

ENGLISH SUMMARY

GEOMORPHOLOGICAL STUDIES IN THE SAFED AREA

by D. NIR & A. YAIR

The area under investigation, about 180 sq. km., may be divided into three distinct geomorphological units: the plateaus (the basaltic plateau of Dalton-Alma, the erosional plateau of Dishon, the karst plateau of Yehoyariv), the mountains of Safed, and the piedmont of Hatzor. A variety of karstic phenomena is to be found in the karst plateau: lapiés, sinkholes, dolines, karstic springs, canyons and caves. This karst apparently originated at a rather early time, supposedly before the Pleistocene. The study of the river terraces revealed two terraces in the western part of the wadis, and three continuous terraces in the piedmont area. These three terraces are in close relation to the changing levels of the Lake Huleh in the Upper Pleistocene.

The geomorphological development of the Safed area was as follows: after marine sedimentation till the Eocene and the main folding of the Miocene, an erosional surface was established, and at the same time, a karst cycle was initiated. This erosional surface was partially fossilized by the Pliocene/Pleistocene lava flows. With the main faulting of the Jordan Valley, a new cycle of erosion began, in which three phases of degradation and aggradation can be distinguished.

SOIL UTILISATION IN THE SAFED AREA

by Y. KARMON

A field survey of land use in the Safed area, carried out in 1959, resulted in maps Nos. 2 and 3, which represent land use at the times of the British mandate (approximately 1931) and present-day land use. A comparative analysis of the two maps leads to the evaluation of natural and social factors influencing the utilisation of different parts of the area.

The decisive natural factors are slope and type of soil, the distribution of which is represented in map No. 1. The steep slopes are unsuitable for agriculture, but in areas of moderate gradient there appear differences between the Arab land use in the time of the mandate and modern Jewish land use.

For Arab land use type of soil was the dominating factor. The terra rossa soils, which cover 59% of the area, were difficult to work because of their rocky character, and were cultivated only at a rate of 25%. The rendzina soils (on 20% of the area), although less fertile than terra rossa, were easier to work, even on stronger slopes, and their rate of cultivation amounted to 60%. The basaltic soils (10% of the area), occur mainly on level plateaus and were cultivated at almost 100%.

The crops grown by Arab were mainly grains with orchards of olives

and figs. The orchards showed a strong tendency of concentration on rendzina-slopes. A major feature of Arab land use was the dispersal of scattered holdings and patch cultivation on stony grounds.

Jewish settlement after the creation of the State of Israel was based on mechanization and irrigation. For both means, slope is more important than type of soil; stronger gradients were reserved for afforestation and controlled grazing; level areas, built mainly of hard limestone and basaltic rock, had to be ameliorated by expensive terracing and levelling of rocky ground. The crops of Arab agriculture were replaced by vineyards and orchards of deciduous fruit-trees, the main field crops are tobacco and irrigated crops (vegetables, cotton, maize). The higher selectivity of modern agriculture resulted in reduction of cultivated land from c. 80000 dunam (40% of the surveyed area) to 29 000 dunam (14%), the number of agricultural settlers receded from 9 300 in 1935 to 3500 in 1958, thus revealing the difficulty in establishing modern agricultural settlement in the mountainous regions of Israel.

THE SOILS OF EASTERN UPPER GALILEE

by A. BROSH

1. *Red soils (terra rossa)*,—mediterranean zonal soils, formed by weathering of hard limestones, mainly of the Upper Cenomanian, Turonian and Eocene formations. These are considered to be the most fertile of the mountain regions' soils, being rich in mineral content, well textured and well drained. On the other hand, most of them are very shallow and too dry for unirrigated summer-crops.

2. *White-gray soils*—mediterranean intrazonal soils, formed mainly by physical weathering of chalk of the Senonian formation. Agriculturally less fertile than the red soils owing to a lesser mineral content and too much lime, they are much easier to cultivate and much better suited for unirrigated summer-crops.

3. *Dark-brown soils*—also mediterranean intrazonal soils. Their usual location on comparatively flat basaltic plateaus makes them deeper and much more continuous than red soils but very poorly drained, and very stony. They are therefore less fertile and more difficult to cultivate than red soils unless special measures of amelioration are undertaken.

THE HISTORICAL DEVELOPMENT OF ROUTES IN THE MOUNTAINS OF SAFED

by Y. KARMON

The scarcity of historical roads in the Mountains of Safed is explained by a special combination of topographical difficulties which not only isolate the region from the adjoining ones but also dissect it into almost unconnected segments. The areas, that provide the least obstacles for movement, are the chalk-hills, which run mainly from NW to SE, passing in the

vicinity of Gush Halav and of Safed (see map on page 213), forming a narrow corridor.

But the main lines of transport in the northern part of ancient Israel run from E to W, and from N to S, connecting Damascus and the Valley of Lebanon with the coastal Plain or Judea. For that purpose easy routes are available, skirting the Mountains of Safed to the East (Huleh Valley) and South (Valley of Beth Kerem).

The only route, which could utilize the natural corridor in the Safed Mountains, would be a route from Tyre towards Tiberias, and this route played only a minor role in commercial or military movements of historical times. Even this route bypassed the town of Safed at a distance of approximately 2 km at an elevation, 250 m lower than the citadel of Safed.

These geographical considerations may explain the lack of importance of the citadel-hill in ancient times. In crusader times it became important owing to its nearness to the main crossing point of the Jordan and its isolated position, which suited the strategical conception of the crusaders.

Once Safed became an important urban centre, it became also a centre of gravity that attracted all routes, creating the anomalous position, that geographically easier routes were abandoned in favour of a more difficult route, that provided shelter and trading facilities.

Safed hold its position as a road centre even in modern times. The first Turkish carriage road from the coast at Acco to the Huleh Valley, and in its wake the motor road from Acco to Damascus, were constructed along the difficult medieval route, and not along the ancient route, that crossed the gorge of the Nahal Amud near Kh. esh-Shuni and does not touch any important settlement.

Until today traffic from the Huleh Valley to Haifa is forced to climb the Mountains of Safed for lack of an easier possible road, but the time has come to reconsider the possibilities of constructing a road along the lines of the ancient route.

THE REGIONAL IMPORTANCE OF THE TOWN OF SAFED

by A. SHAHAR, TEMIMA STOCK, LEVIAH APPLEBAUM

Since the middle of the 19th century, the position of Safed in the urban hierarchy has been declining steadily. Whereas in the times of the Palestine Exploration Fund (about 1880), Safed was the fourth-largest town in Palestine, in 1931 it held only the ninth place in the population rank and in 1959 its rank decreased to the twenty-fourth place among the towns of Israel. This decline of the urban importance of Safed is being investigated upon the background of the shrinkage of Safed's zone of influence. Several criteria were chosen for delimiting the present zone of influence of Safed, such as the extent of the regions of daily commuting, administrative services and cultural activities. Most important was the survey of the area marketing its agricultural produce to Safed and getting urban services there. The analysis of all the criteria clearly proves, that—as

compared with the past — Safed now has only a limited regional importance. This decrease of the regional function of Safed is mainly the result of the loss of its defensive position, the recent poverty of its rural surroundings and the urban competition of Qiryat Shemona and Tiberias. It is suggested that Safed should be developed not only as a regional centre for its present limited zone of influence, but as a resort-town, serving the whole country.

THE CANYONS OF ISRAEL

by M. HAREL

Most of the canyons in Israel develop in the arid and semiarid areas of the Judean Desert and the Negev. Conditions suitable for their development are present particularly on the eastern slopes of the central mountain ranges of the country. Their formation is assisted by the following factors, single or in combination:

- (1) The presence of resistant hard, homogeneous rock, or of sandstone.—
- (2) Under conditions of extreme aridity obtaining in the Jordan Valley and the Dead Sea area in particular, the same effect is obtained in the soft Lisan marls.—
- (3) Steep escarpments.—
- (4) The mechanism of arid climate with its occasional violent cloudbursts and floods.

THE CAVES IN THE BETH-GUVRIN REGION *)

by Y. BEN-ARIEH

There are good reasons to assume that the many caves and cistern in the Beit Guvrin region were excavated mainly in order to utilise the soft chalk found here as building material, mainly in the production of cement. Part of the chalk was used as building material in the coastal plain, especially in the region of Ashkelon.

It appears that the numerous small ancient villages, called here *Khurvot*, are connected to the caves and that most of them were inhabited by the people who excavated them.

An archaeological survey of these *Khurvot* shows that most of them are from the Byzantine period. It therefore seems very likely that most of the caves and cistern in this area are also from the same period.

*) concluded from Bull. Isr. Expl. Soc., Vol. 23 (1959), pp. 176–193.

תִּיקוּנֵי טַעוִיּוֹת

עמ' 199 שורה 3 : במקום נחל דלתון צ"ל נחל הצור

עמ' 241 שורה 17 : במקום משתרע צ"ל משתפל

עמ' 241 : הערה מס' 5 מתיחסת למפה בעמ' 213

עמ' 248 שורה 12 : במקום העליה מצפת צ"ל לצפת

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