



DIREZIONE MINERARIA
SERVIZIO GEOLOGICO

7

CENTRAL FILE

CLASTIC SEDIMENTS OF WELL PHILIPS 7/11-1, North Sea (Norway)

INTERVAL 9589±-9678±; PALEOCENE FM.

IL RESPONSABILE DEL SERVIZIO

S. Donato Mil., 19/12/68

Dr. V. Fois

Grain size, sedimentary structures and petrography of the available samples were analysed. All these data are summarized on the sediment log (Encl. 1) with porosity and permeability values. Sandstones were subdivided into types according to their grain size following the procedure indicated in the report "Graphic representation of grain size" (R. Passega, Sept. 28, 1967). Grain size analyses data are reported on files at the end of this report.

SEDIMENTOLOGY

We examined two cores from 9589' to 9678', which are in the upper part of the reservoir rock. The reservoir is made of sandstone beds a few meters thick interbedded with thin clay layers rich in fine sand. The cleaner sands are in the upper part of the reservoir.

Sandstone beds are mostly massive but the finer sandstones have parallel or wavy laminations. Bioturbation is often present in shaly intervals. Clay fragments are frequent both in sandstone and in clay beds. There are also structures that can be attributed, in spite of the small size of the cores available, to slumpings. These indicate a certain sediment instability during the deposition (growing structure ?) (Encl. 1, Photos).

Grain size analyses show that sands never have medians coarser than 200 microns; the coarser grains instead arrive to 2 millimeters. Medium sands were mostly transported as graded suspensions, fractions coarser than 700-800 microns were transported by rolling. Shales interbedded are sandy as we can see from samples n. 44, 62 b, 69 b, 70, 100 ecc. (Encl. 2).

The percentages of lutite (fractions finer than 31 microns) in the sandstones is fairly high and indicate a winnowing effect not very strong.

PETROGRAPHY

Quartz sandstones, light grey, poorly sorted with clay matrix, silica and carbonate cements. Generally carbonate cement is irregularly distributed (Encl. 1). Major components of the detrital fraction are:

- subrounded quartz grains sometimes cataclastic
- scarce, weathered, feldspars, mostly represented by acid plagioclase
- mica flakes in subparallel laminations
- very rare detrital glauconitic grains.

Grain contacts are mostly tangential, sometimes planar.

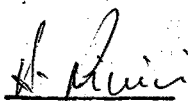
POROSITY AND PERMEABILITY

The porosity values in sandstones range between 15 and 25%. Permeability is nearly always between 10 and 100 md (Encl. 1).

This range of porosity is quite high for medium cemented sandstones as they are; this is due to the low percentages of carbonate and silica cements. Permeability instead is not very high in relation to the grain size of the sandstones. In fact these sandstones have a certain percentage of matrix and a poor sorting that keep permeability at relatively low values. Probably silica and carbonate cement have no strong influence on the permeability; pressure solution effect is also negligible as contacts between grains are mostly tangential.

*matrix
poor sorting*

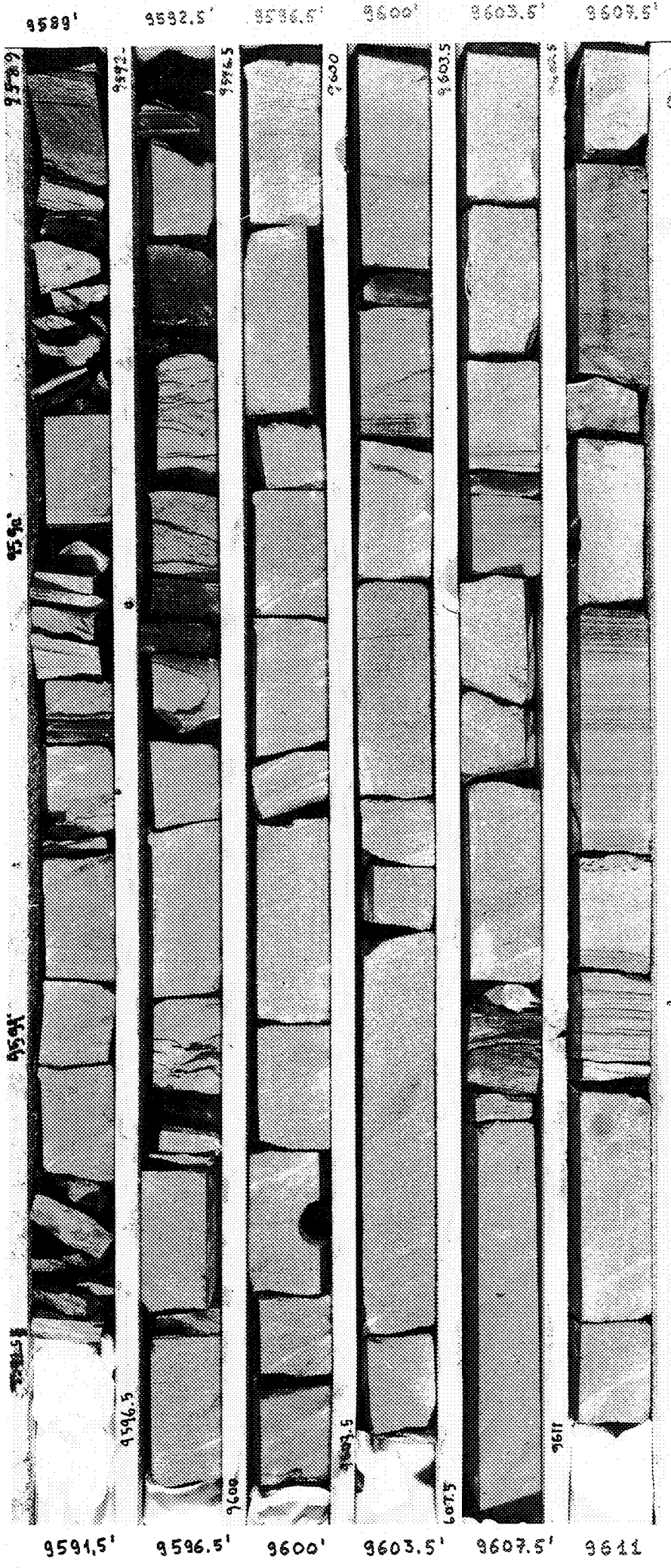
- Enclosure 1 : Sediment log
" 2 : CM, FM, LM, AM diagrams with tables of grain
size analyses data and with tables of core
photos.


A. Rizzini

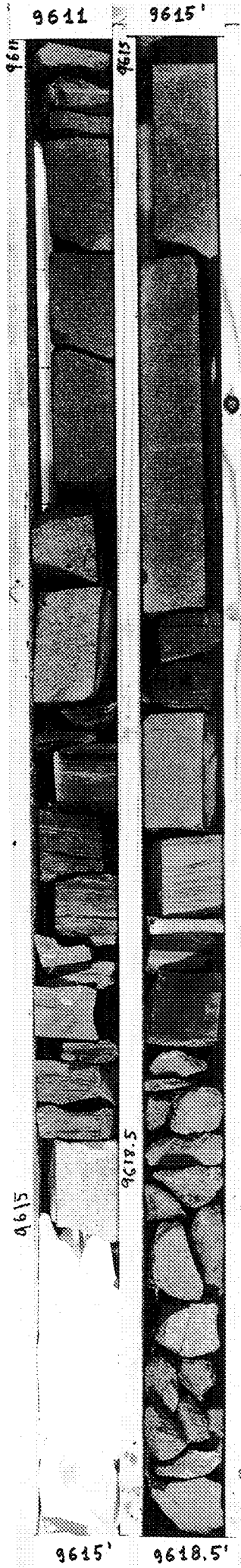

E. Costantini

FIELD NORTH SEA WELL 7/11-1 S. DONATO January, 1969

DEPTH	C (Onepercentile)	M (Median)	A (% Finer than 3.9 microns)	Γ (% Finer than 31 microns)	T (% Finer than 125 microns)	%																	
						> 16 mm	16-8 mm	8-4 mm	4-2 mm	2-1.41 mm	1.41-1 mm	1-0.71 mm	0.71-0.50 mm	0.50-0.35 mm	0.35-0.25 mm	0.25-0.177 mm	0.177-0.125 mm	0.125-0.088 mm	0.088-0.062 mm	0.062-0.031 mm	0.031-0.0156 mm	0.0156-0.0078 mm	0.0078-0.0039 mm
9602	470	170	2.0	4.8	37.9						0.1	0.6	6.6	21.6	16.9	16.3	14.0	7.6	11.5	0.7	1.4	0.7	2.0
9603	1800	195	1.4	5.3	31.5			0.7	1.2	4.8	5.1	5.3	9.6	12.5	13.2	16.1	10.1	8.0	8.1	2.2	1.2	0.5	1.4
9604	740	150	2.5	6.8	39.8					0.2	1.0	3.2	6.8	12.9	14.8	21.3	12.6	8.5	11.9	2.1	1.5	0.7	2.5
9604	125	30	15.6	51.1	99.0											1.0	3.9	8.2	36.8	20.0	9.4	6.1	15.6
9605	1500	180	1.9	5.1	31.4				1.2	3.6	4.2	5.1	10.9	12.6	12.9	18.1	10.7	8.3	7.3	1.7	0.8	0.7	1.9
9606	1700	160	3.4	8.9	38.5			0.7	0.7	1.1	2.0	3.4	5.6	12.9	15.7	19.4	11.0	5.1	13.5	3.0	2.2	0.3	3.4
9606	165	37	14.8	43.8	96.3									0.1	0.5	3.1	6.9	15.0	30.6	14.1	8.7	6.2	14.8
9607	520	86	6.6	20.5	64.9						0.2	0.9	2.3	6.3	9.2	16.2	13.3	12.1	19.0	7.0	3.8	3.1	6.6
9608	350	48	13.1	37.9	84.0							0.2	0.9	1.6	3.9	9.4	10.7	13.2	22.2	12.3	8.3	4.2	13.1
9608	450	155	2.7	8.0	35.0							0.5	3.5	17.1	18.2	25.7	11.8	7.3	7.9	3.0	1.3	1.0	2.7
9609	660	130	3.8	9.9	47.5						0.7	2.8	7.9	12.4	13.6	15.1	12.6	9.6	15.4	3.7	1.2	1.2	3.8
9609	92	44	7.3	25.2	100											1.5	15.5	57.8	6.3	6.3	5.3	7.3	
9610	280	64	6.2	18.2	90.5								0.3	1.1	2.3	5.8	13.5	28.8	30.0	6.9	3.5	1.6	6.2
9610	860	160	2.8	8.0	33.7					0.4	1.7	3.9	7.5	11.4	17.1	24.3	8.8	8.8	8.1	2.4	1.5	1.3	2.8
9611	630	150	2.2	6.4	38.5					0.1	0.4	2.2	4.8	14.3	16.5	23.2	14.3	7.7	10.1	2.0	1.7	0.5	2.2
9611	700	130	3.8	11.4	48.0					0.2	0.9	2.4	5.9	11.8	12.5	18.4	12.1	8.3	16.2	4.1	2.8	0.7	3.8
9612	2050	200	1.2	4.3	26.3			1.2	2.7	3.7	5.2	5.2	5.9	15.2	15.4	19.2	10.5	5.9	5.6	1.7	0.7	0.7	1.2
9613	370	30	17.2	51.4	82.1							0.2	1.3	2.6	5.0	8.8	7.9	7.2	15.6	17.9	9.9	6.4	17.2
9614	330	11	29.7	69.5	89.5							0.1	0.6	1.9	2.6	5.3	5.3	4.9	9.8	12.4	14.3	13.1	29.7
9615	600	110	5.7	14.2	55.0					0.1	0.4	1.5	4.4	9.8	11.5	17.4	12.2	10.0	18.6	4.2	3.5	0.8	5.7
9615	840	115	3.4	11.4	52.8					0.5	1.0	2.7	5.1	9.7	10.7	17.5	12.6	12.1	16.7	3.6	2.5	1.9	3.9
9615	460	92	5.3	17.9	61.6						0.2	0.5	2.1	7.7	10.7	17.2	12.9	11.2	19.6	6.4	3.8	2.4	5.3



7/11-2
 9589'-9622'



7/21-2
9589'-9622'

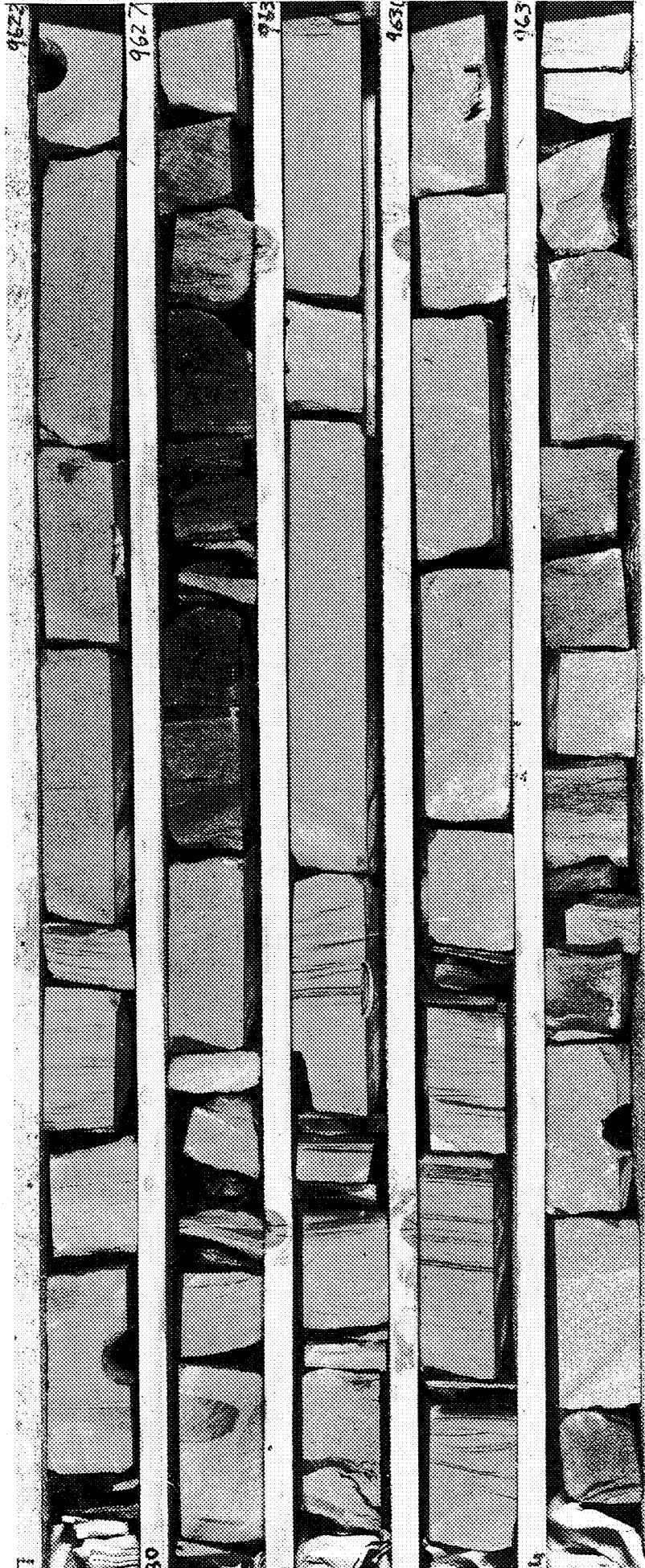
9622'

9627'

9630'

9634'

9639'



9627'

9630'

9633'

9637'

9644'

7/11-2
9622'-9638'



DIREZIONE MINERARIA

GEOL-Petro

file well bore 7/11-1

S. Donato Mil. 25.2.69

Bollettino d'analisi N. 93/69

PERCENTUALI DEI MINERALI PESANTI DEI CAMPIONI:

carote del pozzo 7/11-1 (Mare del Nord)

Campione		Minerali opachi	Andalusite	Anfiboli			Apatite	Cianite	Cloritoide	Epidoti		Granati	Olivine	Pirosseni		Rutilo + Polimorfi	Sillimanite	Staurolite	Titanite	Tormalina	Zircone	% totale
N.	Profondità ft.			Glaucofane	Orneblenda	Tremolite Actinolite				Rombici	Monoclini			Rombici	Monoclini							
1	9598					1 Barite 1%					72				1					16	9	100
2	9608				tracce						70				1					6	23	100
3	9618										50				3					11	36	100
4	9630										45				1					52	2	100
5	9641										65				6					6	23	100

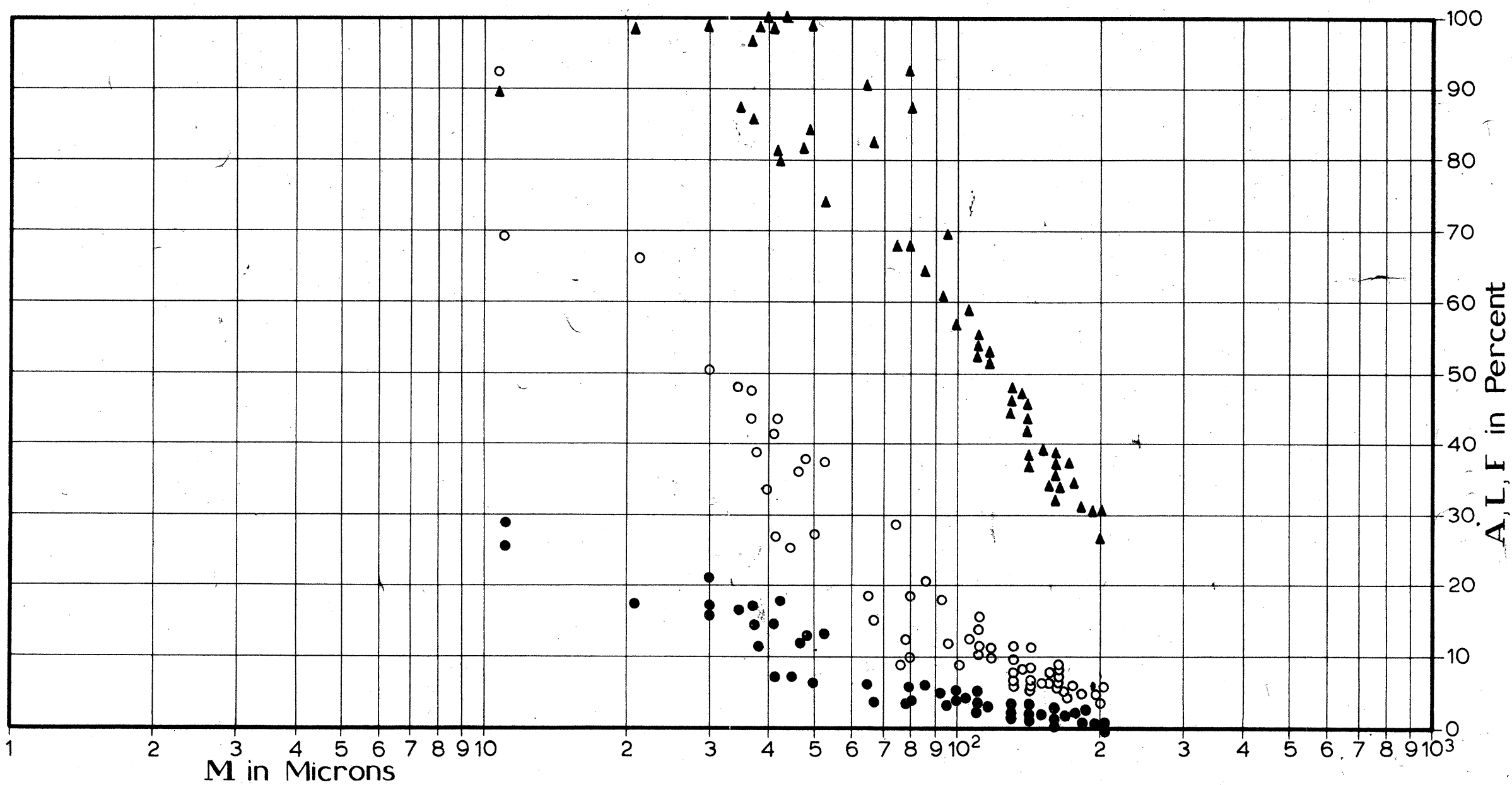
*chiedere - confronto con sabbie Polescevic, e
di altri vicini, dell' Guffierens.*

*ask for a comparison with
Polescevic Sands from England*

IL RESPONSABILE DEL REPARTO

A-M(•), L-M(◦) and F-M(▲) DIAGRAM

ENCL. 2



C-M DIAGRAM

