert and closely ressembles the Cretaceous part of the Çal Dağ