A QUANTITATIVE AND QUALITATIVE STUDY

OF THE PLANKTON OF

SOME LAKES IN

JASPER NATIONAL PARK, (Alta), 1925-1926.

Alexandr Bajkov.

Being a thesis submitted to the University of Manitoba in partial fullfilment of the requirements for the degree of Master of Science.

Winnipeg. 1927.

I N T R O D U C T I O N.

The following account of the minute fauna and flora of certain of the Jasper Park Lakes is based upon extensive plankton collection made during the summer of 1925 by Messrs F. Neave, A. Mozley, and during the summer 1926 by Messrs F. Neave, A. Mozley, Miss R. Bere and by the writer under the direction of Professor Chas. H. O'Donoghue at the request of the Biological Board of Canada.

The collection were obtained from 18 different lakes, situated from 3339 feet to 5550 feet above sea level and consist of more than five hundred samples. The high altitude makes the area very interesting for the investigation of fresh water plankton and on the other hand some of the highest lakes of Jasper Park (Maligne and Medicine Lakes) geologically are very young. The biggest and highest of the lakes examined is Maligne Lake situated 28 miles from Jasper, about 20 miles long and from 1 to 3 miles wide. The maximum depth of this lale is about 60 mt. Geologically Malign Lake, is extremely recent.

The largest collections were secured from Annette Lake (3344 f. Beauvert Lake (3356 feet), Edith Lake (3339 feet), Pyramid Lake (3867 feet), Big Trefoil Lake (3351 feet), Maligne Lake (5550 feet), Jacques Lake (4750 feet) and Caledonia Lake (3810 feet). Only a few collections were secured from Hibernia Lake (3954 feet), Medicine Lake (4600 feet) and No1 Lake near Geickie station.
Some samples were taken also from the other side of the Rocky Mountain Divide, namely from Yellowhead Lake, British Columbia (Fraser River System).

A quantitative study of the plancton and of the vertical distribution of different species during different hours of day and night was made at 8 lakes: Annette, Beauvert, Edith, Mildred, Jacques, Maligne, Pyramid and Caledonia. Diagrams showing the vertical distribution of plankton are included at the end of the present work.

The method of work in Jasper Park is one which the author has applied in Europe on the Lakes of South Moravia (Czechoslovakia), and the vertical distribution of the species common to both regions (Ceratium hirundinella, Daphnia longispina, Polyarthra platyptera etc.) agrees very closely in the two cases.

The writer desires to express his gratitude to Dr. Ch. O'Donoghue and Biological Board of Canada, who so materially aided and facilitated the field and laboratory work.

The writer also desires to express his sincere thanks to Miss R. Bere, Mr. F. Neave and Mr. A. Mozley for their kind assistance and many helpful suggestions.

Instruments and methods of investigation.

For measuring temperature three „Negretti and Zambra" reversing thermometers were used. For water samples two bronze bottles with rubber stoppers were employed. For bottom fauna an Ekmann dregs (9" square) was used and for plankton samples several different plankton nets, made of bolting silk No 20.

All plankton for quantitative work was collected with three special galvanized iron plankton cylinders volume IO liters each (fig.I). These cylinders were each fitted with a lid and a bottom in the form of two semicicles hinging in the middle and acting as valves, which open as the apparatus descends allowing the water to pass freely, but close as soon as the cylinder stops or is drawn up. The water collected from the desired depth in this way was then strained through an Apstein plankton net and carefully drained from the bucket into vials. The time required to obtain a full set of samples at each station varied from I.to 2 hours (longer in very deep places).

The time of day quoted for each series in tables is approximately halfway between the first and last sample. In deep places a special numbering machine and steel line was used. Special care was taken with surface samples. to avoid taking them where previous sampling had disturbed the water. All plankton was preserved in 3 % formalin. Temperatures were always taken with plankton samples at all depth. Water samples fot determination of oxygeen were taken when possible at the same time.

For volumetric detemination of plankton use was made of special graduated tubes in which the plankton was allowed to settle for twenty four hours.

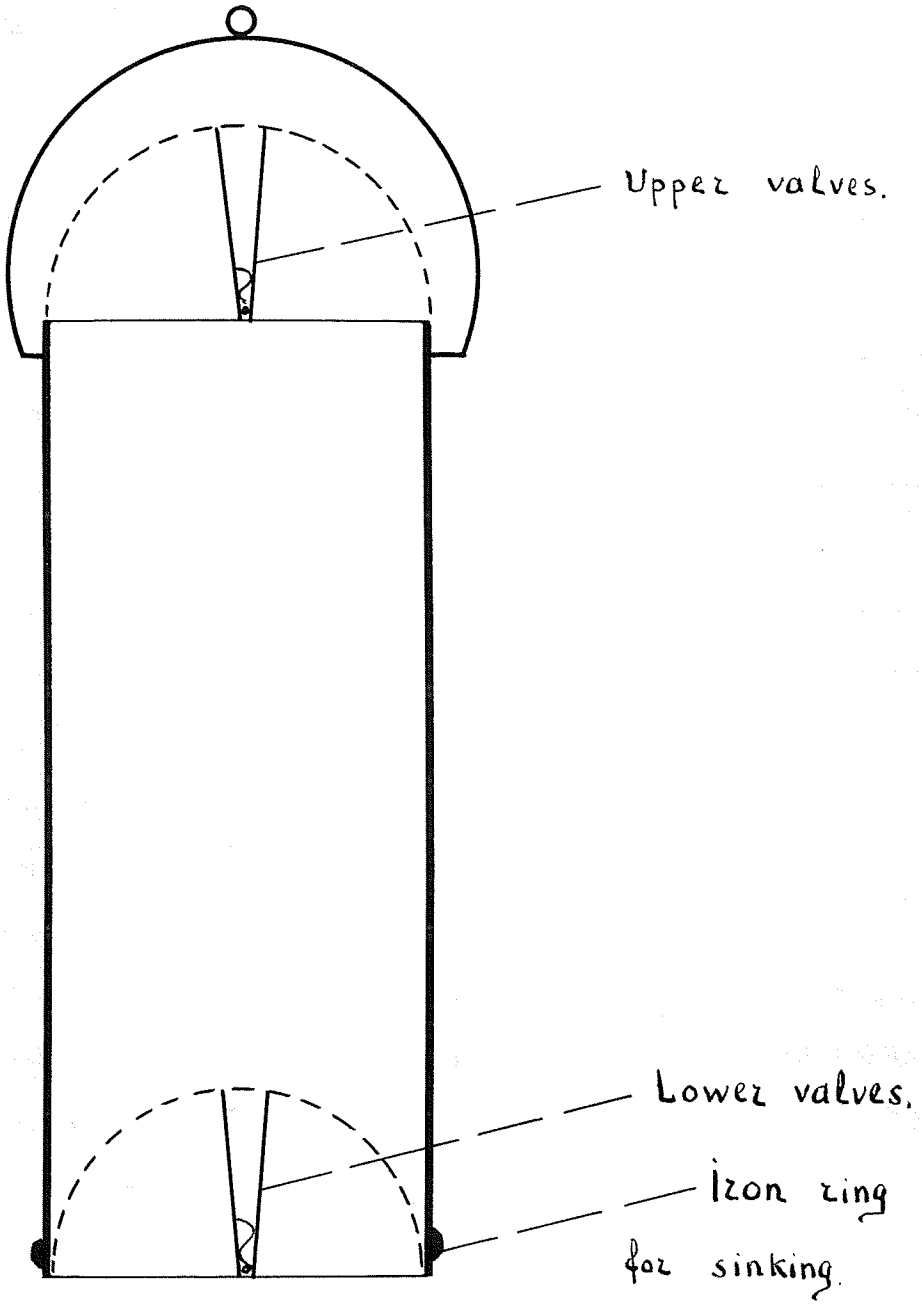


Fig. I.

Descending position with valves open.

Its volumetric determination is not very difficult. Many species besides having a characteristic specific gravity have also a differnt colour (Asterionella-white, Cladocera-brown, Copepoda-orange and red etc.) Afterwards the counting of the plankton was done on a specially ruled slide and the count for each sample was repeated several times (minimum 3 times). The size of the various organisms and the comparative volumes of a different species in the settling tubes were taken into consideration at times when these differences could be easily observed.

Some writters have critised quantitative work with graduated tubes and prefer the centrifuge method. (Kofoid, I897; Ward, I900; Galtsoff, I923). The author, in Europe,has examined both methods (I924) and has not found much difference in result between them. Indeed the centrifuge method may give a larger error, because the volume of plankton measured in this case depends largely on the number of revolutions and length of time of centrifuging particularly with a small hand centrifuge. In settling tubes the only force is that of gravity, which is constant for any given place. With both methods we receive relative volumes of plankton, which it is possible to compress to several times. The absolute quantity of plankton can only be found by exact weighing.

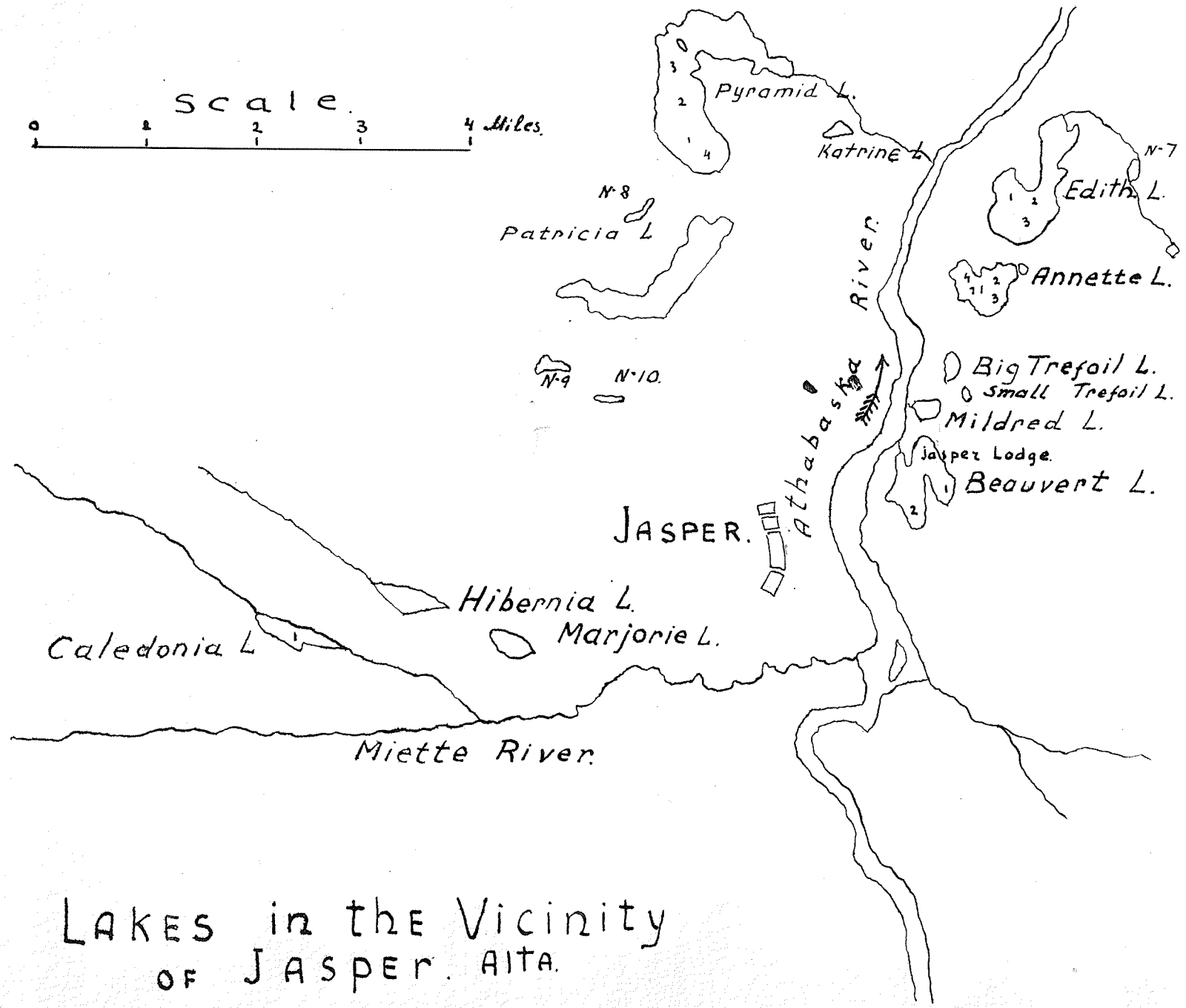
The work with a cylinder apparatus,such as described , which cuts out a short vertical column of the water at any point from surface to bottom, with the minimum amount of disturbance ,will, always be very much better and more exact, than work with a pump where water is pumped from different depths and then filtred through the plankton net.

The pump method is easier, but gives correct results only with phytoplankton and probably with Rotatoria. Actively moving animals such as Diaptomus, Leptodora, Corethra, even Daphnia, will be

caught only when they are very near the tube at the commencument of operations, at a distance of a few centimeters from the tube, the current will be so insignificant that all these animals will successfully withstand it. More over is practically all actively moving water animals swim against a current and so many escape capture.

A qualitative plankton sample was collected at the surface and in deep water by means of horizontal and vertical tows at many points in all the lakes and near shores. The stomach contents of many specimens of different fishes yeilded much valuable data. It is interesting to note that some species very rarely found in open-water plankton have been observed in great numbers in the stomach contents of several fish. For example, Canthocamptus minutus and Pediastrum integrum were only found in very small numbers in Annette Lake, but in the stomach contents of small suckers (Catostomus catostomus lacustris), Pediastrum integrum was often found and Canthocamptus minutus has been found to the number of 100 - 200 specimens in the digestive tract of several small suckers.

Each point where observations were made is called a "station" and the location of these points are shown in the map preceding the description of each lake. The following figure shows the lakes of Jasper Park, where plankton investigations were made.



LAKES in the Vicinity OF JASPER. ALTA.

Physiography.

The Athabaska River is the largest stream in Jasper Park. Owing the silt brought down by its many glacierfed tributaries it is very turbid during the summer months. The water of the Athabaska River is almost without living plankton. It is very muddy (Secchi disk IO -I5cm), and temperature relatively low, during summer months only II - I4C. The tributaries of this River are also very cold and very poor in ~~plankt~~ plankton.

Annette, Beauvert, Edith, Trefoil and Mildred Lakes.

These lakes represent an old course of the Athabaska, their altitudes varying slightly according to their relative positions in the former river bed. These lakes are:

Beauvert Lake---------altit.-3356 feet-----maxim.depth 20m.
Mildred Lake----------3354----------4 mt.
Big Trefoil Lake----------3351----------
Annette Lake----------3344----------24 mt.
Edith Lake----------3339----------I9 mt.

In chemical composition these lakes do not differ very much among themselfs. The following table shows the results of analyses of water samples for radicles and salts in gramme per million cubic centimeters.

	Annette.	Beauvert.	Edith.
Ca.	32.	27.	38.
Mg.	I4.	I0.	I7.
Na.	3.	4.	3.
So_4	I7.	I4.	23.
Cl.	I.	I.	I.
Co_3	77.	63.	89.
Fe and Al.	I.8	I.4	0.4
Total solids.	I50.	I36.	I98.

Beauvert Lake, which has an outlet stream, differs from Annette and Edith Lakes by a little smaller percentage of all solids.

The temperature of the waters of these three lakes also does not differs much. The plankton of these lakes is on the whole quite similar. The dominant plankton forms throughout the summer are: Ceratium hirundinella, Diaptomus sicilis, Daphnia pulex and Daphnia longispina. In Annette Lake the maximum of Ceratium was found at the beginning of July, in Edith Lake about two weeks later. The maximum of Diaptomus was also later than in Annette Lake, (about 15th of August). Leptodora kindtii and Diaphanosoma leuchtenbergianum, which occur in Annette Lake have not been found in Beauvert and Edith Lakes. Little aquatic vegetation (Chara, Potamogeton) is present in these lakes. On the other hand, Mildred Lake, which is small and shallow is full of vegetation. The plankton of Mildred Lake differs widely from the plankton of Annette, Edith and Beauvert Lakes and is characterized by the presence of a large group of plankton organisms, which are absent from the previous three lakes. These are:

Aphanothece microscopica Näg.

Conochilus unicornis Rouss.

Diaptomus leptopus Forbes.

Cyclops albidus Jurine.

Polyphemus pediculus (Linne).

The plankton of the Small Lake near Mildred, which also contens Diaptomus leptopus and Polyphemus pediculus is very similar. The plankton of Big Trefoil Lake does not differ very much from that of Annette Lake. The following samples may be considered characteristic of Annette, Beauvert and Edith Lakes.

A N N E T T E L A K E .

30 - VIII - I926. 6 P. M. Surface. (fair).

t air - 20 c. t - water - I6. c. Baromet. 660mm.

Phyllopoda:	Alonella nana (Baird).	
	Drepanothrix dentata (Euren).	I%
Copepoda:	Diaptomus sicilis Forbes.	
	Cyclops bicolor Sars. Claus.	5%
	Cyclops bicuspidatus Claus.	
Rotatoria:	Asplanchna priodonta Gosse.	
Diatoms:	Asterionella formosa Hass.	20%
	Fragilaria crotonensis Kitton.	
	Stephanodiscus niagarpe Ehrb.	5%
	Amphora ovalis Ehrb.	
Chlorophyceae:	Oocystis solitaria Wittz.	
	Botryococcus brauni Kützz.	
	Tetraspora explanata Kützz.	I9%
	Shizochlamus gelatinosa A. Braun	
Myxophyceae:	Chroococcus limneticus Lemm.	
	Chroococcus dispersus Lemm.	
Flagellata etc.	Ceratium hirundinella O. F. Müll.	30%
	Peridinium tabulatum Ehrbg.	
	Dinobryon sertularia Ehrbg.	20%
	Dinobryon stipitatum Ehrbg.	
	Chlamydomonas pulvisculus Ehrb.	

B E A U V E R T L A K E

2 - IX - 1926. 7 P. M. Surface. (fair).

t air - 19 c. t - water - 18.2 c. Baromet. 684mm.

Phyllopoda:	Daphnia longispina (O.F. Mull).	20 %
Copepoda:	Diaptomus tyrelli Poppe. Diaptomus sicilis Forbes. Cyclops bicolor Sars. Nauplius stadia	30 %
Rotatoria:	Polyarthra platyptera Ehrb.	5 %
Diatoms:	Amphora ovalis Ehrb. Navicula viridis Kützg. Epithemia argus Kützg. Cyclotella compta Kutz. var. affinis Grun. Stephanodiscus niagaroe Ehrb.	15 %
Chlorophyceae:	Tetraspora explanata Kützg. Spirogyra crassa Kützg.	5 %
Myxophyceae:	Nostoc commune Vauch. Chroococcus dispersus Lemm.	
Flagellata etc.	Ceratium hirundinella O.F. Müll. Peridinium tabulatum Ehrb.	25 %.

E D I T H L A K E .

6 - IX - I926. 4 P. M. Surface. (fair).

t air - I7c. t - water - I6.4 c.

Phyllopoda:	Acroperus harpae Bajrd.	30%
	Bosmina longirostris (O.F. Müll).	
	Daphnia longispina (O.F. Müll).	
	Daphnia pulex (de Geer).	
Copepoda:	Diaptomus sicilis Forbes.	15%
Rotatoria:	Asplanchna priodonta Gosse.	5%
	Palyarthra platyptera Ehrb.	
Diatoms:	Flagilaria crotonensis Kitton.	10%
	Amphora ovalis Kütz.	
	Cymbella gastroides Kütz.	
	Gomphonema geminatum Agh.	
	Stephanodiscus niagarae Ehrb.	
Chlorophyceae:	Botryococcus brauni Kütz.	10%
	Tetraspora explanata Kütz.	
	Crucigenia rectangularis (Näg).	
	Coccystis solitaria Wittz.	
	Pediastrum boryanum Menegh.	
Myxophyceae:	Chroococcus limneticus Lemm.	
Flagellata: etc.	Dinobryon sertularia Ehrb.	30%
	Ceratium hirundinella O.F. Müll.	
	Peridinium tabulatum Ehrb.	

The following tables give the dates and times of day at which collections were made upon Annette, Beauvert and Edith Lakes. In each lake more than one spot was chosen and the different position are known as stations and each given a number. With each is given the depth in metres at which the sample was taken, the temperature at that depth and the total amount of plankton obtained expressed in cubic centimetres of plankton per 100 litres of water filtered: the cubic centimetres being estimated by the method explained previously.

Annette Lake.

Station No	Date	Depth	t° c.	C.C. in 100 Cb.	Station No	Date	Depth	t° c	C.C. in 100 Cb.	Station No	Date	Depth	t° c.	C.C. in 100 Cb.	Station No	Date	Depth	t° c.	C.C. in 100 Cb.	Station No	Date	Depth	t°c.	C.C. in 100 Cb.
1	4.-VII 2.P.M.	0	22.3	0.60	2	5-VII 10. A.M.	15	12.0	0.40	7.	16.-VII 10.45 A.M.	12	13.8	0.25	2	20-VII 12 P.M	6	16.4	0.50	1.	2.-VIII 3. P.M.	4	15.8	0.40
—	—	1	20.5	0.50	+	—	19	11.2	1.00	—	—	15	13.5	0.20	—	—	8	15.	0.40	—	—	6	15.6	0.50
—	—	2	20.3	0.40	—	—	22	11.2	1.20	—	—	18	13.	0.20	—	—	10	14	0.45	—	—	8	15.6	0.70
—	—	4	19.8	0.30	2	5.-VII 12. P. M.	0	19.3	0.60	—	—	20	11.95	0.25	—	—	15	13.	0.50	—	—	10	14.9	0.65
—	—	6	19.2	0.40	—	—	1	19.6	0.40	2.	20-VII 11. A.M.	0	17.5	0.20	3.	26-VII 11. A.M.	0	17.5	0.30	—	—	12	14.8	0.70
—	—	8	18	0.40	—	—	2	19.3	0.30	—	—	1	17.	0.15	—	—	1	17.4	0.30	—	—	15	14.8	0.90
—	—	10	16	0.60	—	—	3	18.6	0.40	—	—	2	16.8	0.20	—	—	2	17.4	0.40	—	—	19	12.6	0.80
—	—	15	14	1.00	—	—	5	16.5	0.40	—	—	4	16.6	0.25	—	—	4	17.	0.20	1	2.-VIII 1. A.M.	0	16.	0.80
—	—	20	11.5	1.20	—	—	10	14.0	0.40	—	—	6	16.4	0.25	—	—	6	15	0.30	—	—	1	15.9	0.80
2	5-VII 10. A.M.	0	19.6	0.75	—	—	15	12.0	0.40	—	—	8	15.	0.25	—	—	8	15	0.40	—	—	2	16.5	0.50
—	—	1	19.3	0.40	—	—	20	11.5	0.40	—	—	12.	15.5	0.30	—	—	10	14	0.40	—	—	4	16.	0.60
—	—	2	18.5	0.30	7.	16.-VII 10.45 A.M.	0	18.1	0.25	—	—	16	14	0.40	—	—	12	14	0.40	—	—	6	15.6	0.80
—	—	4	17.2	0.30	—	—	1	18.	0.20	—	—	20	13.1	0.70	—	—	15	13.9	0.90	—	—	8	15.5	0.70
—	—	6	15.3	0.20	—	—	2	17.8	0.20	2	20.-VII 12. P. M.	0	13.5	0.40	—	—	20	13.6	1.20	—	—	10	15.5	0.60
—	—	8	14.3	0.20	—	—	4	17.4	0.20	—	—	1	16.8	0.40	1	2-VIII 3. P. M.	0	16.7	0.40	—	—	12	15.	0.50.
—	—	10	14.0	0.30	—	—	6	15.	0.20	—	—	2	16.9	0.50	—	—	1	16.1	0.40					
—	—	12	13.1	0.30	—	—	8	14.9	0.20	—	—	4	17.	0.50	—	—	2	16	0.35					

Annette Lake.

Stat. №	Date	Depth	t°c.	cc per 100 lt.	Stat. №	Date	Depth	t°c.	cc per 100 lt
1	9-VIII 7 P.M.	0	16	0.3.	2	18-VIII 12 noon	14	12.8	1.1.
—	—	1	15.8	0.3	—	—	18	12.8	1.0
—	—	2	15.8	0.3	2	30-VIII. 6 P.M.	0	17.5	0.8
—	—	4	15.8	0.4	—	—	1	17.6	0.8
—	—	6	15.7	0.5	—	—	2	17.9	1.1
—	—	8	15.2	0.8	—	—	4	17.4	1.0
—	—	10	15.1	0.7	—	—	6	16.9	1.0
—	—	12	15.	0.6	—	—	8	16.	0.8
—	—	14	14.5	0.6	—	—	10	15.2	0.8
2	18-VIII 12 noon	0	16.2	0.6	—	—	12	15.1	0.8
—	—	1	15.8	0.5	—	—	16	14	0.8
—	—	2	15.6	0.5	—	—	20	12	0.8
—	—	4	15.5	0.4					
—	—	6	15.4	0.4					
—	—	8	14.9	0.4					
—	—	10	13.5	1.2					
—	—	12	12.8	1.5					

Beaumert Lake.

Stat. №	Date	Depth	t°c	cc in 100 lt.	Stat №	Date	Depth	t°c	cc. in 100 lt.	Stat. №.	Date	Depth	t°c.	cc per 100 lt
1	6-VIII 6 P.M.	0	19.2	0.4	2	21-VIII 3 P.M	0	16	0.2	1	10-VIII. 12 noon	0	15.6	0.4.
—	—	1		0.5	—	—	1	15	0.15	—	—	1	14.6	0.3
—	—	2		0.4	—	—	2	14.9	0.15	—	—	2	14.	0.3
—	—	3		0.6	—	—	4	14.2	0.15	—	—	4	13.8	0.3
—	—	5		0.65	—	—	6	14	0.2	—	—	6	13.5	0.3
—	—	7		0.65	—	—	8	13.9	0.4	—	—	8	12.3	0.3
—	—	9		0.35	—	—	10	13.8	0.7	—	—	12	11.0	0.3
—	21-VII 1 P.M.	0	16.	0.35	1	4-VIII. 4 P.M	0	13.9	0.3	—	—	14	10.8	0.3
—	—	1	15	0.3	—	—	1	13.9	0.3	—	—	16	10.	0.6
—	—	2	14.9	0.2	—	—	2	13.9	0.3	—	—	17	8.0	1.0
—	—	4	14.2	0.15	—	—	4	13.8	0.5	—	—	19	6.2	2.5
—	—	6	14	0.10	—	—	6	13.3	0.8	—	21-VIII 1 P.M	0		0.5
—	—	8	13.9	0.2	—	—	8	11.9	0.7	—	—	1		0.6
—	—	10	13.8	0.6	—	—	10	11.2	0.6	—	—	4		0.6
—	—	12	13.5	0.5	—	—	12	10.9	0.6	—	—	8		0.6
—	—	15.	13.	0.5.	—	—	14	10	0.6	—	—	12		0.6
										—	—	14		0.7.

1/11

Edith Lake

Station No	Date	Depth	t°c	c.c. in 100 cu	Station No	Date	Depth	t°c	c.c. in 100 cu	Station No	Date	Depth	t°c	c.c. in 100 cu	Station No	Date	Depth	t°c	c.c. in 100 cu	Station No	Date	Depth	t°c	c.c. in 100 cu
1	8-VIII 4 P.M.	0		0.40	1	28-VII 8 P.M.	0	16.70	0.90	2	6-VIII 12 noon	0	15.7	0.50	1	11-VIII 7 P.M.	0	15.4	0.80	1	18-VIII 5 P.M.	0	16.6	0.60
—	—	1		0.20	—	—	1	16.80	0.70	—	—	1	15.6	0.50	—	—	1	15.6	1.00	—	—	1	16.00	0.60
—	—	2		0.15	—	—	2	16.80	0.60	—	—	2	15.6	0.30	—	—	2	15.6	0.80	—	—	2	15.8	0.60
—	—	4		0.20	—	—	4	16.00	0.70	—	—	4	15.5	0.30	—	—	4	15.6	0.70	—	—	4	15.6	0.60
—	—	6		0.20	—	—	6	16.00	0.70	—	—	6	15.4	0.30	—	—	6	15.4	0.60	—	—	6	15.6	0.70
—	—	8		0.20	—	—	8	15.9	0.70	—	—	8	15.4	0.30	—	—	8	15.4	0.60	—	—	8	15.3	1.25
—	—	10		0.35	—	—	10	15.8	0.70	—	—	12	15.	0.40	—	—	10	15	0.60	—	—	10	15.2	2.25
—	—	15		0.40	—	—	14	15.00	0.80	—	—	14	14.5	0.70	—	—	12	14.4	0.60	—	—	12	15.1	1.75

P Y R A M I D L A K E .

This lies 4 miles north of Jasper, is a lasge lake ,about 2 miles long and 20 mt. deep. pH - 6.2. The plankton of Pyramid Lake is richer, than that of the other lakes examined. This lake is a typical alpine lake with clear water and an inlet and outlet creeks. Pyramid Lake is the only lake in Jasper Park, in which the lacustrine form of the Grayling (Thymallus signifer) is found. Lake - Trout (Cristivomer namaycush) are also present. The following table shows the temperature and volumes of plankton in cc. per I00 litres of water at different depths of Pyramid Lake .

The plankton of Pyramid Lake is characterised by a large percentage of Phyllopoda (I5 species). The following species, which are absent from the other lakes examined, were found.

Latona stifera.

Bosmina longirostris var. brevicornis.

Trachelomonas sp.

Rhizolenia morsa.

Synedra ulna var. danica.

Tabellaria fenestrata var. asterionelloides.

Campylodiscus hibernicus var. noricus.

Staurastrum gracile.

Gloeocystis infusionum.

Anabaena flos-aquae.

The very interesting species Leptodora kindtii, which occurs also in Annette Lake, was found in Pyramid Lake in quite large numbers. The great quantity of such important fish food as Daphnia pulex, Diphanosoma, Bosmina, Diaptomus etc., shows, that Pyramid Lake is naturally one of the best lakes for fish near Jasper.

Pyramid Lake.

Station No	Date	Depth.	t° c.	C C. per 100 lts.	Station c/o	Date	Depth.	t° c	C C. per 100 lts.	Station c/o.	Date	Depth.	t° c.	C C. per 100 lts
1.	14-VII. 4.30 P.M.	0	19.6	0.8	2	29-VII 8 P.M.	0	14.5	1.40	1.	12-VIII 4.30 P.M.	0		1.25
—	—	1	19.5	0.9	—	—	1	15.0	1.70	—	—	1.		1.10
—	—	2	19.5	0.9	—	—	2	15.6	1.25	—	—	2		0.90
—	—	4	18.	0.90	—	—	4	16.0	1.90	—	—	4		1.100
—	—	6	18.1	0.90	—	—	6	16.1	1.90	—	—	6		1.00
—	—	8	17.6	0.90	—	—	8	16.0	2.30	—	—	8		1.00
—	—	10	17.0	1.00	—	—	10	15.5	2.00	—	—	10		1.00
—	—	12	16.2	1.00	—	—	12	15.0	1.80	—	—	12		1.00
—	—	14	16.0.	1.20	—	—	14	14.5	1.75	—	—	14		1.00
—	—	20	14.9	1.00	—	—	16	14.0	1.70					

The following sample is characteristic for Pyramid Lake.

26-VII- 26. 9 p.m. Air t - I0.5 c. Water t - I6.2 C.

Phyllopoda:	Diaphanosoma leuchtenbergianum. Fish	10%
	Leptodora kindtii (Focke).	
	Daphnia pulex (de Geer).	
	Daphnia longispina (O.F. M.)var.hyalina form. mendotae.	
	Bosmina longirostris (O.F. M.)var. brevicornis	
Copepoda:	Diaptomus tyrelli Poppe.	15%
	Diaptomus sicilis Forbes.	
	Cyclops viridis americanus Marsh.	
	Cyclops bicolor Sars.	
	Cyclops fimbriatus Fish.	
	Nauplius stadia.	
Rotatopia:	Anuraea cochlearis Ehrb.	5%
	Notholca longispina Kellicot.	
Diatoms:	Asterionella formosa Haas.	25%
	Fragilaria crotonensis Kitton.	
	Fragilaria capucina Desmaz.	
	Cocconema lanceolatum Ehrb.	
	Navicula sp.	
Chlorophyceae:	Botryococcus brauni Kütz.	5%
	Cocjstis solitaria Wittr.	
Myxophyceae:	Anabaena flos-aquae Breb.	
	Crococcus limneticus Lemm.	
Flagellata: etc.	Ceratium hirundinella O.F. Müll.	40%
	Dinobryon sertularia Ehrb.	
	Dinobrion stipitatum Stein.	
	Codonella lacustris .	

PATRICIA LAKE.

This lake is situated 4 miles from Jasper, about I½ mile long and 30 meters deep.(maximum depth near North end of lake is 45 mts.). Water clear, pH 8. 2.The plankton of this lake is very similar to that of Pyramid Lake. It also has: Diaphanosoma leuchtenbergianum, Daphnia longispina, Daphnia pulex and many of the same species that are found in Pyramid Lake. It is remarkable, that the dominant species here is Fragilaria crotonensis. The following sample is characteristic for Patricia Lake.

26-VII-26. 5. 30 P.M. North part near shore.

Phyllopoda:	Diaphanosoma leuchtenbergianum Fish.	5%
	Daphnia pulex (de Geer).	
	Daphnia longispina (O.F. M.)	
Copepoda:	Diaptomus tyrelli Poppe.	10%
	Diaptomus sicilis Forbes.	
	Cyclops bicuspidatus Claus.	
	Cyclops fimbriatus Fish.	
	Nauplius stadia.	
Rotatoria:	Anuraea cochlearis Gosse.	
Diatoms:	Fragilaria crotonensis Kitton.	75%
	Epithemia argus Kütz.	
	Asterionella formosa Hass.	
Myxophyceae:	Lyngbia major Menegh.	10%
	Crococcus turgidus (Kütz).	
	Nostoc commune Vauch.	
Clorophyceae:	Mougeptia calcarea Wittr.	
	Staurastrum logiradiatum W.& G. West.	
Flagellata:	Ceratium hirundinella O.F. M.	

C A L E D O N I A L A K E .

This is 4 miles from jasper and about ¾ mile x 200 yards, pH 8.2 This lake is fairly deep (about I2 mts), with water not so clear as Annette,Edith,Beauvert and Pyramid Lakes and is full of Rainbow Trout, which grow to a length 32 - 34 cm.

The plankton of this lake is very rich and characteristic. There have been found six species of Staurastrum and five species of Cosmarium, a genus which is not abountdant in the other lakes.

The following species are very common in this lake:

Tabellaria fenestrata;

Staurastrum leptocladum;

Zygnema pectinatum;

Spirogyra crassa,

and we may also note,though less common Fragillaria capucina and Notholca longispina.

It is very interesting to note the absence of Anuraea cochlearis, which is widely distributed in many other lakes, Diaptomus sicilis and Diaptomus tyrelli.The last genus is represented by Diaptomus leptopus (not common in Jasper Park.

The following sample is characteristic for Caledonia Lake.

C A L E D O N I A L A K E.

17 - VIII - 1926. 4 P. M. Surface. (near outlet creek)
t air - 19.8 c. t - water - 18.5 c.

Copepoda:	Diaptomus leptopus Forbes.	
	Cyclops bicolor Sars.	10%
	Cyclops fimbriatus Fosh.	
Rotatoria:	Notholca longispina Kellie.	
Diatoms:	Tabellaria fenestrata Kütz.	10%
	Navicula viridis Kütz.	3%
	Stephanodiscus niagarae Ehrb.	
	Asterionella formosa Hass.	50%
	Fragilaria capucina Desm.	2%
	Epithemia argus Kütz.	
Chlorophyceae:	Spirogyra sp.	
	Zygnema pectinatum (Vauch).	
	Cosmarium granatum Breb.	
	Cosmarium botrytis Menegh.	
	Botryococcus brauni Kutz.	
	Tetraspora gelatinosa (Vauch).	25%
	Staurastrum leptocladum Nordst.	
Myxophyceae:	Crococcus dispersus Lemm.	
	Crococcus limneticus Lemm.	
Flagellata:	Ceratium hirundinella O.F. Müll.	
	Dinobryon sectularia Ehrb.	

H I B E R N I A L A K E .

This lake is very poor in plankton. It is situated about 4 miles from Jasper. The water in this lake is very clear; pH 6. 2 The plankton fauna is not so rich as that of Annette Lake, but certain Rotatoria (Anuraea, Asplanchna, Diplois, Monostyla, Ploesoma Polyarthra and Pterodina) are quite common in both these waters. Not many samples were taken from this lake. The following sample is characteristic for Hibernia Lake.

22 - VII - 26. 4 P.M. S.E. end near shore.

Phyllopoda:	Diaphanosoma leuchtenbergianum Fish.	20%
Copepoda:	Cyclops phaleratus Koch.	
	Cyclops bicolor Sars.	25%
	Stadia nauplius.	
	Diaptomus sicilis Forbes.	
Rotatoria: A	Asplanchna priodonta Gosse.	30%
	Anuraea cochlearis Gosse.	
	Anuraea aculeata Ehrb.	5%
	Ploesoma sp.	
Diatoms:	Cocconema lanceolatum Ehrb.	
	Amphora ovalis Kutz.	5%
	Navicula sp.	
	Synedra ulna v. splendens(Kutz).	
Chlorophyceae:	Botryococcus brauni Kutz.	3%
Myxophyceae:	Groococcus limneticus Lemm.	
Flagellata:	Ceratium hirundinella (O.F. M.)	I2%

B U F F A L O P R A I R I E L A K E .

This pool, formed by a beaver dam, is still increasing in size. It has inlet and outlet creeks, clear water and is a favourite resort for tourist fishermen from Jasper in search of Rainbow Trout (Salmo irideus).

Buffalo Prairie Lake is situated about IO miles from Jasper, is about 400 yards in diameter and approximately circular and 4 metres deep. The water in this lake is not very cold and consequently it has a very rich vegetation (Myriophyllum, Ceratophyllum, Potamogeton etc.), which covers the bottom and near the shore there is a growth of littoral vegetation (Polygonum amphibium etc.). The quantity of submerged aquatics has a great influence on the character of the plankton and other water organisms: indeed we find there a very interesting association of forms, Moina sp., Sida crystallina and Eurycercus lamellatus. The last is particularly noteworthy since while it has not been taken in the plankton, it is extraordinarily abundant in the stomach contents of the fish. Diaptomus sicilis here is larger than in other lakes. Both species of Anuraea i.e. aculeata and cochlearis and large numbers of diatoms were obtained.

The following sample is characteristic for Buffalo Prairie Lake.

22-VII-26. 3P.M. Middle of Lake. Air T 20 C. Surface I8 C.

Phyllopoda: Daphnia longispina O.F. Müll.
Bosmina longirostris (O.F. Müll).
Sida crystallina (O.F. Müll.)
Diaphanosoma leuchtenbergianum Fish.

Copepoda: Diaptomus sicilis Forbes.
Cyclops ater Herrick.
Cyclops viridis americanus Marsh.

Rotatoria: Anuraea cochlearis Gosse.
Polyarthra platyptera Ehrb.

Diatoms: Stephanodiscus niagarae Ehrb.
Amphora ovalis Kütz.
Epithemia turgida Kütz.
Myxophyceae: Chroococcus limneticus Lemm.
Nostoc verrucosum (Lemm.)
Chlorophyceae: Cosmarium botrytis Menegh.
Botryococcus brauni Kütz.
Zygnema sp.
Flagellata: Dinobryon sertularia Ehrb.
Ceratium hirundinella O.F. Müll.

Several lakes round Jasper, formed by beaver dams, as Beaver dams near Old Fort Point, Beaver Lake near Medicine and other, are very like Buffalo Prairie Lake.

S U M M I T L A K E S.

These are two very interesting, small and very shallow lakes, situated at an altitude of 5000 feet, containing few species, but these in great numbers. This is the only one place in Jasper Park, where Diaptomus eiseni and Branchipus sp. were found. The depth of these lakes is about 2 or 3 feet in summer and the temperature of the water is subject to great diurnal variation.

The following sample was taken from Summit Lake 14-VIII-26. P.M.

Diaptomus eiseni Lilljeb.
Diaptomus tyrelli Poppe.
Nauplius stadia.
Daphnia pulex (de Geer).
Chroococcum infusionum Rab.
Nostoc commune Vauch.
Ceratium hirundinella O.F. Müll.

MALIGNE AND MEDICINE LAKES.

These two lakes are the largest examined and of great interest to the hydrobiologist. They are drained by the fine Maligne River, but contain no fish. Geologically they may be very young. The upstream route to them is barred by Maligne Canyon and the underground portion of the river near Medicine Lake. The plankton of these two lakes is very similar, but Maligne Lake is very much richer than Medicine. They yielded one species of rotifer (Triarthra sp.), which was not specifically determined and which is absent from all samples from the other lakes of Jasper Park. The most abundant plankton organisms here are: Stephanodiscus niagarae and Asterionella formosa. Dinobryon stipitatum not uncommon, the species being absent from Beauvert, Mildred, Edith and Trefoil Lakes. One Rotatorian, other than the form noted above Polyarthra platyptera was observed in Maligne Lake. In both lakes Diaptomus sicilis very abundant. In Maligne Lake Diaptomus ashlandi has been found also, but in very small numbers. Daphnia longispina and Daphnia pulex are also quite common in Maligne Lake. The water of these lakes is not clean, (Secchidisk about I - 2 mt. in Maligne Lake), they contain, however, a plentifull supply of potential fish food in the form of Amphipoda, Phryganidae and Ephemeridae larvae, Molluscs and plankton. They seem well suited to the requirements of Salvelinus fontinalis. The following tables shows the temperature, and volumes of plankton in cc. into 100 liters of water.

Maligne Lake.

Station No	Date	Depth in m.	t°C.	C.C. per 100 ltr	Station No	Date	Depth in m.	t°C.	C.C. per 100 ltr	Station No	Date	Depth in m.	t°C	C.C. per 100 ltr.
1.	11-VIII 2.30 P.M.	0	18.6	0.80	2.	12-VIII 4.P.M.	0	12.5	0.80	3.	13.VIII 3.P.M.	0	11.8	0.80
—	—	5	10.8	1.00	—	—	5	10.3	0.60	—	—	1	11.7	0.60
—	—	10	8.1	0.60	—	—	10	9.1	0.60	—	—	2	11.6	0.70
—	—	20	5.7	0.50	—	—	15	8.0	0.60	—	—	3	11.2	0.60
—	—	30	4.9	0.30	—	—	20	6.7	0.60	—	—	4	10.0	0.50
—	—	40	4.9	0.30	—	—	25	5.8	0.50	—	—	5	9.5	0.50
—	—	50	4.8	0.30	—	—	30	5.2	0.40	—	—	6	9.0	0.60
—	—	60	4.7	0.30	—	—	35	5.2	0.30	—	—	7	8.00	0.60
—	—	70	4.2	0.30	—	—	40	4.9	0.30	—	—	8	7.5	0.60
—	—	80	4.0	0.30	—	—	50	4.5	0.30	—	—	9	7.	0.50

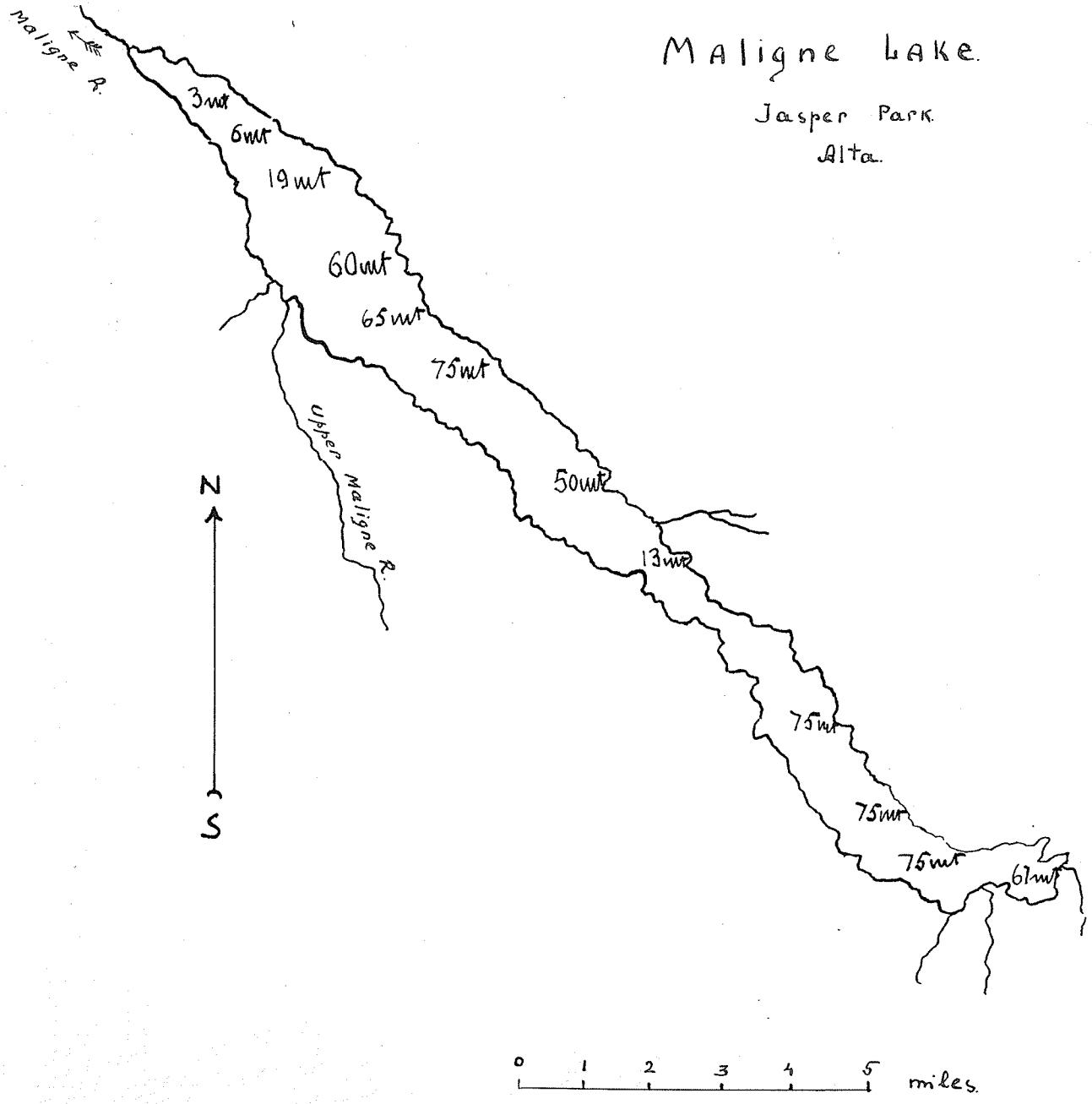
A characteristic sample from Maligne Lake.

M A L I G N E L A K E .

I2 - VIII - I926. IO A.M. Surface. (Midlle of lake).

t air - I9 c. t - water - I5 c. Baromet. 630mm.

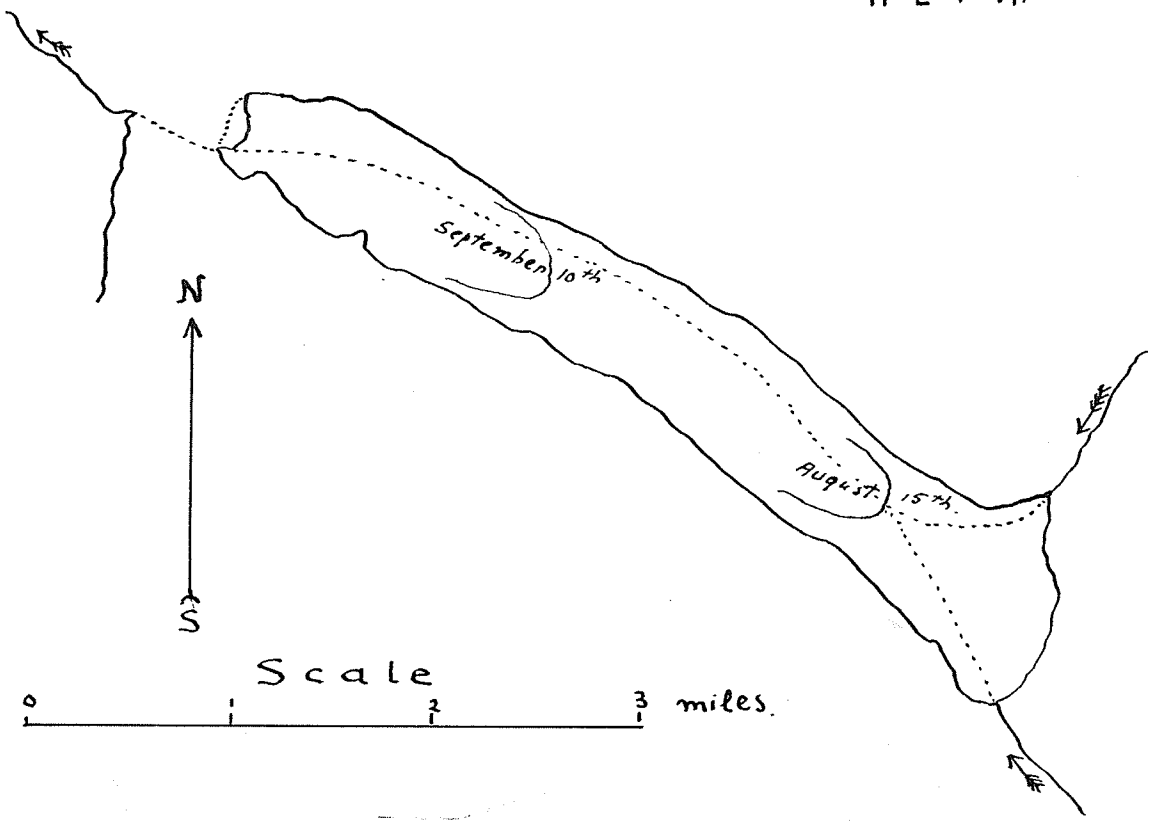
Copepoda:	Diaptomus sicilis Forbes.	45%
	.Nauplius stadia.	IO%
	Cyclops fimbriatus Fish.	5%
Phyllopoda:	Daphne pulex (de Geer).	5%
Rotatoria:	Polyarthra platyptera Ehrb.	5%
Diatoms:	Asterionella formosa Hass.	5%
	Stephanodiscus niagarae Ehrb.	I5%
	Flagilaria crotonensis Kitton.	
Myxophyceae:	Chroococcus turgidus (Kützs).	5%
Chlorophyceae:	Botryococcus brauni Kützs.	
	Cosmarium granatum Breb.	
Flagellata:	Dinobryon stipitatum Stein.	5%
	Dinobryon sertularia Ehrb.	
	Ceratium hirundinella O.F. Müll.	


Maligne Lake
Jasper Park
Alta.
Maligne R.
3mi
6mi
19mi
60mi
65mi
75mi
50mi
13mi
75mi
75mi
75mi
61mi
Upper Maligne R.
N
S
0 1 2 3 4 5 miles.

MEDICINE LAKE

JASPER PARK

ALTA.



J A C Q U E S L A K E.

This small lake is situated at an altitude of 4750 feet. The water is not very clear and it is full of Dolly Varden Trout (Salvelinus alpinus malma Walb.).There is one large outlet creek and several inlet creeks.

The plankton of this lake is quite rich considering the coldness of the water. Great numbers of Daphnia pulex occur in autumn and Aphanothece microscopica is a characteristic summer form. Not very many species of plankton organisms are present, but followig species are very abundant.

Phyllopoda:	Daphnia pulex (de Geer).	~ 40 %
	Chydorus sphaericus (O.F. Müll).	25 %
Copepoda:	Cyclops bicolor Sars.	
	Nauplius stadia.	
Rotatoria:	Anuraea aculeata Ehrb.	
Diatoms:	Navicula elongata Grun.	
	Navicula viridis Kütz.	
	Cymbella cuspidata Kütz.	
Myxophyceae:	Aphanothece microscopica Näg.	30 %
Flagellata:	Ceratium hirundinella O.F. Müll.	5 %

The following table shows temperature of water and volums of plankton in different depths in cc. per 100 liters.

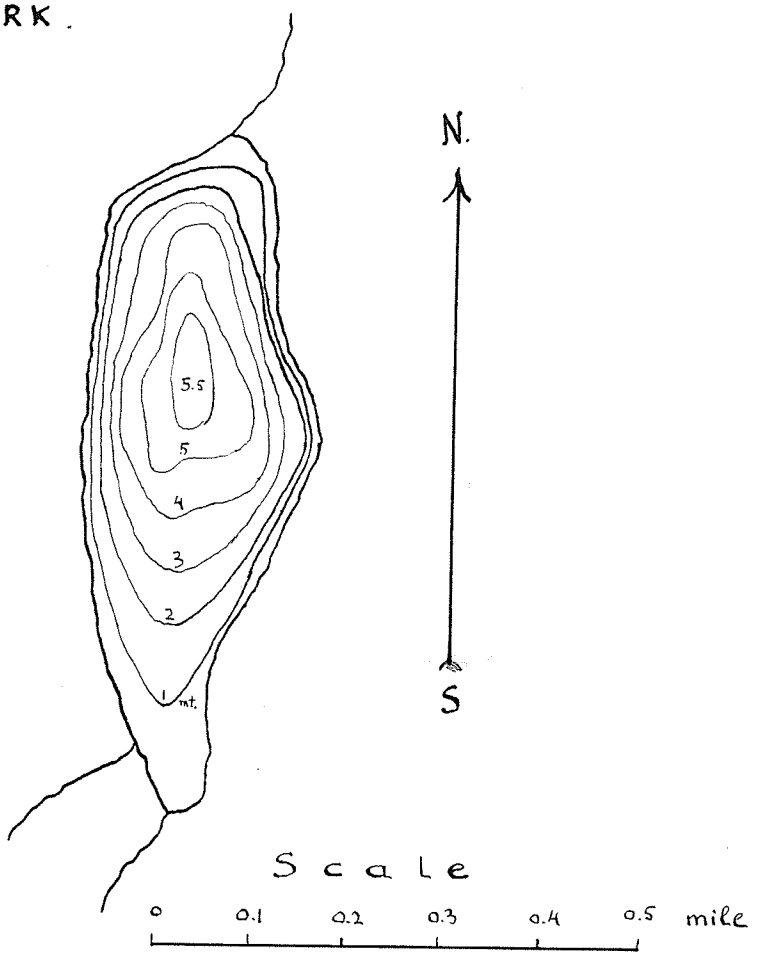
Jacques Lake

Station no	Date	Depth in mt.	t° c	c.c. per 100 lt	Station no	Date	Depth in mt.	t° c	c.c. per 100 lt	Station no	Date	Depth in mt	t° c	cc per 100 lt
1	6-VIII 1 PM	0	11.0	0.80	1	6-VIII 6 PM	0	11.0	1.00	1	7-VIII 1 AM.	0	10.3	0.60
—	—	½	10.5	0.40	—	—	½	10.5	1.00	—	—	½	10.4	0.60
—	—	1	10.3	0.60	—	—	1	10.2	0.80	—	—	1	10.6	0.80
—	—	1½	10.0	0.60	—	—	1½	10.0	0.70	—	—	1½	10.5	0.80
—	—	2	9.8	0.60	—	—	2	9.9	0.70	—	—	2	10.5	0.80
—	—	2½	9.6	0.60	—	—	2½	9.7	0.60	—	—	2½	9.3	0.80
—	—	3	9.5	0.70	—	—	3	9.5	0.60	—	—	3	9.1	0.80
—	—	3½	9.0	1.00	—	—	3½	9.2	0.60	—	—	3½	9.1	0.80
—	—	4	8.4	1.40	—	—	4	9.0	0.70	—	—	4	9.	0.70
—	—	4½	8.3	1.40	—	—	4½	9.1	0.70	—	—	4½	9.	0.70

JACQUES LAKE

JASPER PARK.

ALTA.



List of species.

The following list does not claim to be exhaustive but it contains all the common forms and all the striking or readily identifiable species that were obtained during the summer months. As little is known of the biology of this area notes have been added in some instances.

A R T H R O P O D A .

Class Crustacea.

ORDER COPEPODA.

Family Centropagidae.

Diaptomus sicilis Forbes.

This is the commenest species of Diaptomus in the lakes of Jasper Park. It is plentiful in many lakes .It was found in all parts of most lakes and in Maligne Lake at a depth of about to 80 mt. The straight slender process on the antepemultimate segment of the right antenna of the male varies greatly in size, but always nearly equals penultimate segment .It lives mostly in depths from 2 to 12 meters. Males occur in spring and autumn. In Annette Lake during the summer only a few males were found. In Maligne and Medicine Lakes males probably occur all through the summer. Colour red, but not so bright red as Diaptomus tyrelli. Length of female 1.1mm., male about 0.9-1mm. Diaptomus sicilis from Jasper Park differs from Diaptomus sicilis from Quill Lakes (Sask.) in its smaller size, coloration and the armature of feet.

Diaptomus ashlandi Marsh.

This Diaptomus was found only in Maligne Lake. It is not so common as previous species. Colour pink, size smoller than Diaptomus sicilis.

Male-0, 8-09. Female-0, 9-Imm.

Diaptomus tyrelli Poppe.

This species, which is widely spread in the Rocky Montains occurs nearly everywhere in Jasper Park. It absent in the highest Lakes Maligne and Medicine, but occurs in Summit Lakes (altitude 5000). Probably this is the limit of altitude for this Diaptomus in Jasper Park.

Length of male, generally, about I.I5 mm, Herrick and Turner desribe a species from Summit Lake Cal. (altitude 5.300 feet) of moderate size I.9 mm. In Jasper Park (Beauvert Lake) the size is the same. Coloration very bright red. On bright, still days in the deep blue water, this species seems black. Males and females are to be found throughout the summer, but egg bearing females only in spring. Distribution from surface to I4 mt. Mostly in depth from 5 to IO mt.

Diaptomus eiseni March.

This, one of the largest species of Diaptomus, is only known from California (Centreville) and Nebraska. It has not been previously recorded from Canada, In Jasper Park occurs only in one lake. (Summit Lake), on the route from Medicine to Jacques Lake, altitude about 5.000feet. It differs from D. eiseni from California in the one jointed endopodite of the fifth foot of the male. Colour dark red, lenght of female 3 - 3.5 mm, male 2.75 - 3 mm. Found at middle of August associated with Branchipus sp. In August the females had 4 - 5 green eggs in their egg sacs.

Diaptomus leptopus Forbes.

This species, widely distributed in the small lakes of North America, occurs in Jasper Park and its colour is violet blue with red. Length I.5 - I.7 mm. In June and July females with

eggs were taken. The hyaline lamella of the antepenultimate segment of the right antenna of the male is not broad, its width about $\frac{1}{4}$ the width of the segment. Ratio of males to females in August about 50:50.

Diaptomus shoshone Forbes.

This species is not so widely spread in Jasper Park as Diaptomus tyrelli. It has been found in small numbers only in Pyramid Lake and Beauvert Lake together with D. tyrelli. Colour bright red. Length 2.5mm.

Family Cyclopidae.

Cyclops bicolor Sars.

Quite common in lakes of Jasper Park during all the summer months. It was found often at considerable depths. No females with eggs were observed during the summer.

Cyclops viridis americanus Marsh. (C.brevispinosus Herrick. 1884.). This widely distributed species has been found in several lakes in Jasper Park. Its limnetic form occurs in the plankton from Annette, Beauvert and other lakes.

Cyclops bicuspidatus Claus.

This species occurred in Annette, Beauvert and Patricia Lakes. In Annette and Beauvert females, with eggs were found in June.

Cyclops fimbriatus Fisher.

This small Cyclops, with eight jointed antennae occurs in considerable numbers in nearly all the lakes of Jasper Park.

Cyclops phaleratus Koch.

This big, stout species has been found along the shores of several lakes of Jasper Park. It is not very common.

Cyclops prasinus Fisher.

This species has been found only in Maligne Lake. Probably it is

present in other Lakes in Jasper Park.

Cyclops serrulatus Fisher.

This species widely distributed throughout the world, was found in Jasper Park only in plankton from Beauvert Lake and them was not common. Probably this altitude is the limit for this species.

Cyclops leuckarti Claus.

Occurs in Beauvert and Pyramid Lakes. In July females with eggs were collected.

Cyclops ater Herrick.

This rare american species occurs in Jacques and Buffalo Prairie Lakes. It is not common in Jasper Park.

Cyclops albidus Jurine.

This species has been found only near shore in Mildred Lake, and Beaver Lake near Medicine. In summer the females were with eggs.

Family Harpacticidae.

Canthocamthus minutus Claus.

A few individuals of this copeped were found near shore among water plants in a number of the lakes . In Annette Lake during the whole summer it was found only once or twice, but in the stomach contents of Catostomus catostomus lacustris from this lake, it was plentiful. In the alimentary canals of several fish the number of Canthocamtus minutus was more than 100 or 200.

O R D E R O S T R A C O D A .

Family Cypridinae.

Cypris americanus. Cush.
This species was found along the shore in small numbers in Pyramid and Beaver Lake near Medicine Lake. It probably occurs in other lakes in the Park.

Cypris virens Jurine.
This was collected from very small shallow pond about 5 meters from the shore of Maligne Lake (upper end, altit. 5550 feet, not far from a glacier) and also in Jacques Lake near the shore. In those places it was very common in August.

Cypris fuscata Jurine.
This common ostracod, was found in Caledonia Lake and in several small ponds and swamps near Jasper.

Physocypria pustulosa Sarpe.
This species was collected in small numbers in a little pond near Edith Lake in July.

Family Candonidae.

Candona sp.
One large green species was collected by Mr. A. Mozley in a swamp on the shore of the Athabaska River near mouth of Maligne River.

O R D E R P H Y L L O P O D A .

At least 33 species and varieties of these Crustacea have been found in the different lakes. It is very interesting, to npte the complete absence in Jasper Park of the genera Holopedium, Streblocerus and Illyocryptus. The common genera are Alona, Daphnia, Bosmina and Diaphanosoma.

Family Sididae.

Sida crystallina (O.F. Müller).

This sedentary form is quite common at end of August in Buffalo Prairie Lake near the shore and on the water plants It occur also in the bays of the outlet creek, and probably is of importance as food for young Rainbow trout.

Latona setifera (O.F. Müller).

This phyllopod has been observed once in plankton from Pyramid Lake. Very rare in Jasper Park.

Diaphanosoma leuchtembergianum Fisher.

This typical plankton species is widelly distibuted in the Lakes of Jasper Park. It occurs in great numbers in deep water samples from Pyramid and Annette Lakes. Also it occurs near shore in Pyramid and in the shallow Buffalo Prairie Lake.

Diaphanosoma brachyurum (Lievin).

This species is not common in the Park. It is found in small numbers mostly near the shores.

Family Daphnidae.

Daphnia pulex (de Geer).

This typical plankton phyllopod widelly distributed everywhere, is very common, probably the commonest species in

Jasper Park. It occurs in nearly in all lakes. In the lakes with clear water all the

Daphnia pulex during day times are concentrated near bottom, in the evening they come to the surface. In the lakes with muddy water (Maligne Lake) its distribution is not very deep. It occurs in two forms: one very big and the mother small and often both forms occur together. Throughout the summer the males are fewer that the females. Females with winter eggs did not occur.

Daphnia pulex var. obtusa.

This was collected in great numbers in autumn in Jacques Lake and in small numbers in Patricia Lake.

Daphnia longispina O.F.Müller.

This species was found nearly everywhere in Jasper Park, often associated with Daphnia pulex. During day in very deep places, during night time near surface and in all depths. Several varieties of this species have been found in different parts of Jasper Park.

Ceriodaphnia reticulata (Jurâne).

This species is not common in Jasper Park. It was found in small numbers in Annette Lake, Mildred Lake and Patricia Lake.

Ceriodaphnia megalops Sars.

This species was found only in Beaver Lake near Medicine Lake.

Ceriodaphnia sp.

Young individuals of this species occured in small numbers in Annette and Patricia Lakes.

Moina sp. (rectirostrs)?

A small numbers of young specimens of Moina occured in

plankton from Buffalo Prairie Lake in 1925 and in Small Lake near Mildred in 1926. The genus is not common in Jasper Park.

Simocephalus vetulus (O.F.Müller).

This species widely distributed through the world was found in many small ponds and shallow waters in Jasper Park. It was very common in a small pond near Edith Lake.

Scapholeberis mucronata (O.F.Müller).

This is very common near the shores in Medicine and Maligne Lakes. It occurs also in Buffalo Prairie in small number.

Family Bosminidae.

Bosmina longirostris (O.F.Müller).

This species which is widely distributed in the Northern Hemishire, was collected during the whole summer in many of the lakes at different depths. It has not been found in Maligne, Medicine and Jacgues Lakes. Probably the altitude of these lakes are too high for this species. In Pyramid Lake it has a var. brevicornis.

Family Macrothricidae.

Drepanothrix dentata (Euren).

This species was found in a few samples from Pyramid and Annette Lakes but is not common.

Family Chydoridae.

Eurycercus lamellatus (O.F.Müller).

This cladoceran, distinguished by its long and narrou body, was plentiful in the stomach contents of a number of the specimens of Salmo irideus from Buffalo Prairie Lake and in Leuciscus fgom the Athabasca River in 1925. Otherwise it is not common in the Park. Small numbers this form were

collected in Annette and Edith Lakes and in pond near Edith Lake. Several specimens were found in stomachs of small suckers (Catostomus catostomus lacustris).

Alona costata Sars.

This very abundant species, was found in three places in Jasper Park:(Beauvert L. Pyramid L.and Medicine Lake).Two specimens of this cladoceran, were found in the stomachs of small suckers in Annette Lake.

Alona affinis (Leydig).

This largest speches of the genes occured only in Beauvert and Pyramid Lakes then not common by .

Alona quadrangularis (O.F.Müller).

Collected in small numbers in Annette and Pyramid Lakes, but not common.

Alona guttata Sars.

This species occurred only in Annette Lake but not common.

Alonella nana (Baird).

This rare, smallest member of the family was occasionally found in plankton from Annette and Pyramid Lakes in July and August.

Chydorus sphaericus (O.F.Müller).

This commonest of all the Cladocera, was found in various lakes throughout the summer.

Chydorus sphaericus var. minor (Lill).

This small limnetic variation of the previous species was found in very small numbers only in Maligne Lake (alt.5550) in August.

Chydorus latus Sars.

This was collected from Beaver Lake near Medicine Lake but was .Rare.

Graptoleberis testudiana (Fisher).

Only one individual of this species was observed. It was found near Southern shore of Annette Lake in July.

Kurzia latissima (Kütz).

This species was secured only from one locality, the shallow part of Beauvert Lake near outlet creek.

Pleuroxus striatus Schoedler.

Collected from Beauvert and Small Lake near Mildred during July, August but it was not common.

Family Polyphemidae.

Polyphemus pediculus (LINN.)

This cladoceran was found in several lakes and was very common all along the shore of Medicine and Maligne Lakes in July and August. In shallow lakes the coloration of this species is remarkable: the alimentary tract is bright re red, the eggs deep green, and all body of a yellow colour.

Family Leptodoridae.

Leptodora kindtii (Focke).

This largrst of the cladocera species, was found only in two lakes, Annette and Pyramid and despite careful search it was not found elswhere. During the day this species occurred only in the deepest parts of Annette and Pyramid Lakes, in the evening and night time it came to the surface. The first Leptodora was found in Pyramid Lake 27-VII-26.

R O T A T O R I A .

Family Notommatidae.

Distemma setigerum Ehrb.

This rotifer was found only in Jacques Lake in August. Not common.

Family Dinocharidae.

Dinocharis pucillum Ehrb.

This was found in three localities: Big Trefoil Lake, Caledonia Lake and Beaver Lake near Medicine. Not a rare species.

Family Coluridae.

Colorus grallator Gosse.

This species was observed in several samples from Annette Lake and also found in Hibernia Lake near the shore in August

Cochlearе turbo Gosse.

This small species was found in plankton from Mildred Lake near the shore and among water plants, but was not very common.

Family Ploesomidae.

Ploesoma truncatum Levander.

A form that has the same distribution as Colurus grallator.

Family Asplanchnidae.

Asplanchna priodonta Gosse.

This is very common in many of the lakes in June ,July,August but absent from those in higher altitudes.

Family Euchlanidae.

Diplois daviesiae Gosse.

This species not rare in certain lakes in July and August.

Family Rattulidae.

Rattulus longiseta Shrank.

This species has been found but not commonly in shallow lakes among water plants and near the shore.

Family Pterodinidae.

Pterodina patina Ehrb.

This rotifer has been found in small numbers in Annette and Hibernia Lakes.

Pompholyx complanata Gosse.

Only one specimen of this species and genus was found in Annette Lake during the season.

Family Cathypnidae.

Monostyla lunaris Ehrb.

A few specimens of this species were found during the season in Annette, Pyramid and Beaver Lakes. It is rare.

Distyla inermis Bryce.

This species was found only in Annette Lake.

Cathypna luna Ehrb.

This, widely distributed rotifer has been found only in Edith and Mildred Lake but is not rare.

Family Triarthridae.

Polyarthra platyptera Ehrb.

This is the commonest rotifer in Jasper Park. It was found in great numbers in nearly all lakes. It is very interesting, that this species has not been found in many samples from Pyramid and Caledonia Lakes. In the deep lakes it often occurs

only at considerable depths. In Maligne and Medicine Lakes very small specimens occurred together with the typical form.

Triarthra sp.

This very interesting species with long setae was found at a considerable depth in Maligne Lake, where it is quite common. Also a single specimen of this rotifer was taken in Medicine Lake. The exact species has not been determined.

Family Conochilidae.

Conochilus unicornis Rouss.

This species is very common in Mildred Lake ~~near the outlet~~ but was not found elsewhere. It associated with Polyarthra platyptera. In samples from Mildred Lake near the outlet creek in July it formed about 50% of the total plankton

Family Brachionidae.

Anuraea aculeata Ehrb.

The local distribution of this widely spread species is quite interesting. It was found in Annette Lake and absent in other similar lakes, but occurs in Jacques, Buffalo Prairie, Caledonia and Hibernia Lakes and is not rare.

Anuraea cochlearis Gosse.

This is widely distributed in Jasper Park throughout the summer and probably second only in numbers to Polyarthra platyptera. In several lakes it exhibits a series of variations.

Notholca longispina Kell.

In Pyramid Lake this species has very long spines. It is

common also in Caledonia and Hibernia Lakes.

Notholca foliacea Ehrb.

This species is not common in Jasper Park it was found only in Annete and Pyramid Lakes.

Notholca acuminata Ehrb.

This species has been observed only in Beaver Lake near Medicine and is not common.

F L A G E L L A T A .

Euglena viridis Ehrb.

This infusorian has been found in several samples from Annette,Edith and Big Trefoil Lakes. Probably it is also found in other lakes near Jasper, but it is not common.

Trachelomonas sp. (volvocina?).

Was found only in Pyramid Lake near the outlet creek. Not common in Jasper.

Chlamydomonas pulvisculus Ehrb.

This species was found in Annette and Mildred Lakes. In Annette Lake it was quite rare,but in Mildred not rare during July and August.

Eudorina elegans Ehrb.

This species of world-wide distribution, has been observed only in Beaver Lake near Medicine in August.

Peridinium tabulatum Ehrb.

This species is very common,widely distributed and associated with Ceratium hirundinella.It was found in great numbers in Annette,Edith,Beauvert and Big Trefoil. Probably distributed everywhere in Jasper throughout the summer.

Ceratium hirundinella O.F. Mul.

This is the commonest species of open-water plankton in the lakes of Jasper Park. It has been collected in nearly all lakes in very great numbers. During the day times this organism comes up to the surface, in the night times it sinks down, but usually not deeper than 5 meters. (see plates with vertical distribution). It was not collected from Medicine Lake, but probably it is present there. The maximum abundance of this species in Annette Lake in is at the begining of July and at this time during the day it constitutes nearly 100 % of all surface plankton. The maximum in Edith Lake about two weeks later. No variations or irregularities of this species were observed.

Dinobryon sertularia Ehrb.

This Flagellate is widely distributed in the lakes of Jasper Park and common, but it has not been observed in the following lakes; Beauvert, Edith and Jacques. In Pyramid Lake and Caledonia Lake it occurred in great numbers from the surface to the bottom throughout the summer. The maximum of this species is at the end of July and begining of August.

Dinobryon divergens Imhof.

This is very rare in Jasper Park and has been found only in Pyramid Lake and Maligne Lake, together with the previous species in 1925 and 1926 in July and August.

Dinobryon stipitatum Stein.

This species is quite common in several lakes of Jasper Park. It is distributed in Maligne Lake to a considerable depth.

Other P R O T O Z O A.

Not many species of this group occur in the open water plankton

of the clear montain lakes of Jasper Park since they mostly live near the bottom and among the aquatic vegetation. Only the four following species were observed in free swimming plankton in Jasper Park.

Codonella lacustris - in Big Trefoil Lake and Pyramid Lake. Rare.

Difflugia corona Wallich.- in Maligne Lake. Rare.

Diplochlamis sp.- in Maligne Lake. Rare.

Urocentrum turbo Mull.-in Small Lake near Medicine. Rare.

D I A T O M S .

Family Melosiraceae.

Melosira varians Agardh.

This diatom was present but not very numerous in Pyramid and Beaver Lakes (near Medicine). In the former in all parts of lake.

Melosira sp.

A small number of individuals of this species was observed in Annette Lake.

Family Coscinodiscaceae.

Cyclotella compta Kutz var. affinis Grun.

This pretty little diatom is not very common in Jasper Park. It has been found only in Annette and Big Trefoil Lake. July, August.

Cyclotella antiqua (W Smith).

This has been found only in Caledonia and Beauvert Lakes. Not common.

Stephanodiscus niagaroe Ehrb.

This very common American species is distributed in great numbers in many of the lakes. During day in August it constitutes nearly 100% if all surface plankton. On the other hand

this species is absent from Mildred,Pyramid and Patricia Lakes. The distribution of this species is very remarkable,probably it has not yet penetrated to several lakes of Jasper Park.

Family Rhizolenidaceae.

Rhizolenia morsa W. 9. West.

This species was found in several samples of plankton from Pyramid Lake in I925 and I926.It is not very common and it has not been observed in other lakes.

Family Fragilariacea.

Synedra capitata Ehrb.

This has been observed in a few samples from Annette and Beauvert Lakes,but is not common.

Synedra ulna Ehrb. v. danica (Kutz).

This has been found only in Pyramid Lake and there is rare.

Synedra ulna v. splendens (Kutz).

This species was found in several lakes in Jasper Park,but not common.

Fragilaria capucina Desm.

This species has been found only in Pyramid and Caledonia Lakes in July and August,and is not common.

Fragilaria crotonensis Kitton.

This species,widely distributed in Canada,is very abundant in many lakes of Jasper Park.It composes about 80% of all plankton in Patricia Lake in July.The vertical distribution of this species is very interesting for it occurs at all depths in the lakes in equal quantity during day and night throughout the summer

Asterionella formosa Hass.

This is very abundant in Pyramid,Maligne,Medicine and Caledonia Lakes and not rare in Annette Lake,but absent from Beauvert,Edith

andMildred Lakes.Its vertical distribution resembles that of the previous species.

Family Tabellariaceae.

Tabellaria fenestrata Kutz.

This is also a very common species in Jasper Park.Has been found in Annette,Beauvert,Pyramid Lake.In Caledonia Lake very abundant throughout the summer.

Tabellaria fenestrata v. asterionelloides.

This was found only in Pyramid Lake and there rare.

Tabellaria flocculosa Kutz.

This rare species was found only in Beauvert Lake in August.

Family Nitzschiaeae.

Nitzschia linearis Smith.

This species was obtained only in Buffalo Prairie Lake,mostly near and on the bottons.

Family Surirellaceae.

Campylodiscus hibernicus var. noricus (Ehrb).

This species was found only in one sample from Pyramid Lake, near the Island in the middle of July.

Surirella elegans Ehrb.

This diatom has been observed in several samples from Pyramid and Maligne Lakes.It is distributed in all depths,but it is not common.

Surirella sp.

This was found in Annette and Patricia Lake and perhaps it is simply a variation of the previous species and is not common.

Family Diatomaceae.

Denticula infanta Smith.

This was found only in Maligne Lake in small numbers.

Family Cymbelaceae.

Amphora ovalis Ehrb.

This species has been obtained from nearly all lakes, but in small numbers throughout the summer.

Cymbella gastroides Kutz.

This has been found only in Caledonia Lake.

Cymbella cistula Hemp.

This species has been observed in one sample from Patricia Lake.

Cymbella gastroides var, minor H.V.H.

This was found in Edith, Maligne, Medicine and Patricia Lake, but was not common.

Cymbella cuspidata Kutz.

This was found only in Jacques Lake.

Cymbella prostratum (Ralfs).

This was observed in Beauvert Lake. Not common.

Cymbella cimbiformis v. parva (W. Smith).

Similar to previous species.

Cocconema lanceolatum Ehrb.

This species is not uncommon in Pyramid, Caledonia and Buffalo Prairie Lake and also has been found in Hibernia Lake.

Family Gomphonemaceae.

Gomphonema acuminatum Ehrb.

This has been found in Beauvert Lake in July and August, but is not common.

Gomphonema constrictum Ehrb.

As above.

Gomphonema acuminatum Ehrb. var. coronatum Ehrb.

This species has been observed only in Caledonia Lake in several samples in 1925 and 1926.

Gomphonema geminatum Agh.

This has been taken rarely in Edith Lake.

Cocconeis pediculus Ehrb.

A few individuals occurred in Annette Lake, during July and August.

Family Naviculaceae.

Navicula viridis Kutz.

This species is not rare in Jasper and was found in some both shallow and deep lakes.

Navicula bacillum Ehrb.

Only few individuals were found in deep plankton samples from Maligne Lake when the plankton bucket touched the bottom.

Navicula elliptica Kutz. v. ovalis Hilse.

This was found in plankton and in bottom samples in Jacques and Caledonia Lake.

Navicula cuspidata Kutz.

This is widely distributed in Jasper Park, but is not common.

Navicula gibba Kutz.

Only a few individuals occurred in Annette Lake.

Navicula lyra v. recta Ehrb.

This species was found in Beauvert Lake, but is not common.

Navicula sp.

Several specimens of Navicula were found in Annette and Jacques Lake and have not been specifically identified.

Pleurosigma attenuatum W. Smith.

This species is widely distributed everywhere and has been observed in small numbers in the plankton from Pyramid Lake, during

July and August.

Pinnularia viridis Smith.

This species is rare in Jasper. It was found in small numbers in a Small Lake near Mildred in July. One individual was found in Annette Lake.

Stauroneis anceps Ehrb.

This species has been observed in Caledonia Lake,but is not common.

Stauroneis phoenicenteron Ehrb.

As above.

Family Epithemiaceae.

Epithemia sorex Kutz.

This species was found in many samples from Edith,Big Trefoil, Caledonia and Buffalo Prairie Lake and was quite common.

Epithemia argus Kutz.

The distribution of this species is similar to that of the previous species,save that it is present in Beauvert Lake,but it is not so common.

Epithemia turgida (Ehrb).

This species has been found in several lakes in Jasper Park and is not rare.

Epithemia gibba Kutz.

A few specimens of this species occurred in Buffalo Prairie Lake at the end of August,but it is rare.

Eunotia praerupha Ehrb.

Several specimens of this species were found in Beauvert Lake.

M Y X O P H Y C E A E .

COCCOGONEAE.

Family Chroococcaceae.

Chroococcus limneticus Lemm.

This typical plankton organism is quite common in Annette, Beauvert, Pyramid, Medicine, Caledonia, Buffalo Prairie, Mildred and Summit Lakes throughout the summer and descended to 5 - 6 mt.

Chroococcus dispersus Lemm.

This has been observed in Annette and Beauvert Lakes asscciated with the previous specis. It is not rare.

Chroococcus turgidus (Kutz).

This is the commonest species of this genus in all the artic region of Canada. In Jasper Park has been found in many lakes, during July and August.

Chroococcus giganteus W. West.

This has been found only in two small lakes: Mildred and Trefoil.

Chroococcus sp.

This species was observed only in the shallow Summit Lake near Medicine in August.

Clathrocystis aeruginosa Henfrey (Mycrocystis aeruginosa(Kutz).

This species was observed in the plankton of Annette and Maligne Lakes, but is not a common alga in Jasper Park although it is found all over the arctic region.

Aphanothece microscopica Nag.

This was observed in the plankton from a number of the lakes in July, August and September.

Aphanocapsa clachista W.& G. West.

This was found only in Pyramid Lake in small numbers near the surface in July.

Gloeothece linearis Nag.

This species was found only in Pyramid Lake together with the previous alga.

Gomphosphaeria apinita Kutz.

This species was observed in several samples from Pyramid, Caledonia and Patricia Lake in 1925 and 1926 and is not uncommon, during July and August.

Coelosphaerium Kutzingianum Nag.

This alga has been found in several lakes in Jasper Park.

Dactylococcopsis rhaphidioides Hansgirg.

This alga is very rare in Jasper Park where it has been found only in Annette Lake in August and September.

Merismopedium teniussimum Lemm.

This has been observed only in Maligne Lake. Probably it is present in small numbers also in Medicine and other lakes in Jasper Park, but is nowhere common.

b) Hormogoneae.

Family Nostocaceae.

Nostoc commune Vauch.

This species is common in Jasper Park; It has been observed in many lakes, ponds and swamps throughout the summer.

Nostoc verrucosum (Linn.)

This species was found only in Buffalo Prairie Lake.

Anabaena flos-aque Breb.

This beautiful alga was found only in Pyramid Lake in quite large numbers in many samples all through the summer.

Anabaena spiroides var. crassa Lemm.

This species was found in Caledonia Lake and in Small Lake near Mildred, but was quite rare.

Anabaena circinalis (Kütz.)

This was found only in Beaver Lake and was not common.

Family Scytonemaceae.

Scytonema mirabile Born.

This species has been found in Beauvert and Caledonia Lake. It is not rare in July and August.

Family Oscillatoriaceae.

Oscillatoria formosa Bory.

This species was found only in Caledonia Lake in 1926 in July and August.

Oscillatoria limosa Agardh.

As above.

Oscillatoria agardhii Gomont.

This species was found in the lakes: Maligne, Medicine and Caledonia. In the latter it is not rare during July and August.

Lyngbia major Menegh.

This was found only in Patricia Lake and was not common.

Family Rivulariaceae.

Rivularia (Glaetrichia) echinulata (J.Smith).

This species has often been found in many samples from Edith, Mildred and Medicine Lakes.

CHLOROPHYCEAE.

Family Palmellaceae.

Gloeocystis infusionum W.& 9. West.

This alga was by no means common, only a few cells being found in several samples from Pyramid Lake. Near surface. July, August.

Family Autosporaceae.

Oocystis solitaria Wittr.

This was observed in several lakes in Jasper Park: Annette, Beauvert, Big Trefoil, Patricia and Beaver Lake near Medicine, but was uncommon.

Oocystis lacustris Chod.

This species appeared in small numbers in the material from Annette Lake in July.

Nephrocytium Agardianum Näg.

This was only once observed in Beauvert Lake near outlet creek in July.

Tetraedron minimum Hansg.

This was found in Caledonia Lake, but was not common.

Echinosphaerella limnetica 9.M. Smith.

This alga originally discribed by M. Smith in I920 from Wisconsion, was found in one sample from Annette Lake.

Selenastrum gracile Reinsh.

This species is quite common in the Small Lake near Mildred during July and August. In other lakes has not been observed.

Scenedesmus sp. (curvatus)?

This was found in one sample from Caledonia Lake in I925 by Mr.Lowe, but has not been observed by the writer.

Scenedesmus dimorphus (Turpin).

This has been observed in small numbers in Small Lake, near

Mildred Lake.

Crucigenia crucifera (Wolle).

This species occurred inthe plankton of Edith and Caledonia Lake. In during August and is not rare in the latter.

Crucigenia rectangularis (Näg.)

This has been found in Edith, Big Trefoil, Patricia and Beaver Lake near Medicine in July, August.

Family Hydrodictyaceae.

Pediastrum boryanum Menegh.

This beautiful alga is widely distributed in Jasper Park. It occurrs nearly everywhere, but is not common during June, July and August.

Pediastrum boryanum rugosum.

This has been observed by Mr. Lowe from a sample from Caledonia Lake in 1925.

Pediastrum duplex Meyen.

This occurred only in Annette Lake. Rare.

Pediastrum integrum Näg.

This was only once observed in plankton of Annette Lake in July 1926 from near shore .But in the stomach contents of Catostomus catostomus lacustris from same lake this species has been found very often.

Family Ulothrichaceae.

Ulothrix zonata Kütz.

This species has been found only in Buffalo Prairie and Big Trefoil Lakes In the former it not rare in August.

Family Zygnemaceae.

Mougeotia calcarea Wittr.

This alga is widely distributed throughout the summer in many

lakes of Jasper Park, but not common. It is absent from Beauvert Lake.

Zygnema pectinatum (Vauch).

This species has been observed in Caledonia and Patricia Lake in small numbers throughout the summer.

Spirogyra crassa Kutz.

This cosmopolitan green alga, has been found throughout the summer in Jasper in four localities. It is quite common in Caledonia Lake, but absent from Annette and Edith Lakes.

Spirogyra sp. (not in conjugation).

This has been found in one sample from Patricia Lake in 1925.

Family Desmidiaceae.

Closterium Dianae Ehrb.

This has been found by Mr. Lowe in one sample from Caledonia Lake in 1925.

Cosmarium cymatoplerum v. archeri Roy.

This alga has been observed in small numbers in Maligne Lake.

Cosmarium punctulatum Breb.

The distribution of this is similar to the previous species, but it is not so rare during August.

Cosmarium loeve Rabenh.

This species was found only in Edith Lake.

Cosmarium reniforme (Ralfs).

This has been found in Caledonia Lake throughout the summer and is not uncommon.

Cosmarium turpinii Breb.

This species has been observed only in Caledonia Lake and is not common.

Cosmarium humile v. striatum (Boldt).

Similar to previous species.

Cosmarium moniliforme Ralfs.

Similar to previous species.

Cosmarium botrytis Meneght.

This species was found in Caledonia and Buffalo Prairie Lake throughout the summer and was not rare in the former.

Cosmarium granatum Breb.

This has been found in two localities - Maligne and Caledonia Lake and is quite rare.

Cosmarium amoenum v. mediolaeve Nordst.

This has been observed in Lake No.I. near Geikie station.

Pleurotaenium trabecula (Ehrb).

This has been found only in Caledonia Lake in August and is not common.

Staurastrum dejectum Breb.

This species has been found only in Caledonia Lake in several samples in 1925 and 1926 during July and August.

Staurastrum sp. [illegible] (Reg.)

This alga was found in two localities in Jasper Park; in Caledonia Lake and in Beaver Lake near Medicine Lake.

Staurastrum polymorphum Breb.

This was found only in Caledonia Lake in July and August and was not common.

Staurastrum leptocladum Nordst.

This species occurred commonly in Caledonia and Beaver Lake near Medicine.

Staurastrum gracile Ralfs.

This has been found only in Pyramid Lake in July and August but was not common.

Staurastrum grallatorium Nordst.

Only one specimen of this algae was observed in Beaver Lake near Medicine in August.

Staurastrum longiradiatum W.& 9. West.

This species occurred only in Patricia Lake but was not common.

Staurastrum megacanthum Lund.

This was found in Edith Lake, but was not common.

Staurastrum lacustre 9. M. Smith.

This was found by Mr. Lowe in sample from Caledonia Lake.

Staurastrum punctulatum Breb.

This species has been observed by Mr. Lowe in one sample from Maligne Lake.

Family Botryococcaceae.

Botryococcus brauni Kützg.

This alga was abundant in nearly all Lakes of Jasper Park throughout the summer. During the day it comes to the surface.

Family Oedogoniaceae.

Oedogonium sp. (no spores).

This was found only in Caledonia Lake and then was not common.

Bulbochaete sp. (no spores).

This species has been observed in Patricia and Big Trefoil Lakes, but is not common.

Family Tetrasporaceae.

Tetraspora gelatinosa (Vauch).

This species is distributed in several lakes in Jasper Park and is not rare.

Tetraspora explanata Kützg.

This has been found in several lakes of Jasper Park during all summer, but not commonly.

Family Dictyosphaeriaceae.

Dictyosphaerium pulchellum Wood.

This species has been observed in Edith, Beauvert and Small Lake near Mildred throughout the summer but is not common.

The following is a list of all species of ZOO and PHYTO-plankton found during 1925-1926.

Copepoda.	Annette Lake	Edith Lake	Beauvert Lake	Mildred Lake	Big-Trefoil Lake	Pyramid Lake	Medicine Lake	Maligne Lake	Caledonia Lake	Jacques Lake	Patricia Lake	Buffalo-Prairie L.	Beaver Lake	Summit Lake	Hibernia Lake	Small Lake	No 1. Lake
Canthocamptus minutus Claus.	O							O	O			O	O				
Cyclops bicolor Sars.	O	O	O		O	O		O	O	O	O				O	O	O
Cyclops viridis americanus Marsh.	O		O									O				O	
Cyclops bicuspidatus Claus.	O		O								O						
Cyclops fimbriatus Fisher.	O	O	O		O	O		O	O		O		O				O
Cyclops phaleratus Koch.	O					O		O				O			O		
Cyclops prasinus Fisher.								O									
Cyclops leuckarti Claus.			O			O											
Cyclops albidus Jurine.				O										O			
Cyclops ater Herrick.										O		O					
Cyclops serrulatus Fish.			O														
Diaptomus ashlandi Marsh.								O									
Diaptomus eiseni Lilljeb.														O			
Diaptomus leptopus Forbes.				O					O							O	
Diaptomus tyrelli Poppe.		O	O	O	O	O		O			O			O		O	
Diaptomus shoshone Forbes.			O					O								O	
Diaptomus sicilis Forbes.	O	O	O			O	O	O			O	O			O		
Diaptomus sp. (oregonensis)? (young).	O																
Ostracoda.																	
Candona sp.													O				
Cypris americanus Cush,						O						O					
Cypris virens Jurine.								O		O							
Cypris fuscata Jurine.									O								
Physocypria pustulosa Sharpe.		O															

Phyllopoda. Acropterus harpae Baird.	Annette Lake	Edith Lake	Beauvert Lake	Mildred Lake	Big-Trefoil Lake	Pyramid Lake	Medicine Lake	Maligne Lake	Caledonia Lake	Jacques Lake	Patricia Lake	Buffalo-Prairie L.	Beaver Lake	Summit Lake	Hibernia Lake	Small Lake	No 1. Lake
Alona costata Sars.	O	O															
Alona affinis (Leydig).	O		O			O	O										
Alona quadrangularis (O.F. Mull.)			O			O										O	
Alona guttata Sars.	O					O						O					
Alonella nana (Baird.)			O														
Bosmina longirostris (O.F. Mull.)	O					O										O	
Bosmina longirostris var. brevicornis Hell.			O			O			O			O					
Ceriodaphnia reticulata (Jur)						O											
Ceriodaphnia megalops Sars.	O			O							O						
Ceriodaphnia sp.													O				
Daphnia longispina (O.F. Mull.)	O										O						
Daphnia longispina v. cucullata.	O	O	O			O		O			O	O					
Daphnia longispina v. hyalina f.mendota.						O						O					
Daphnia pulex (de Geer).						O											
Daphnia pulex v. obtusa.	O	O	O	O		O		O		O	O			O			
Diaphanosoma brachyurum (Lievin).										O	O						
Diaphanosoma leuchtenbergianum Fish.	O		O			O					O						
Drepanothrix dentata (Euren).	O					O					O	O			O		
Chydorus sphaericus (O.F. Mull)	O					O											
Chydorus sphaericus v. minor Lilljeb.			O									O	O			O	
Chydorus latus Sars.								O									
Eurycercous lamellatus (O.F. Mull.)													O				
Graptoleberis testudinaria (Fish).												O					
Kurzia latissima (Kutz.)	O																
Latona setifera (O. F. Mull).			O														
Leptodora kindtii (Focke).						O											
	O																

	Annette L.	Edith L.	Beauvert L.	Mildred L.	Big-Trefoil L.	Pyramid L.	Medicine L.	Maligne L.	Caledonia L.	Jacques L.	Patricia L.	Buffalo-Prairie L.	Beaver L.	Summit L.	Hibernia L.	Small L.	No 1. Lake
Moina sp.												O				O	
Pleuroxus striatus Shoedler.			O													O	
Polyphemus pediculus (L).				O			O	O			O					O	
Scapholeberis mucronata (O.F. Mull.)							O	O				O					
Sida crystallina (O.F. Mull.)												O					
Simocephalus vetulus (O.F. Mull.)									O			O	O				O
Rotatoria.																	
Anuraea aculeata Ehrb.	O								O	O		O			O		
Anuraea cochlearis Gosse.	O				O	O					O	O			O	O	O
Asplanchna priodonta Gosse.	O	O		O	O		O								O	O	
Asplanchna myrmeleo Ehrb.	O			O													
Cathypna luna Ehrb.		O		O													
Cochleare turbo Gosse.				O													
Colurus grallator Gosse.	O														O		
Diplois daviesiae Gosse.	O	O	O												O		
Distemma setigerum Ehrb.										O							
Distyla inermis Bryce.	O																
Dinocharis pocillum Ehrb.					O				O				O				
Monostyla lunaris Ehrb.	O					O							O				
Notholca acuminata Ehrb.													O				
Notholca foliacea Ehrb.	O					O											
Notholca longispina Kellie.						O			O							O	
Ploesoma truncatum Levandr.	O														O		
Pompholyx complanata Gosse.	O																
Polyarthra platyptera Ehrb.	O	O	O	O	O		O	O		O		O	O		O	O	
Pterodina patina Ehrb.	O															O	
Rattulus longiseta Shrank.				O								O	O				
Triarthra sp.							O	O									
Conochilus unicornis Rouss.				O													

Flagellata.	Annette Lake	Edith Lake	Beauvert Lake	Mildred Lake	Big-Trefoil Lake	Pyramid Lake	Medicine Lake	Maligne Lake	Caledonia Lake	Jacques Lake	Patricia Lake	Buffalo-Prairie L.	Beaver Lake	Summit Lake	Hibernia Lake	Small Lake	No 1. Lake
Ceratium hirundinella O.F. Mull.	O	O	O	O	O	O	O	O	O	O	O	O			O	O	
Chlamydomas pulvisculus Ehrb.	O			O													
Dinobryon divergens Inhof.						O		O									
Dinobryon sertularia Ehrb.	O	O			O	O		O	O			O	O				
Dinobryon stipitatum Stein.	O					O	O	O	O								
Eudorina elegans Ehrb.													O				
Euglena viridis Ehrb.	O	O			O												
Peridinium tabulatum Ehrb.	O	O	O		O			O					O			O	
Trachelomonas sp.						O											
Another Protozoa.																	
Codonella lacustris					O	O											
Difflugia corona Wallich.								O									
Diplochlamis sp.								O									
Urocentrum turbo Mull.																O	

Diatoms.

	Annette Lake	Edith Lake	Beauvert L.	Mildred Lake	Big-Trefoil L.	Pyramid L.	Medicine L.	Maligne L.	Caledonia L.	Jacques L.	Patricia L.	Buffalo Prairie	Beaver Lake	Summit L.	Hibernia L.	Small L.	No 1. Lake
Acknathidium flexellum Breb.			O														
Amphora ovalis Ehrb.	O	O	O		O			O		O	O				O	O	
Asterionella formosa Hass.	O					O	O	O	O		O	O					O
Campylodiscus hibernicus v. noricus (Ehrb.)						O											
Cocconeis pediculus Ehrb.	O																
Cocconema lanceolatum Ehrb.						O			O			O			O	O	
Cyclotella antiqua (W.Smith).			O						O								
Cyclotella compta v. affinis Grun.	O				O												
Cymbella cistula Hemp.											O						
Cymbella cuspidata Kutz.										O							
Cymbella cimbiformis v. parva (W. Smith).			O														
Cymbella gastroides v. minor H.V.H.		O					O	O	⊗		O						
Cymbella prostratum (Ralfs.)			O														
Cymbella gastroides Kutz.									O								
Denticula infanta Smith.								O									
Epithemia sorex Kutz.		O			O				O		O						
Epithemia argus Kutz.		O	O		O				O		O						
Epithemia turgida Ehrb.					O	O			O		O	O	O				
Epithemia gibba Kutz.												O					
Eunotia praerupha Ehrb.			O														
Gomphonema acuminatum Ehrb.			O														O
Gomphonema constrictum Ehrb.			O														
Gomphonema acuminatum v. coronatum (Ehrb.)									O								
Gomphonema geminatum Agh.		O															
Fragilaria capucina Desm.						O			O								
Fragilaria crotonensis Kitton.	O	O	O			O		O			O	O	O				
Melosira varians Agardh.						O							O				
Melosira sp.	O																
Navicula parva Ehrb.	O																

	Annette Lake	Edith Lake	Beauvert Lake	Mildred Lake	Big-Trefoil Lake	Pyramid Lake	Medicine Lake	Maligne Lake	Caledonia Lake	Jacques Lake	Patricia Lake	Buffalo-Prairie	Beaver Lake	Summit L.	Hibernia L.	Small Lake	No 1. Lake
Navicula viridis Kutz.			o	o			o	o	o	o		o	o			o	
Navicula fusca Ralfs.	o																
Navicula bacillum Ehrb.								o									
Navicula elliptica Kutz. v. Ovalis Hilse.									o	o							
Navicula cuspidata Kutz.	o			o	o							o	o		o	o	o
Navicula gibba Kutz.	o																
Navicula lyra v. recta Ehrb.		ø	o														
Navicula sp.	o										o						o
Nitzschia linearis Smith.													o				
Pleurosigma attenuatum W. Smith.						o										o	
Pinnularia viridis Smith.	o															o	o
Rhizosolenia morsa W. & G. West.						o											
Rhopalodia gibba (Kutz.)									o		o						
Stephanodiscus niagaroe Ehrb.	o	o	o				o	o	o			o					
Stauroneis phoenicenteron Ehrb.									o								
Stauroneis anceps Ehrb.									o								
Surirella elegans Ehrb.						o		o									
Surirella sp.	o		o								o						
Synedra capitata Ehrb.	o		o														
Synedra ulna v. danica (Kutz.)						o											
Synedra ulna v. splendens (Kutz.)	o								o								
Tabellaria fenestrata Kutz.	o		o			o			o								
Tabellaria fenestrata v. asterionelloides.						o											
Tabellaria flocculosa Kutz.			o														

	Annette Lake	Edith Lake	Beauvert Lake	Mildred Lake	Big Trefoil Lake	Pyramid Lake	Medicine Lake	Maligne Lake	Caledonia Lake	Jacques Lake	Patricia Lake	Buffalo-Prairie L.	Beaver Lake	Summit Lake	Hibernia Lake	Small Lake	No. 1 Lake
Myxophyceae.																	
Coccogoneae.																	
Aphanocapsa elachista W.&G. West.						o											
Aphanothece microscopica Nag.				o		o			o	o		o	o				
Coelosphaerium kuetzingianum Nag.				o		o					o		o				
Chroococcus limneticus v. elegans. G. M. Smith.																o	
Chroococcus giganteus W. West.				o	o												
Chroococcus dispisus Lemm.	o		o						o								
Chroococcus limneticus Lemm.	o	o				o	o	o	o			o		o		o	
Chroococcus turgidus (Kutz).								o	o		o	o		o		o	
Clathrocystis aeruginosa Kutz.	o							o								o	
Dactylococcopsis rhaphidioides Hans.	o																
Gloeothece linearis Nag.						o											
Gomphosphaeria aponita Kutz.						o			o		o						
Merismopedium teniussimum Lemm.								o									
Hormogoneae.																	
Anabaena flos-aquae Breb.						o											
Anabaena circinalis (Kutz).													o				
Anabaena spiroides v. crassa Lemm.									o							o	
~~Echinosphaerella limnetica G. M. Smith.~~									~~o~~								
Nostoc verrucosum (Linn.)												o					
Nostoc commune Vauch.			o			o			o		o	o		o		o	
Lyngbya mayor Menegh.											o						
Oscillatoria formosa Bory.									o								
Oscillatoria agardhii Gomont.							o	o	o								
Rivularia echinulata (G. Smith).		o			o		o										

	Annette L.	Edith L.	Beauvert L.	Mildred L.	Big Trefoil L.	Pyramid L.	Medicine L.	Maligne L.	Caledonia L.	Jacques L.	Patricia L.	Buffalo Prairie L.	Beaver L.	Summit L.	Hibernia L.	Small L.	No 1. Lake
Oscillatoria limosa Agardh.									o								
Scytonema mirabile Born.			o						o								
Chlorophyceae.																	
Botryococcus brauni Kutz.	o	o		o		o		o				o	o				
Bulbochaete sp. (no spores)					o						o						
Cosmarium cymatopleurum v. archeri Roy.									o								
Cosmarium punctulatum Breb.									o								
Cosmarium laeve Rabenh.		o															
Cosmarium reniforme (Ralfs)									o								
Cosmarium turpinii Breb.									o								
Cosmarium humile v. striatum (Boldt).									o								
Cosmarium moniliforme Ralfs.									o								
Cosmarium botrytis Menegh.									o			o					
Cosmarium granatum Breb.								o	o								
Cosmarium amoenum v. mediolaeve Nordst.																o	o
Closterium diane Ehrb.									o								
Crucigenia crucifera (Wolle)		o							o								
Crucigenia rectangularis (Nag.)		o			o						o		o				
Dictyosphaerium pulchellum Wood.		o	o													o	
Gloeocystis infusionum (Schrank).						o											
Mougeotia calcarea Wittr.		o		o	o			o	o		o		o			o	
Nephrocytium agardhianum Nag.		o															
Oedogonium sp. (no spores).									o								
Oocystis lacustris Chod.	o																
Oocystis solitaria Wittr.	o	o	o		o						o		o				
Pediastrum boryanum Menegh.	o	o		o	o				o		o						o
Pediastrum boryanum rugosum.									o								
Pediastrum duplex Meyen.	o																

	Annette Lake	Edith Lake	Beauvert Lake	Mildred Lake	Big Trefoil Lake	Pyramid Lake	Medicine L.	Maligne Lake	Caledonia L.	Jacques Lake	Patricia Lake	Buffalo Prairie L.	Beaver Lake	Summit Lake	Hibernia Lake	Small Lake near Mile	N.1 Lake		
Pediastrum integrum Nag.	O																		
Pleurotaenium trabecula (Ehrb.)									O										
Spirogyra crassa Kutz.			O		O				O				O			O			
Spirogyra sp. (not in conjugation).											O								
Scenedesmus sp. (curvatus).									O										
Scenedesmus dimorphus (Turpin)				O												O			
Shizochlamus gelatinosa A. Braun.			O														O		
Selenastrum gracile Reinsh.																O			
Staurastrum dejectum Breb.									O										
Staurastrum dickiei var. circulare Turn.									O										
Staurastrum frnyivulatum (Nag.)									O										
Staurastrum polymorphum Breb.									O										
Staurastrum leptocladum Nordst.									O				O						
Staurastrum gracile Ralfs.						O													
Staurastrum grallatorium Nordst.													O						
Staurastrum longiradiatum W.& G. West.											O								
Staurastrum megacanthum Lund.		O																	
Staurastrum lacustre G.M. Smith.									O										
Staurastrum punctulatum Breb.								O											
Tetraedron minimum Hansg.									O										
Tetraspora gelatinosa (Vauch).				O	O				O				O						
Tetraspora explanata Kutz.	O	O	O	O	O											O			
Ulothrix zonata Kutz.					O							O							
Zygnema pectinatum (Vauch).								O	O		O								
Echinosphaerella limnetica G.M. Smith	O																		

L I S T O F L I T E R A T U R E .

Bajkov A. The Fishes of Jasper Park.(Contributions to Canadian Biology). (in press).

Bigelow N.K.The plankton of Lake Nipigon and environs.(University of Toronto studies. Publ. of the Ont. Fish. Res. Lab. No I3. I923. Toronto.

Bigelow N.K.Cladocera of South Western Ontario.(Univ. of Toronto Stud. Publ. of the Ont. Fish. Res. Lab. No 8. I922. Toronto.

Birge A.& Juday Ch. Allimnological study of the Finger Lakes of N.Y. Bull. U.S.Bureau of Fish.XXXII.I9I2. Washington.

Birge A.& Juday Ch. Further limnological observation of the Finger Lakes of N.Y. (Bull. U.S.Bureau of Fish. XXXVII. I9I9 - 20.)

Brauer A. Die Susswasserfauna Deutshlands. Jena. I909.

Clemens. Limnology of Lake Nipigon. (Univ. of Toronto Stud. Publ.of the Ont. Fish. Res. Lab. NoII. Toronto. I923.

Dodds G.S. Entomostraca from Panama Canal Zone with description of one new species. (University of Michigan. Occasional paper of the Museum of Zoology. I926.)

Dodds G.S. Entomostraca and Life Zones. Biological Bulletion, Vol.XXXIX. No2. August I920.

Galtsoff P.S.Limnological observation in the Upper Mississippi I92I. Bull. U.S. Bureau of Fish. XXXIX. I924. Washington.

Hellich B. Perloocky Zeme Ceske. (Cladocera) Archiv pro prirod. vyzkum Cech. I878. Praha.

Herrick C.L.A final Report on the Crustacea of Minnesota. (The

Geological & Nat. Hist. Surv.of Minnesota).1894. Minneapolis.

Herrick C.L.& Turner C.H. Synopsis of the Entomostraca of Minnesota. Copepoda, Cladocera and Ostracoda. (Geol. and Nat. Hist. Surv. of Minnesota. 1895. Saint Paul.

Jennings H.S. Rotatoria of the United States. (U.S. Commiss. for Fish and Fisheries. 1900. Washington.

Kamerer,Bovard & Boormann. Northwestern Lakes of the United States: biological and chemical studies U.S. Bull. of Fish. XXXIX. 1924. washington.

Liljeborg W. Om de inom skane forecomande crustaceer af ordiningarne Cladocera, Ostrakoda och Copepoda.Lund. 1853.

Lowe Ch. Report of the Canadian Arctic Expedition 1913-18. Vol.IV.Botany.Freshwater Algae and Freshwater Diatoms. 1923.Ottawa.

Lowe Ch. The Freshwater Algae of Central Canada.(from the Transcription of the Royal Sosiety of Canada.) 3 series. 1924.Ottawa.

Mackay H. A Quantitative study of plankton of the shallow Bays of Lake Nipigon. (Univ. of Toronto Studies, publ. of the Ontario Fish. Reb. Lab. No 26. 1924. Toronto.

Needham and Lloyd. Life of inland Waters. Ithaca. N.Y. 1916.

Smith G.M. Phytoplankton of the Inland Lakes of Wisconsin. Part I. Myxophyceae, Chlorophyceae etc. 1920 Madison Part II. Desmidiaceae. 1924. Madison.

Tilden J. Minnesota Algae. Vol. I. Myxophyceae of North Americ

Van Heurck H. Traite des Diatomees. I899. Anvers.

Vavra V. Monografie ceskych Korysu Skorepnatych. (Archiv pro prirod. vyzkum Cech.) I892 Praha.

Ward & Whipple. Freshwater biology. I9I8 New. York.

Wolle Fr. Diatomaceae of North America. I894. Bethlehem. Pa.

Bigelow N.K. Further studies of the plankton of Lake Nipigon.(Univ. of Toronto Stud.Publ. of the Ont. Fish. Res. Lab. No20) I923 Toronto.

Forbes S. A. A preliminary report on the Aquatic. Invert. Fauna of Yellowstone Nat. Park. (Bull. of the U. S. Fish. Comm. for I89I Washington, I893.

Bovers G.M. A study of Twin Lakes, Colorado, with especial consideration of the food of the Trouts. (U.S. Bull. of the Bureau of Fish. XXVI; I906 Washington.

Canadian Alpine Jurnal. Published by the Alpine Club of Canada. I9I2. Winnipeg.

I. Ceratium hirundinella O.F.Mull.

2. Asplanchna priodonta Gosse.

3. stadia Nauplius.

4. Daphnia longispina (O.F.Mull).

5. Diaptomus sicilis Forbes.

6. Cyclops bicolorSars. & other species.

7. Diaptomus tyrelli Poppe & D.sicilis Forbes.

8. Fragilaria crotonensis Kitton.

9. Peridinium tabulatum Ehrb.

10. Bosmina longirostris (O.F.Mull).

11. Diaphanosoma leuchtenbergianum Fish.

12. Notholca acuminata Ehrbg.

13. Melosira sp.

14. Spirogyra crassa Kutz.

15. Polyarthra platyptera Ehrb.

16. Chroococcus limneticus Lemm.

17. Mougeotia sp.

18. Anuraea cochlearis Gosse.

19. Tabellaria fenestrata Kutz.

20. Leptodora kindtii (Focke).

21. Dinobryon sertularia Ehrb.

22. Daphnia pulex (de Geer) & D.longispina (O.F.Mull)..

23. Asterionella formosa Haas.

24. Notholca longispina Kellie.

25. Rattulus longiseta Shrank.

26. Coelospherium kuetzingianum Nag. & other Myxophyceae.

27. Diaptomus leptopus Forbes & D. tyrelli Poppe.

28. Daphnia pulex (de Geer).

29. Nostoc commune Vauch.

30. Daphnia longispina var. hyalina f. mendotae.

31. Staurastrum (sev. species).

32. Cyclops albidus Jurine & Other species.

33. Diaptomus leptopus Forbes.

34. Conochilus unicornis Rouss. & Polyarthra platyptera Ehr

35. Stephanodiscus niagaroe Ehrb.

36. Chydorus sphaericus (O.F. Mull).

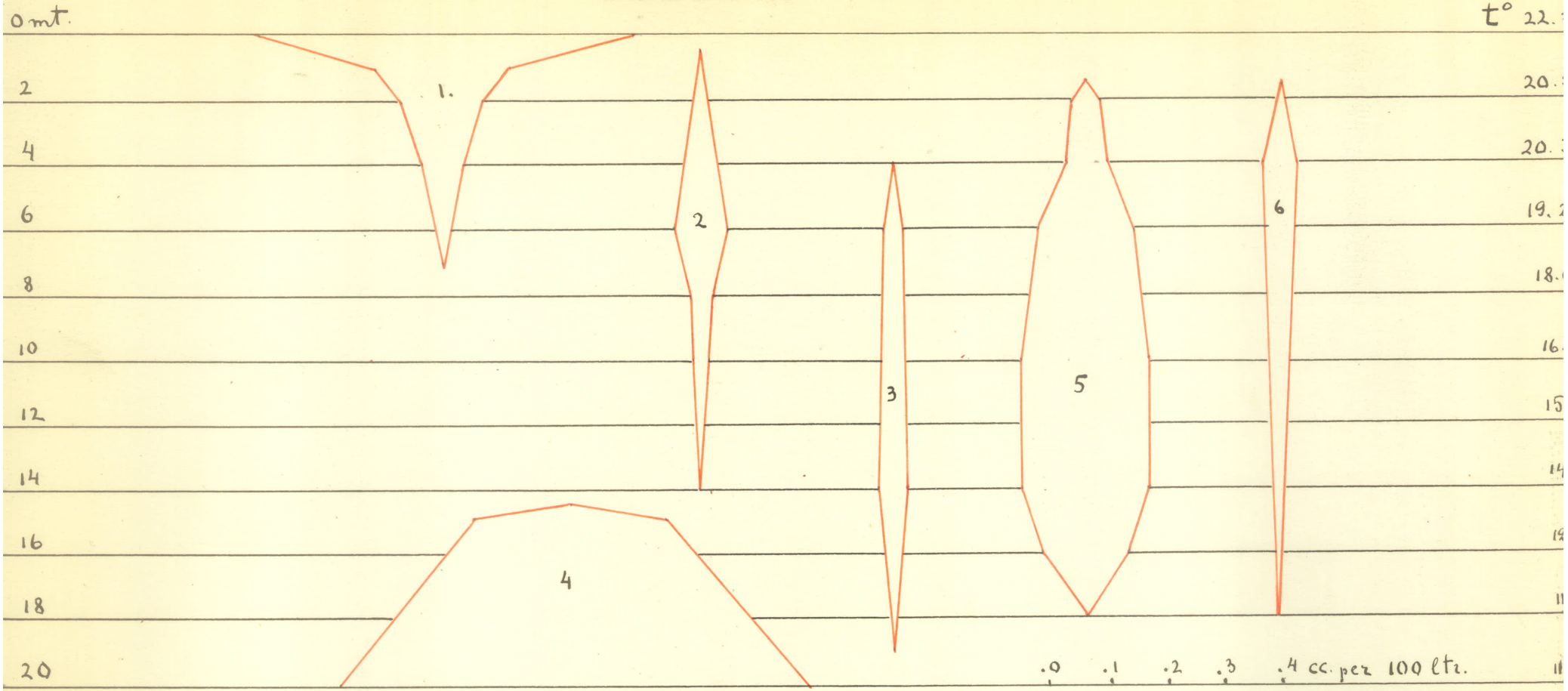
37. Aphanothece microscopica Nag.

38. Diaptomus sicilis Forbes & D. ashlandi Marsh.

39. Inorganic matter.

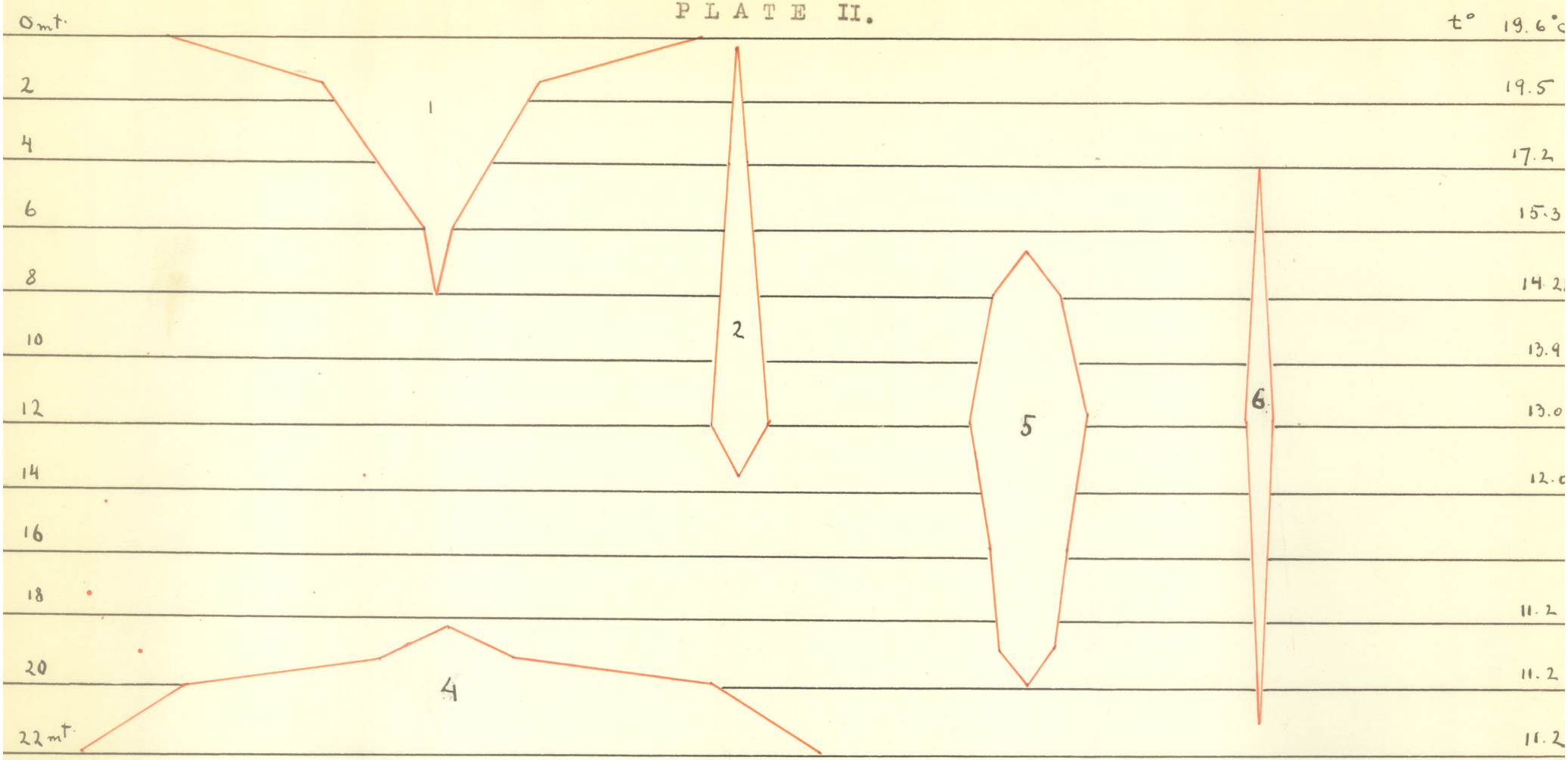
40. Dinobryon sertularia Ehrb. & D. stipitatum Stein.

PLATE I.



ANNETTE LAKE. 4-VII-26. NoI. Sunshine. Secchi disk 18,5 mt. Air T. 30 C.

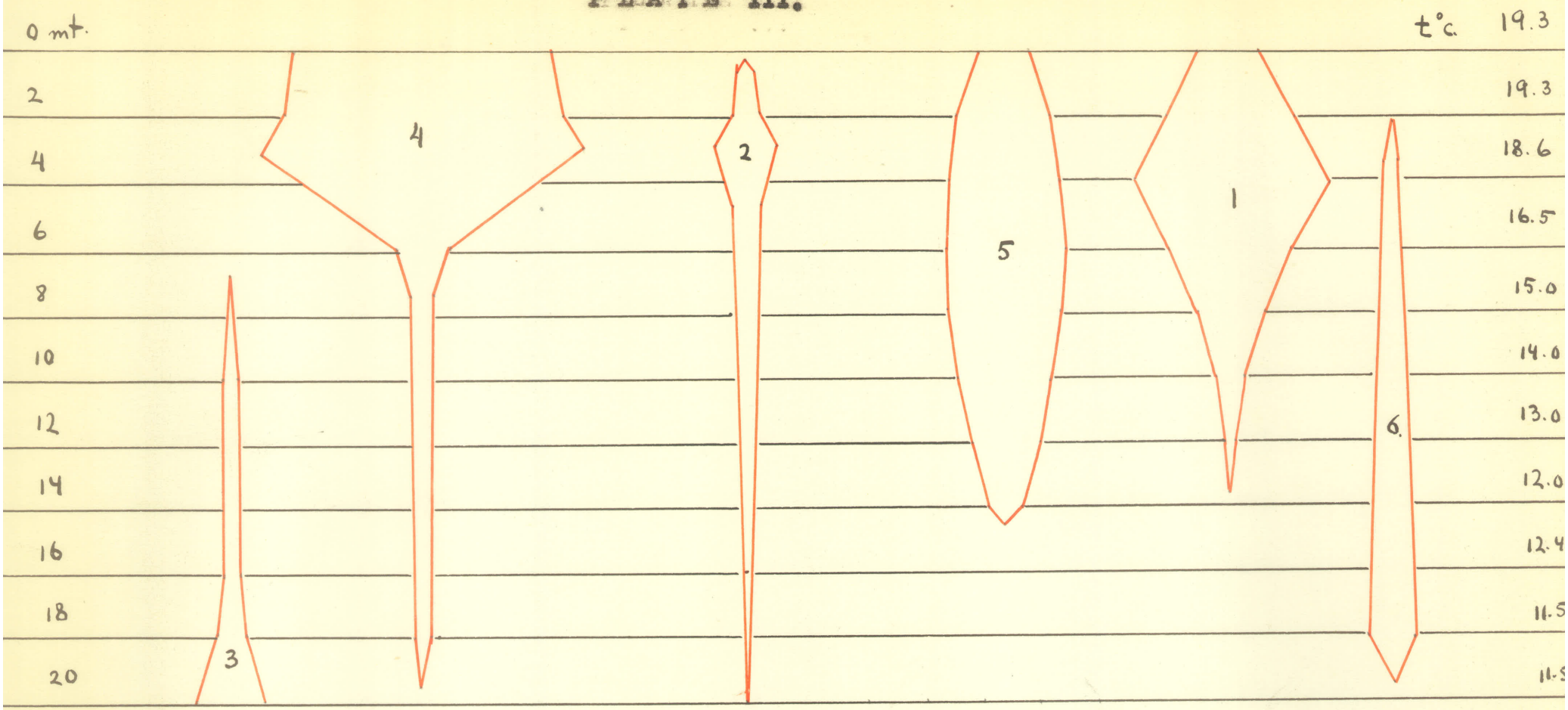
PLATE II.



ANNETTE LAKE. 5-VII-26. II A.M. No4. Sunshine .Air T. 28 c. Barom. 672 mm.

Secchi disk I6-I6,5 mt.

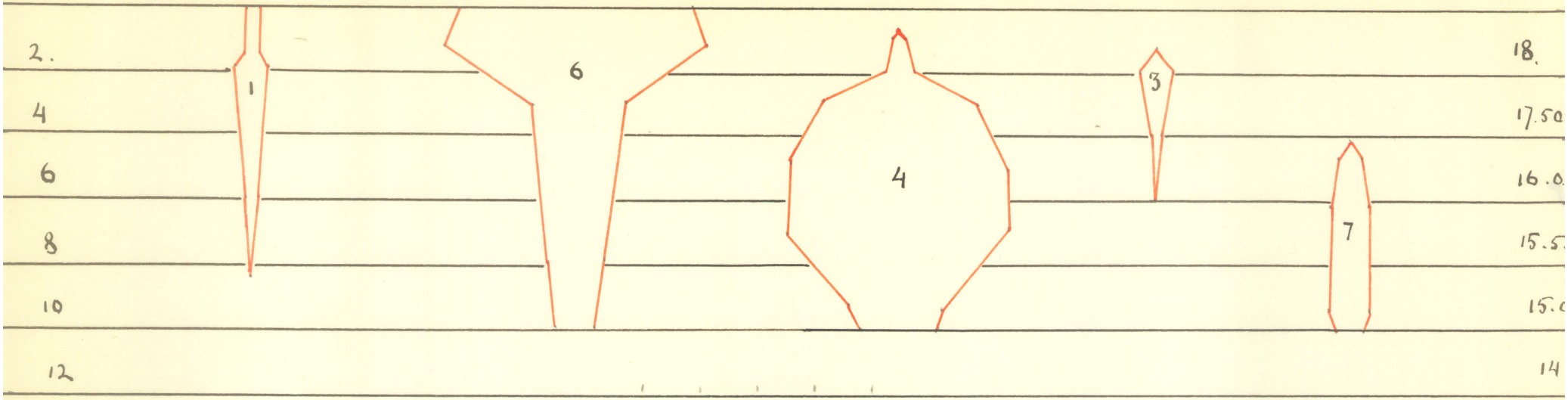
PLATE III.



Annette Lake. No 4. 5-VII-26. Midnight. Air T. 15 C.

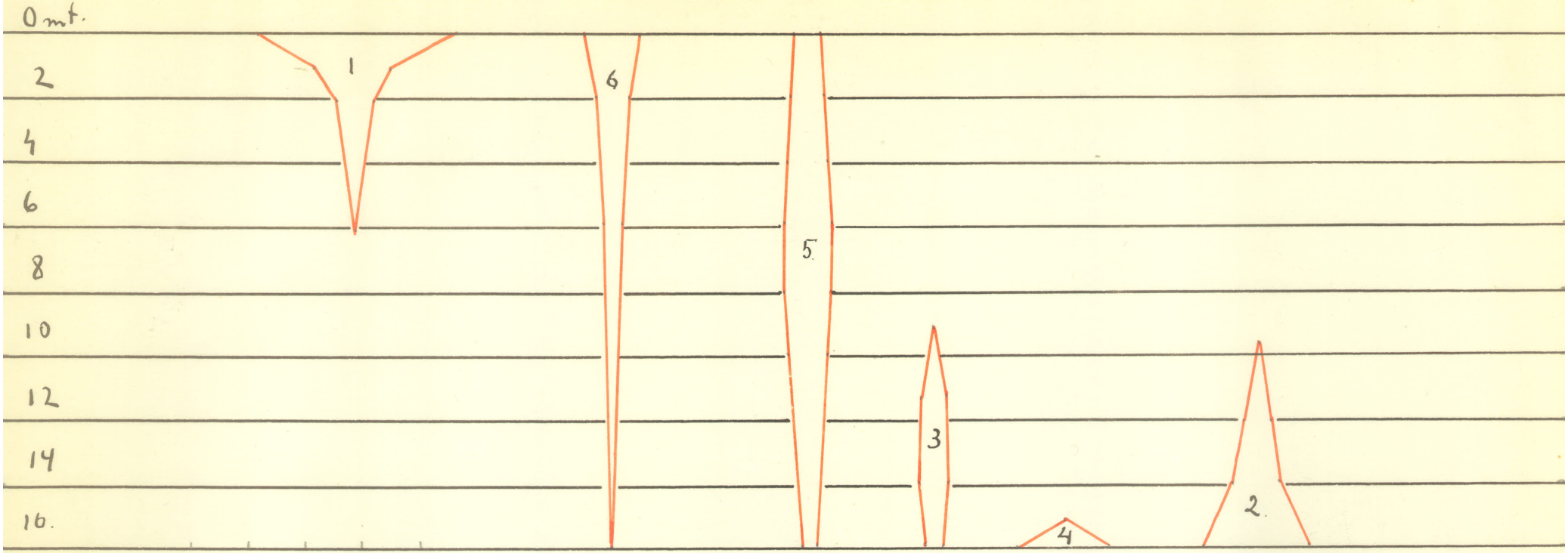
Barom. 672 mm.

PLATE IV.



BEAUVERT LAKE. 6-VII-26. 6 P.M. After rain.

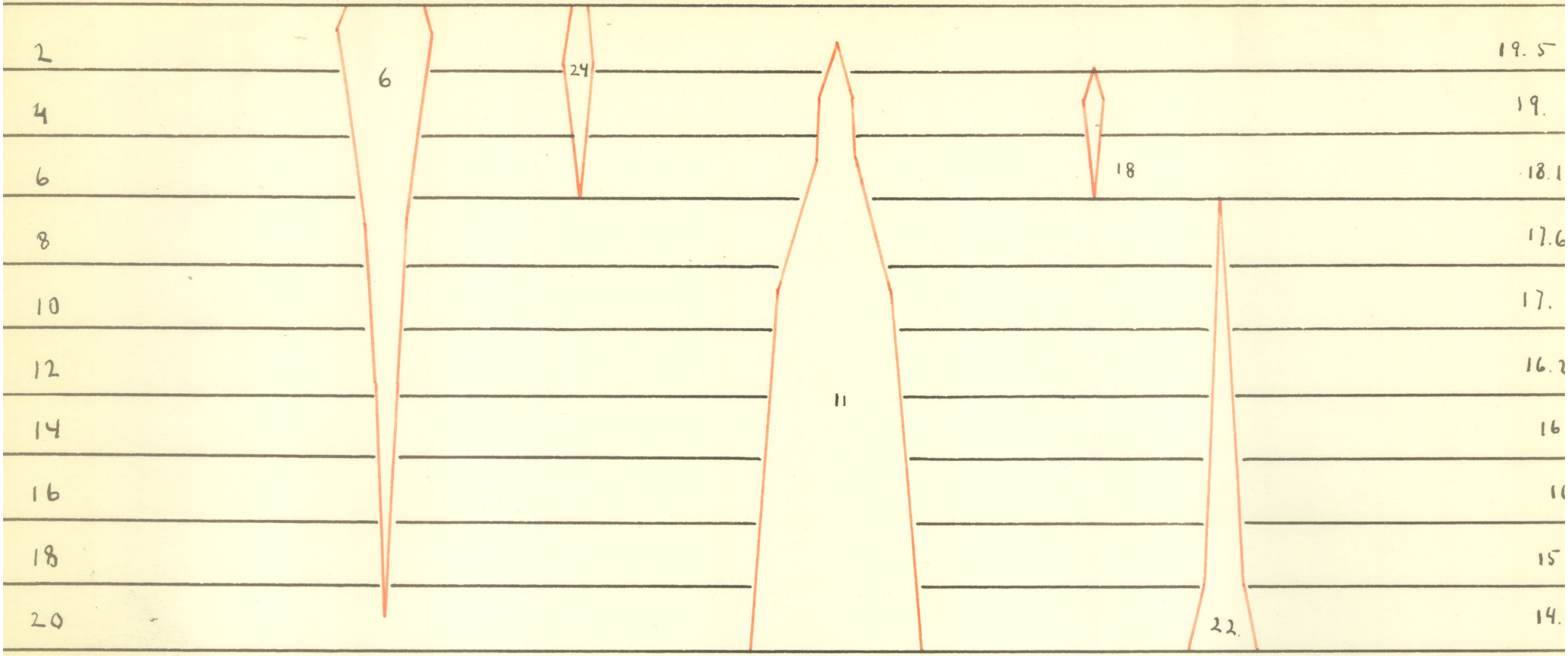
P L A T E V.



EDITH LAKE. 8-VII-26. 4 p.m.

Sunshine; air T. 29 .9 C.

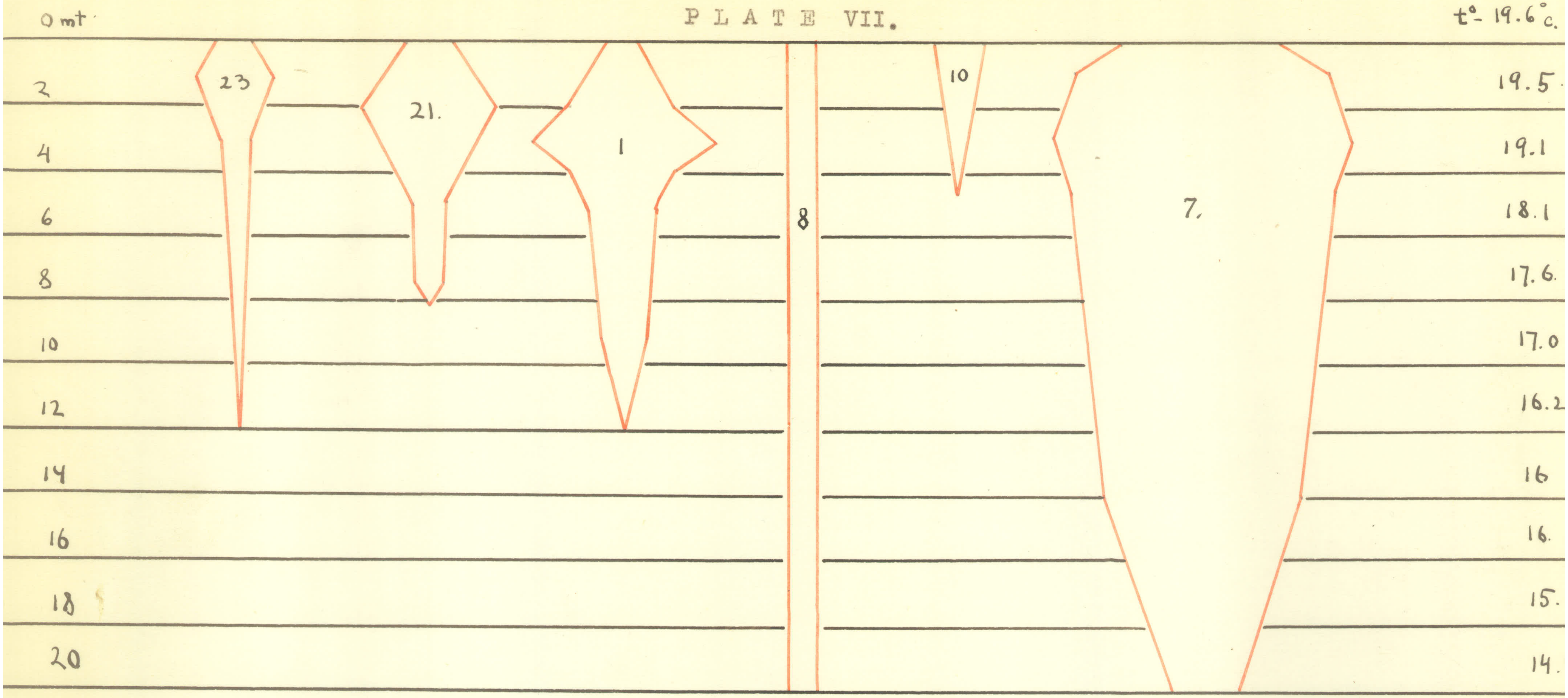
PLATE VI.



PYRAMIDD LAKE. I4-VII/- 4.30 p.m.

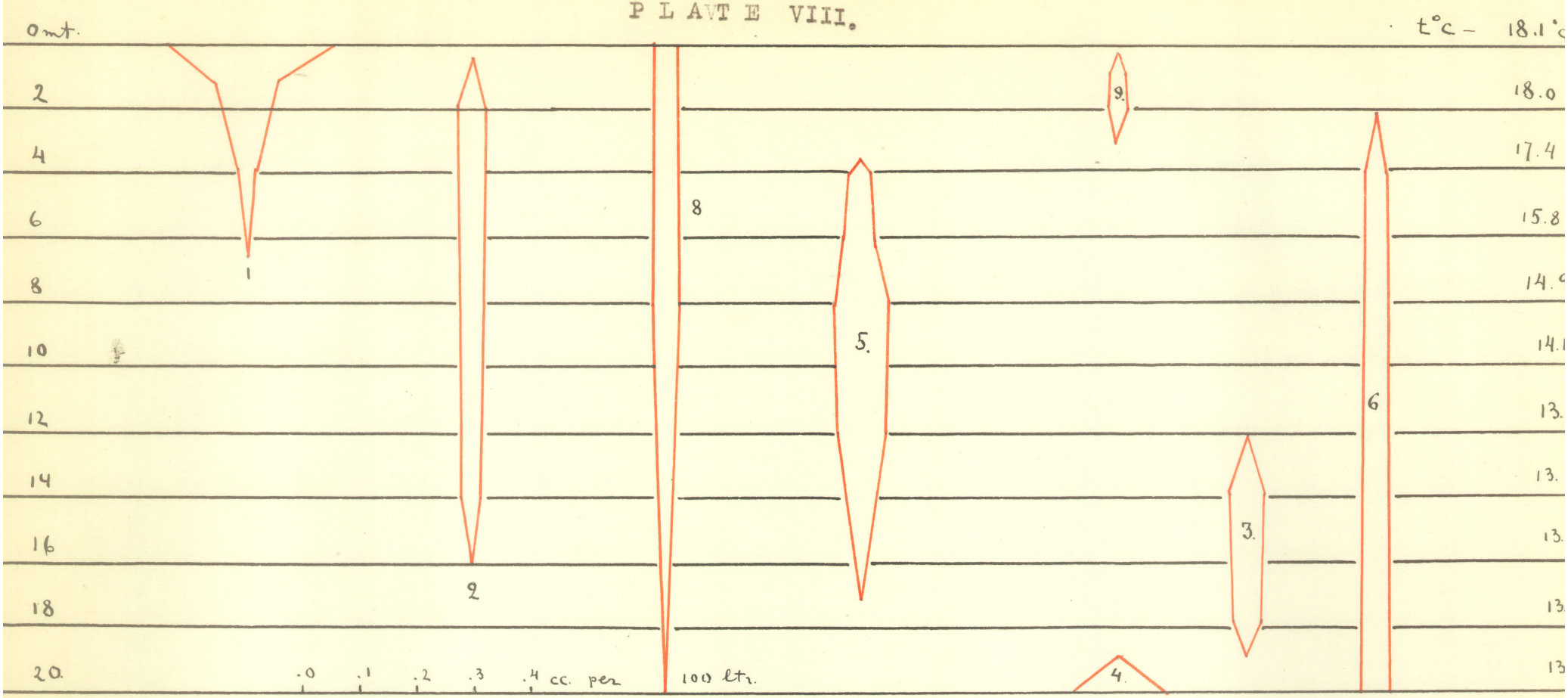
Fair; air T. I9.3 c. Secchi disk IImt.

PLATE VII.



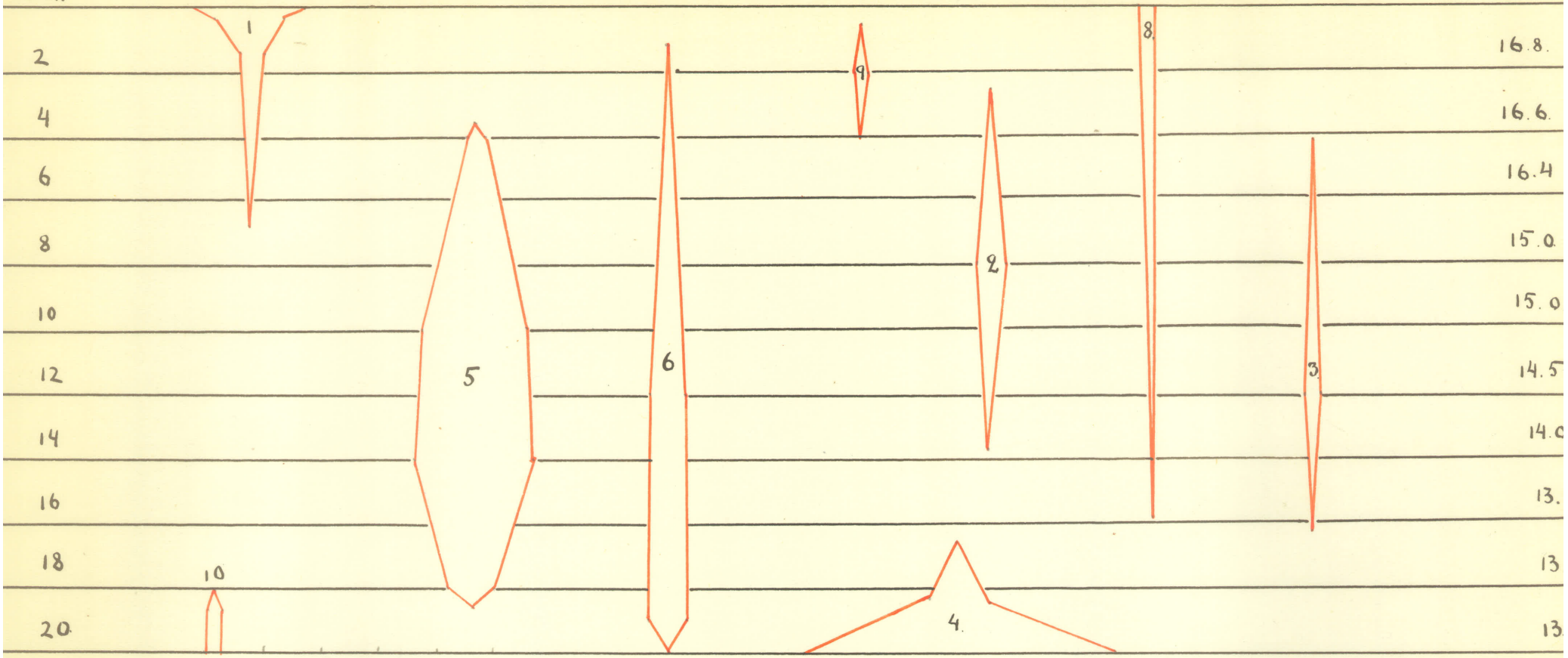
PYRAMID LAKE. (continuation).

P L AVT E VIII.



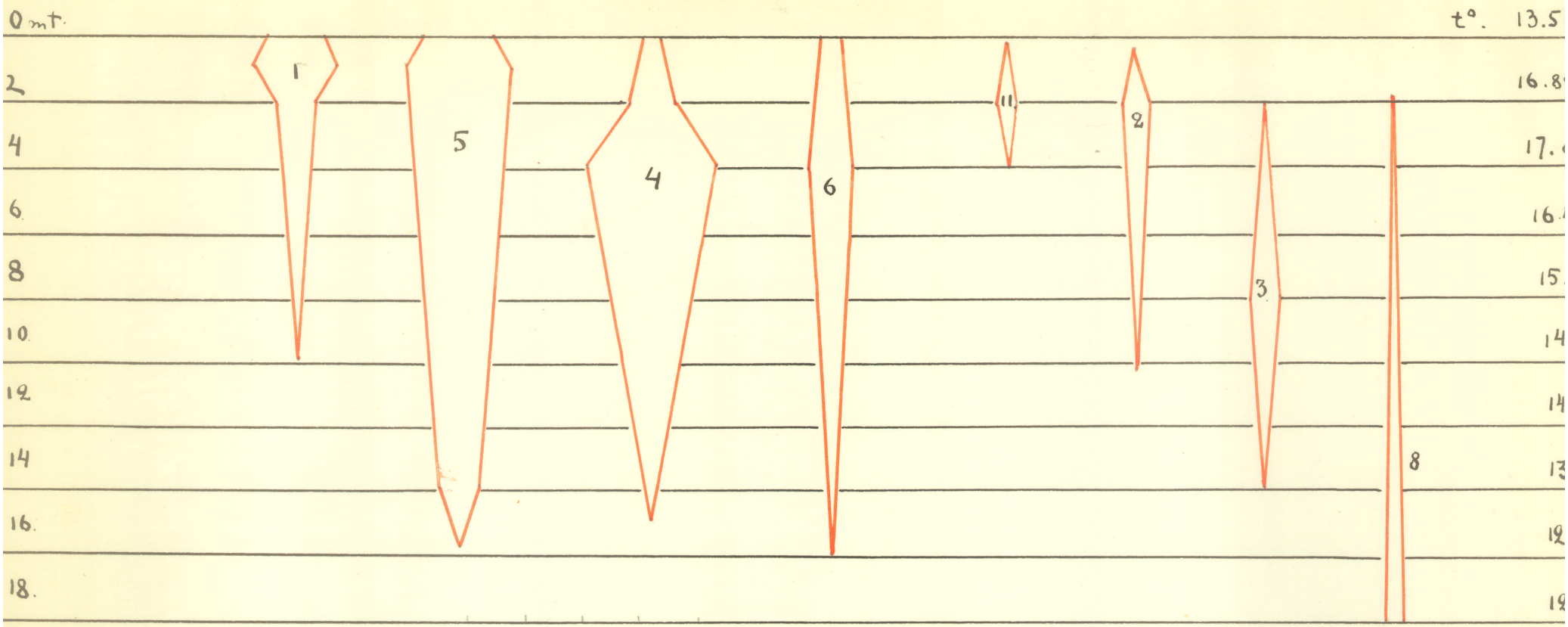
ANNETTE LAKE. No 7. I6-VII-26. II aA.M. After rain.

PLATE IX.



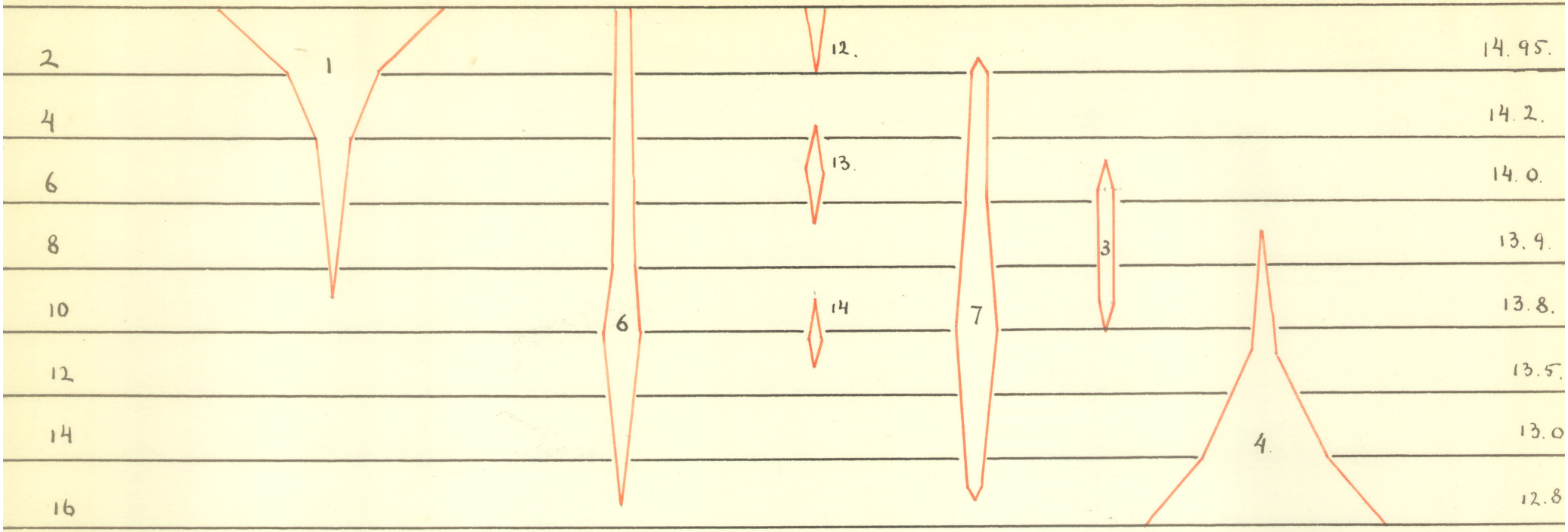
ANNETTE LAKE. 20-VII-26. 12 noon.

PLATE X.



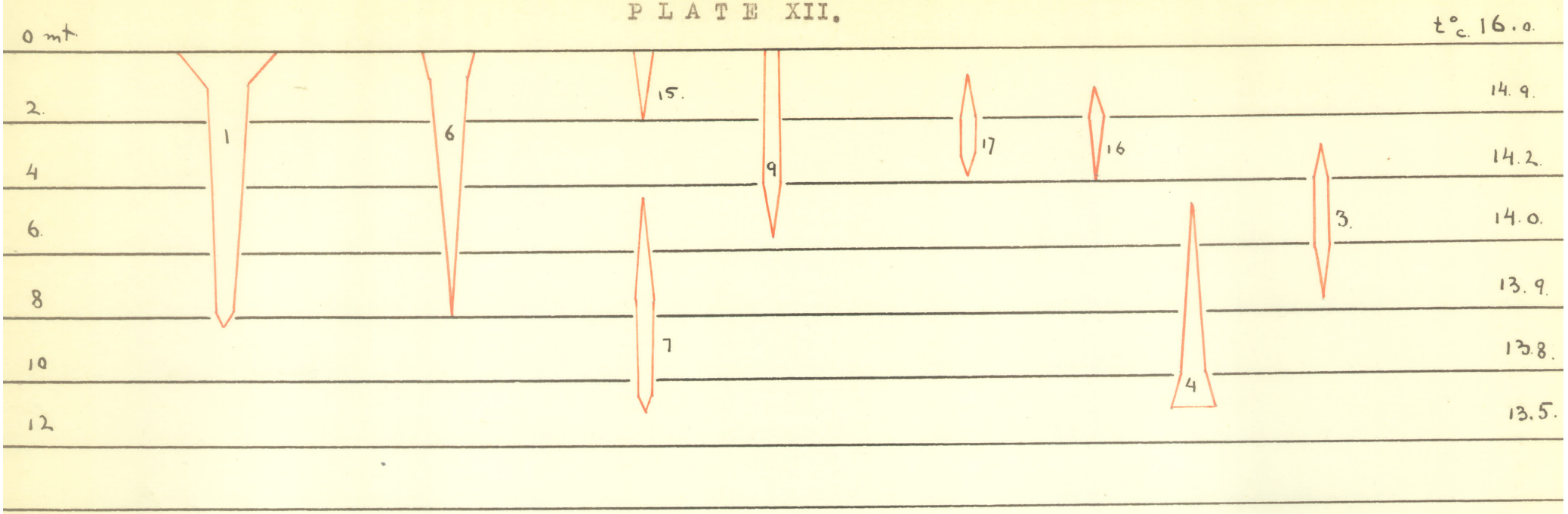
ANNETTE LAKE. 20-VII-26. I2 midnight. Air T.9.3. C.

PLATE XI.



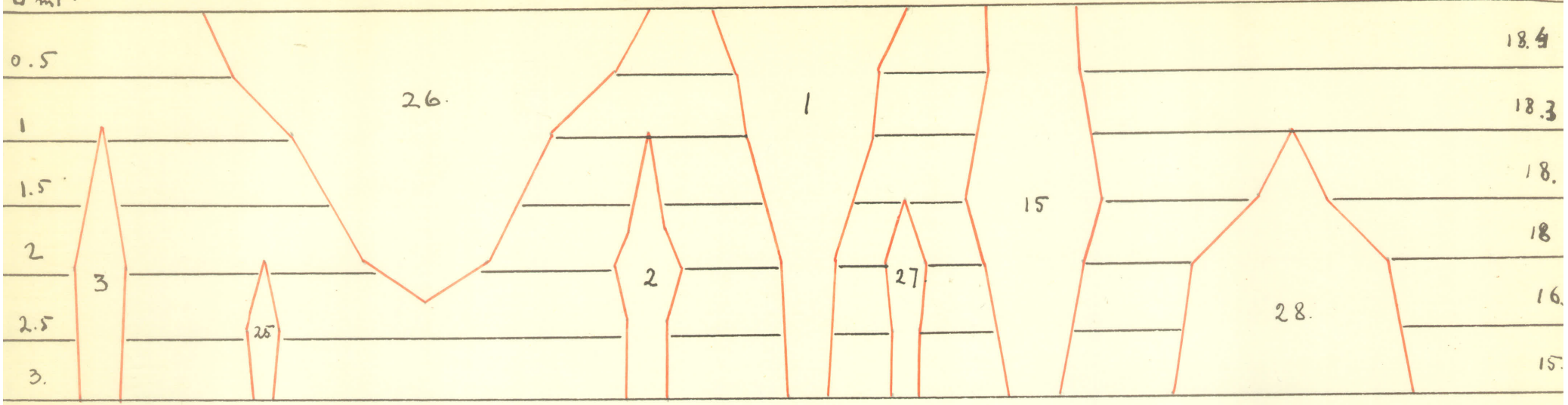
BEAUVERT LAKE. 2-VII-26. I p.m. Cloudy. Air T. 21 C.

PLATE XII.



BEAUVERT LAKE. 31-VII-26. 3 p.m. (No2) Secchi disk 15.5 mt.

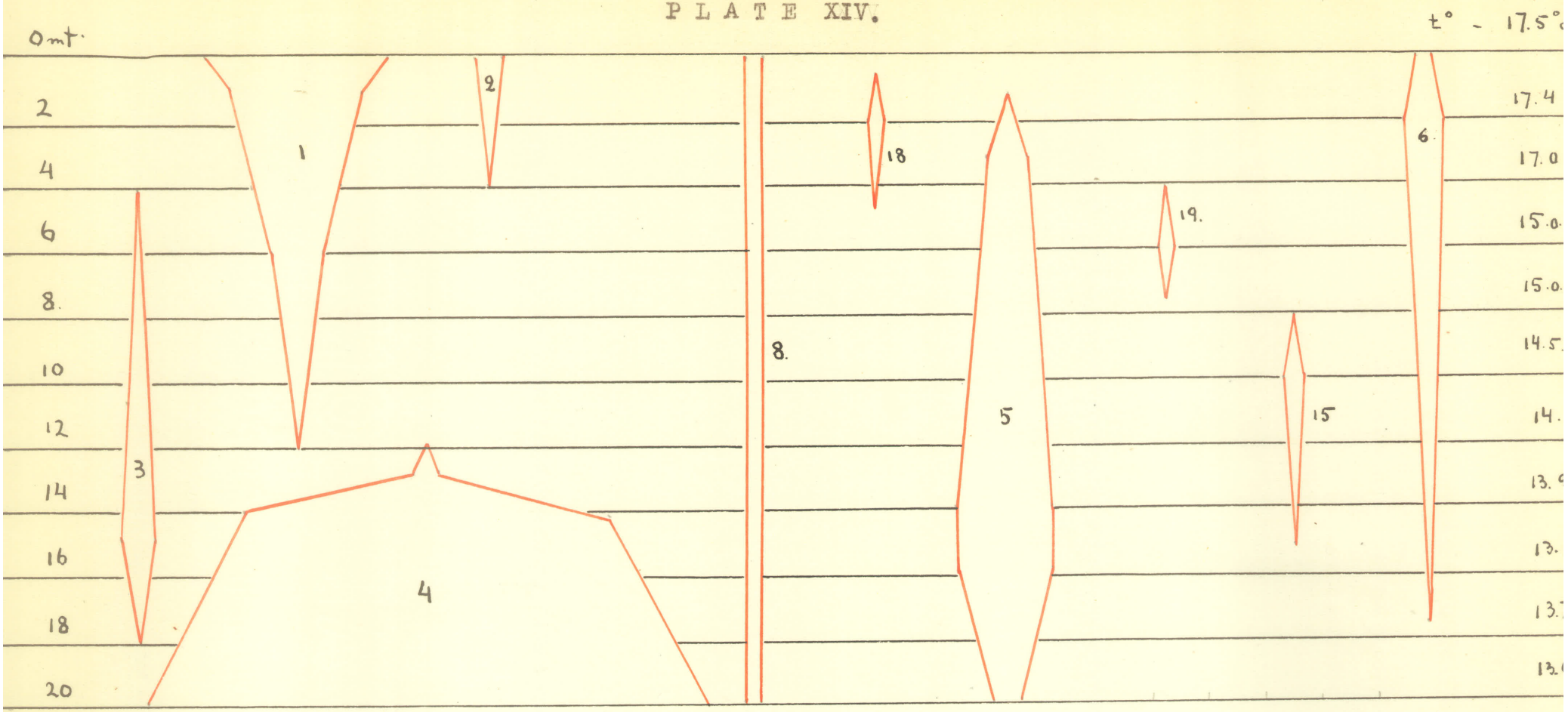
PLATE XIII.



MILDRED LAKE. (middle of lake). 22-VII-26. Ip.m.

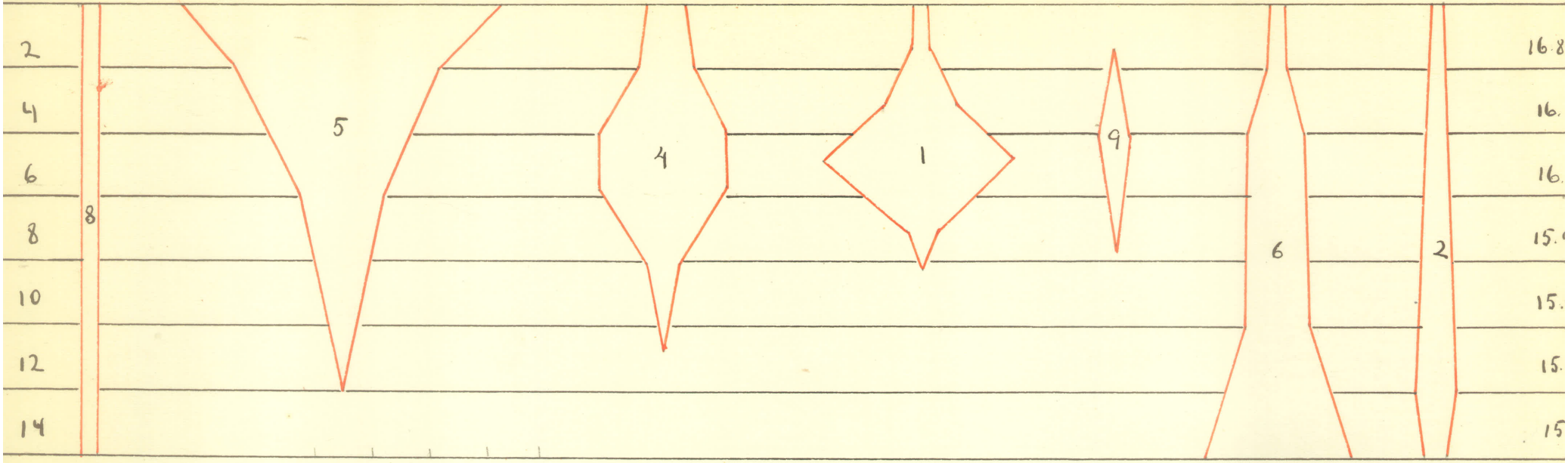
Sunshine. Air T.21.5 C.

PLATE XIV.



ANNETTE LAKE. 26-VII-26. II a.m. Sunshine; air T. 20 C.; barom. 672 mm.

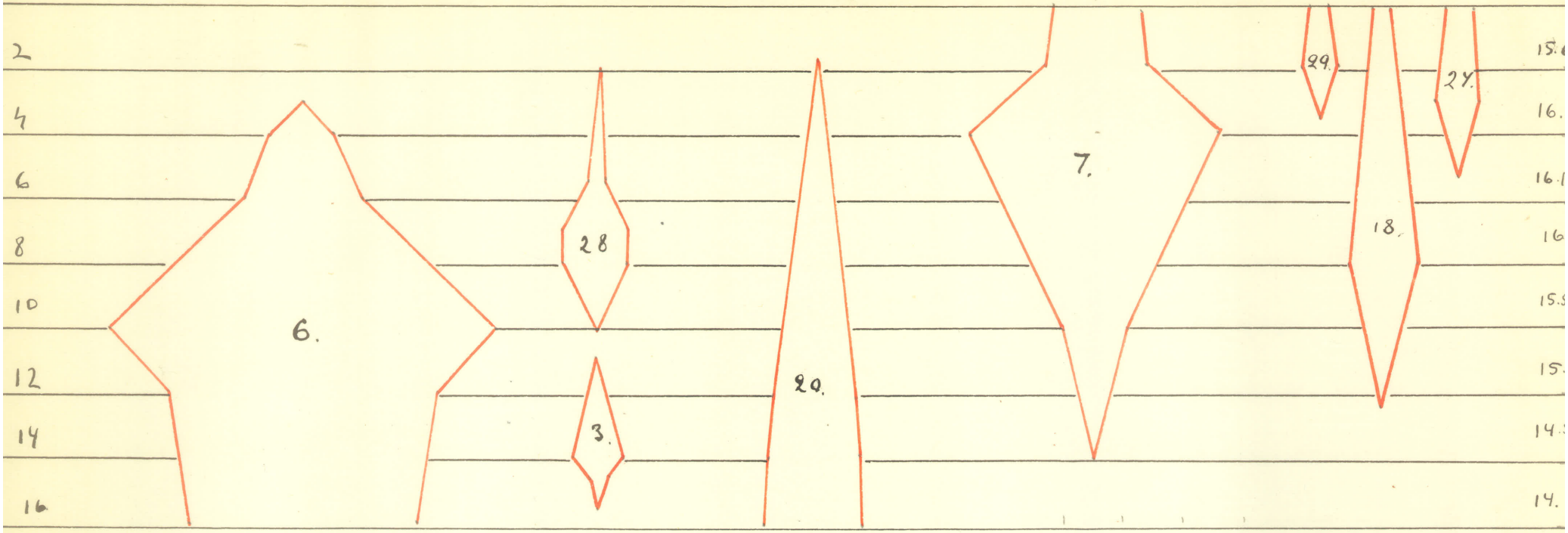
PLATE XV.



EDITH LAKE. 28-VII-26. 8.30 p.m.

Fair; air T.15.8 C.

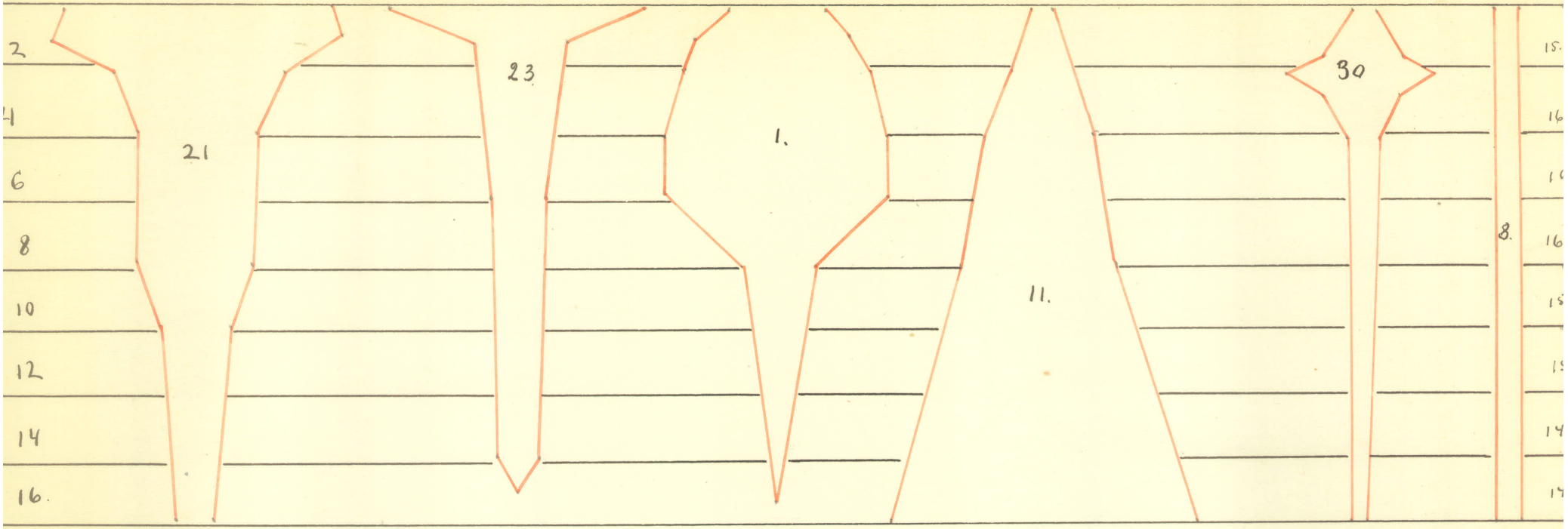
PLATE XVI.



PYRAMID LAKE. No2. 29-VII-26. 8 p.m.

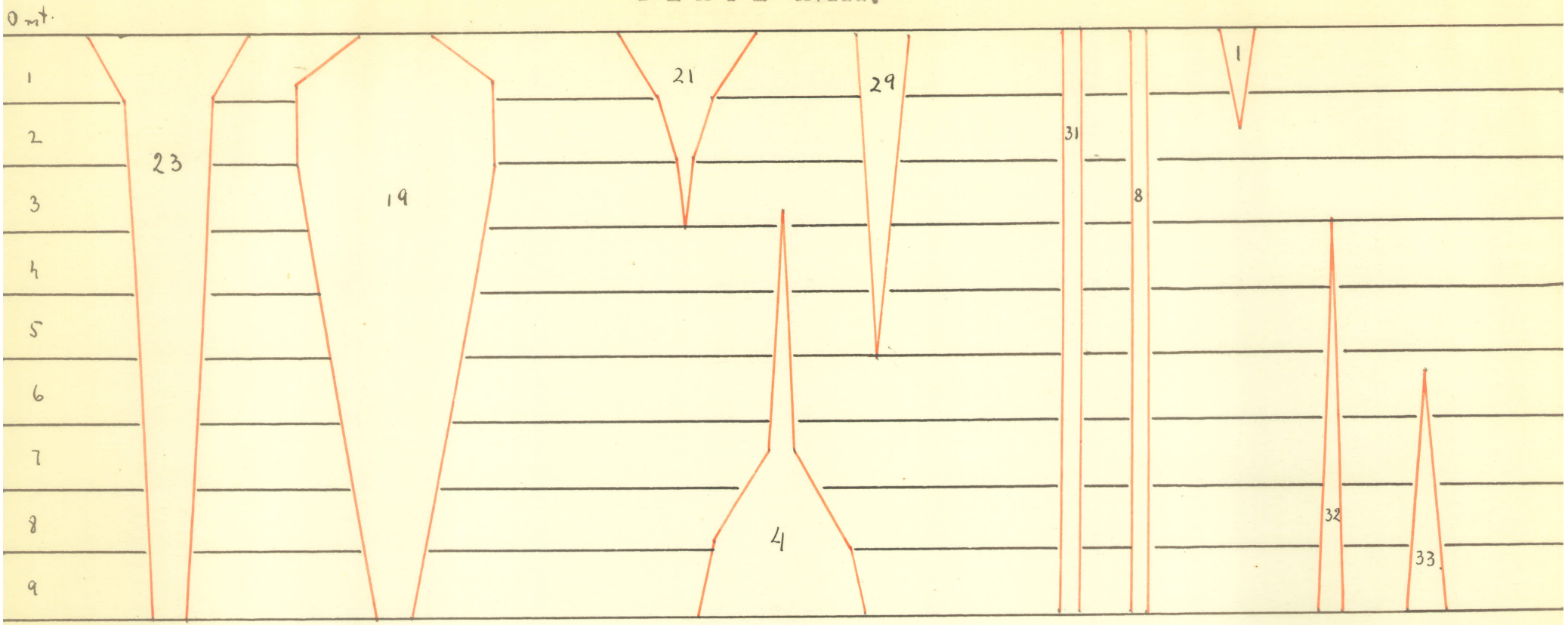
Fair;air T.15 C. Barom. 682 mm.

PLATE XVII.



PYRAMID LAKE (continuation).

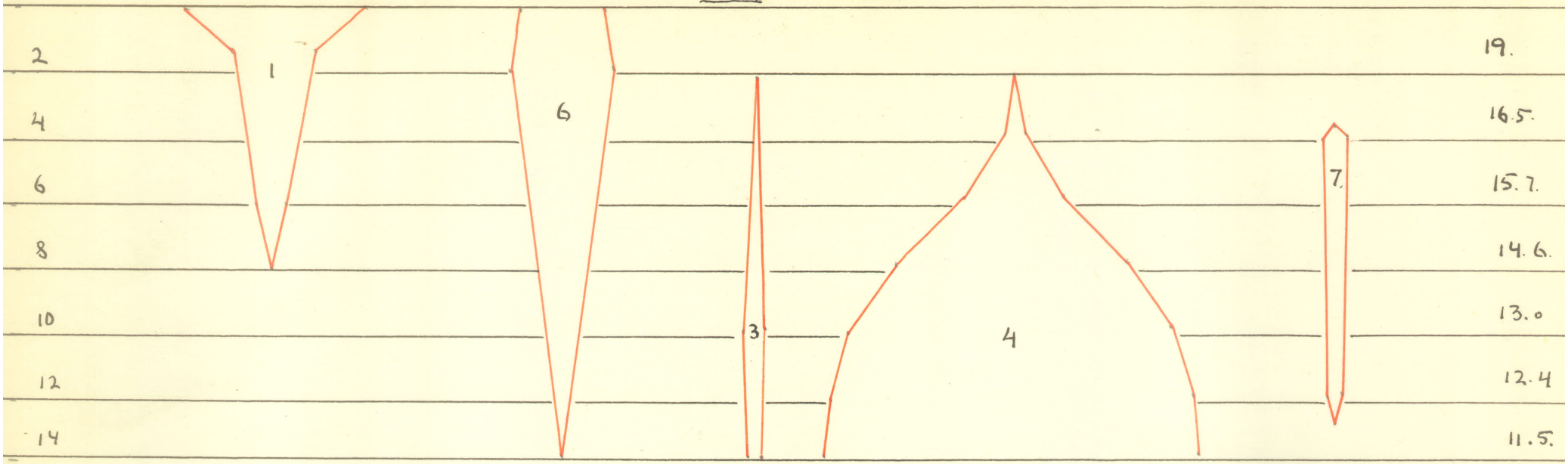
P L A T E XVIII.



CALEDONIA LAKE. 30-VII-26. 6 p.m.

S.W. wind. Rain.

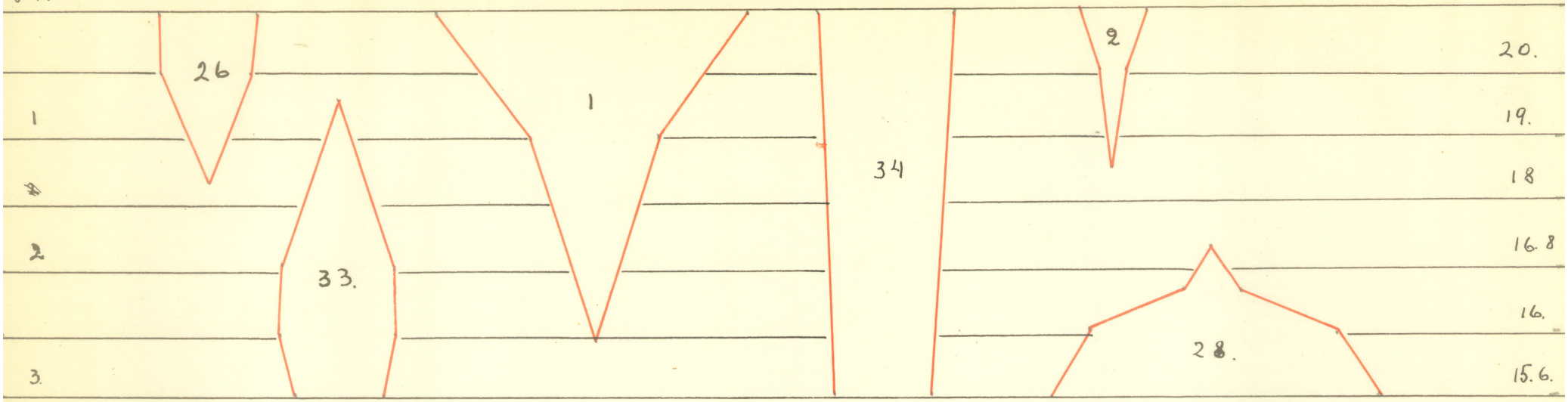
PLATE XIX.



ANNETTE LAKE. 2-VIII-26. 3 p.m.

Fair;air T. 22 C.;barom. 680 mm.

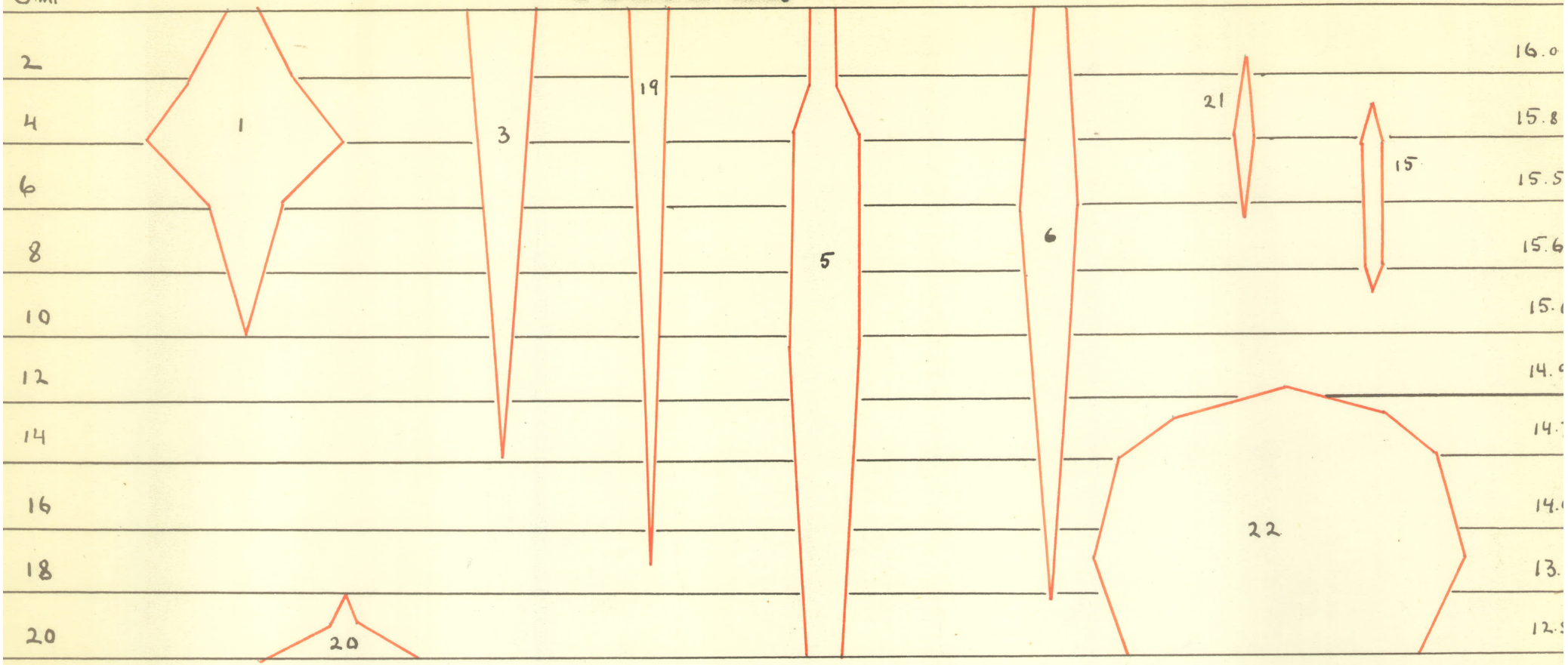
PLATE XX.



MILDRED LAKE. 26-VII-26. Near outlet creek. 6.30 p.m.

Fair; air T. 19.5 C. Barom. 673 mmm.

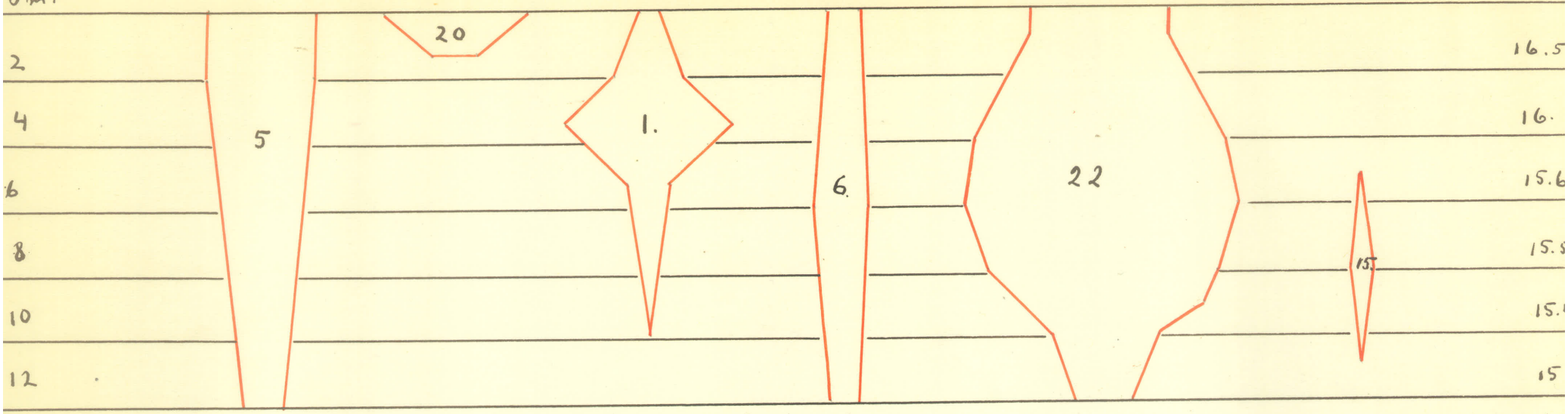
PLATE XXI.



ANNETTE LAKE. 2-VIII-26. 3 p.m..

Fair; air T. 22 C.; barom. 680 mm.

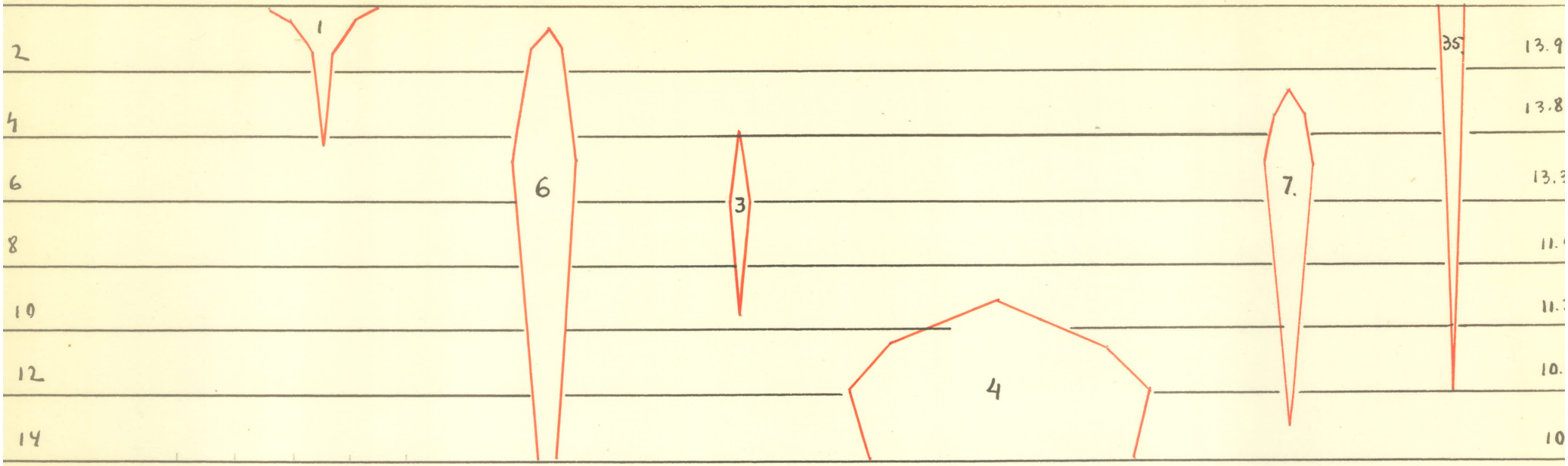
PLATE XXII.



ANNETTE LAKE. 2-VIII-26. I a.m. Night.

Air T. 12.5 C.

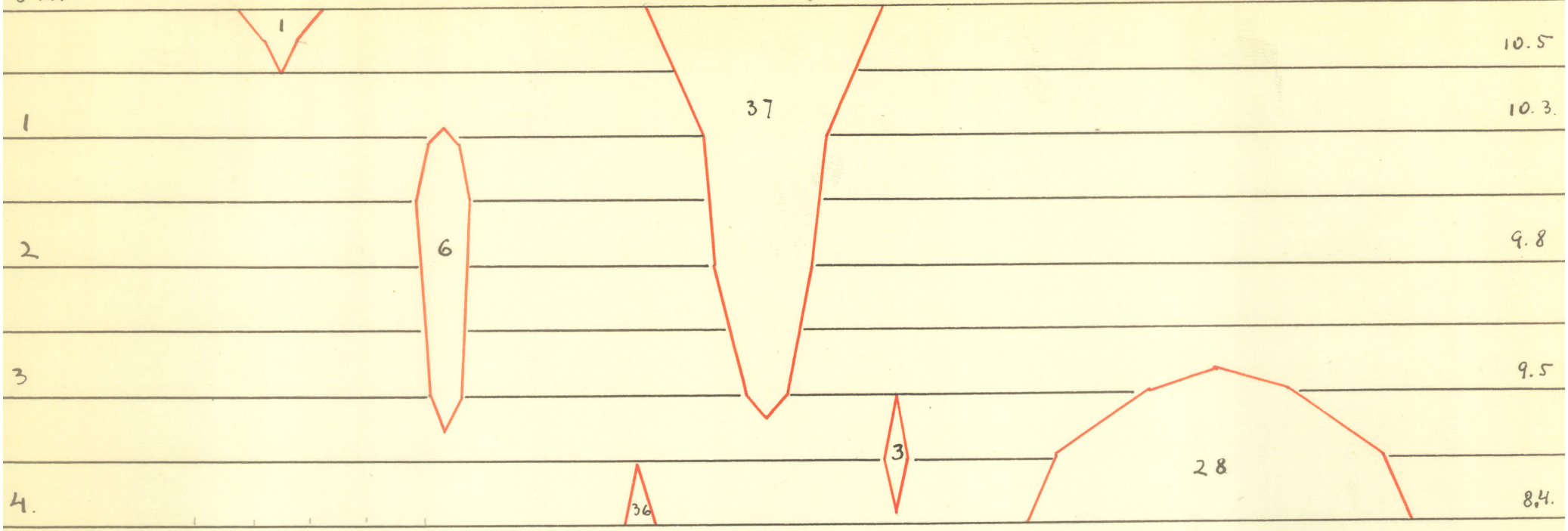
PLATE XXXII.



BEAUVERT LAKE. 4-VIII-26. 3.30 p.m.

Cloudy; air T. 17.5 C.

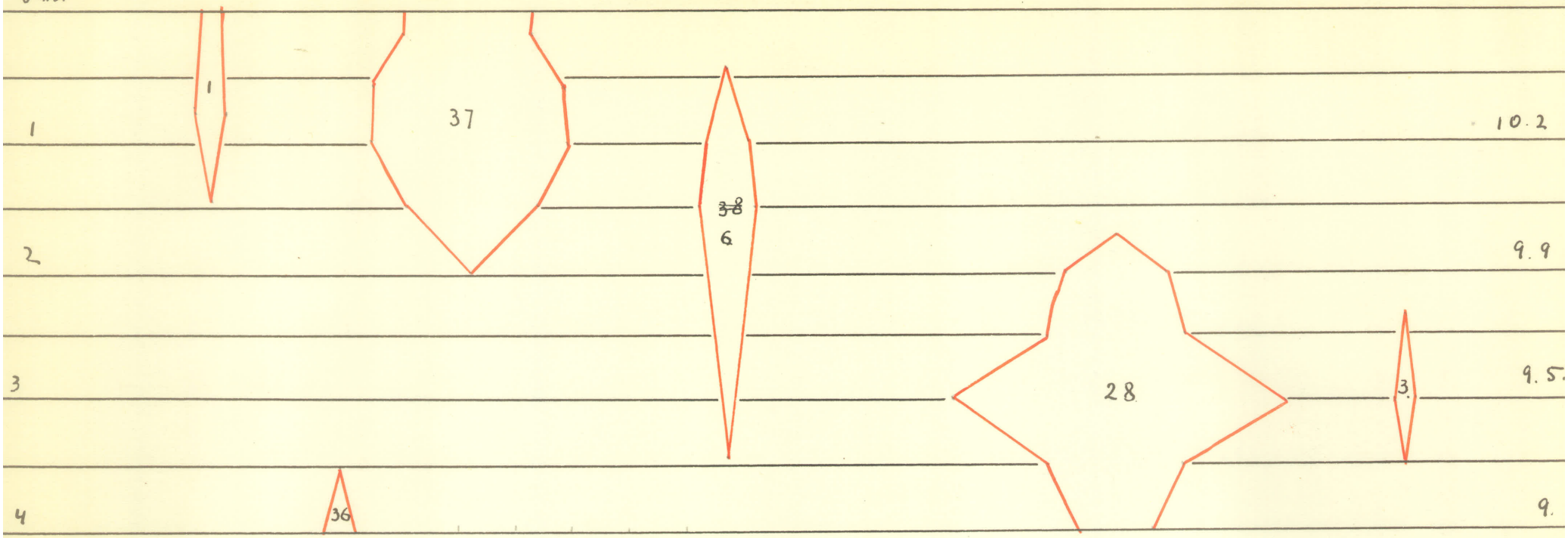
P L A T E XXIV.



JACQUES LAKE. 6-VIII-26. I p.m.

Fair; air T. 19 C. Barom. 645.

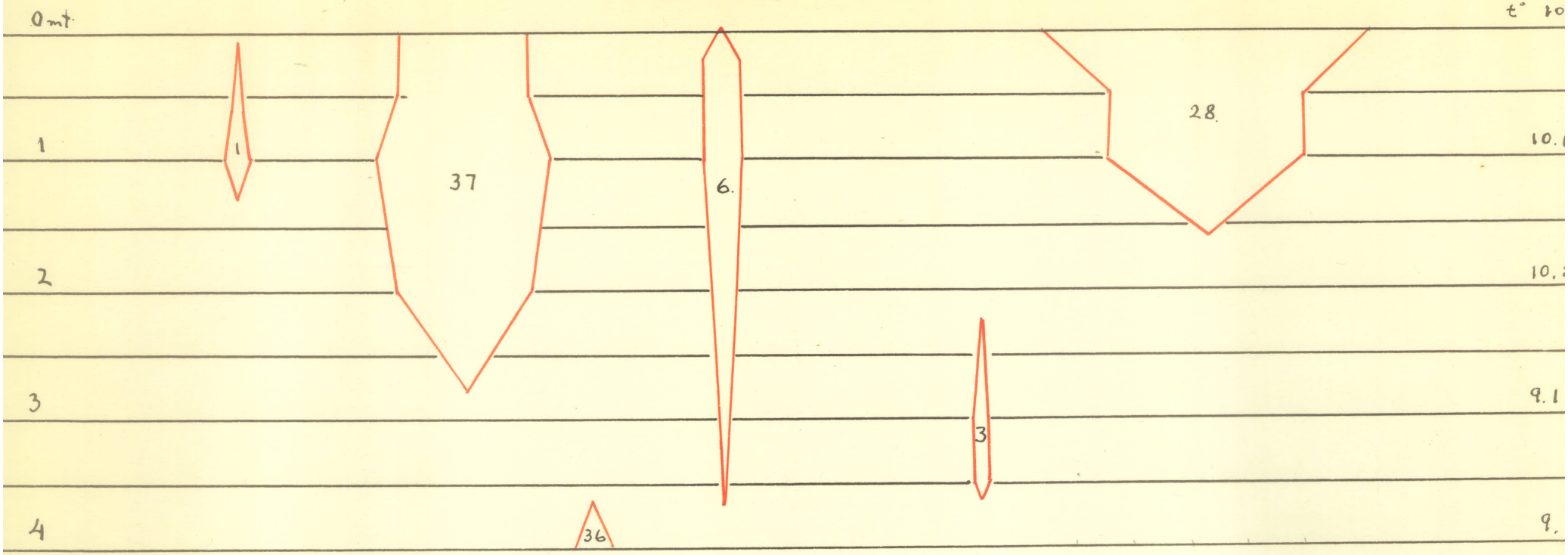
PLATE XXV.



JACQUES LAKE. 6-VIII-26. 6 p.m.

Fair.;air T. 14,9 C. Barom. 649 mm.

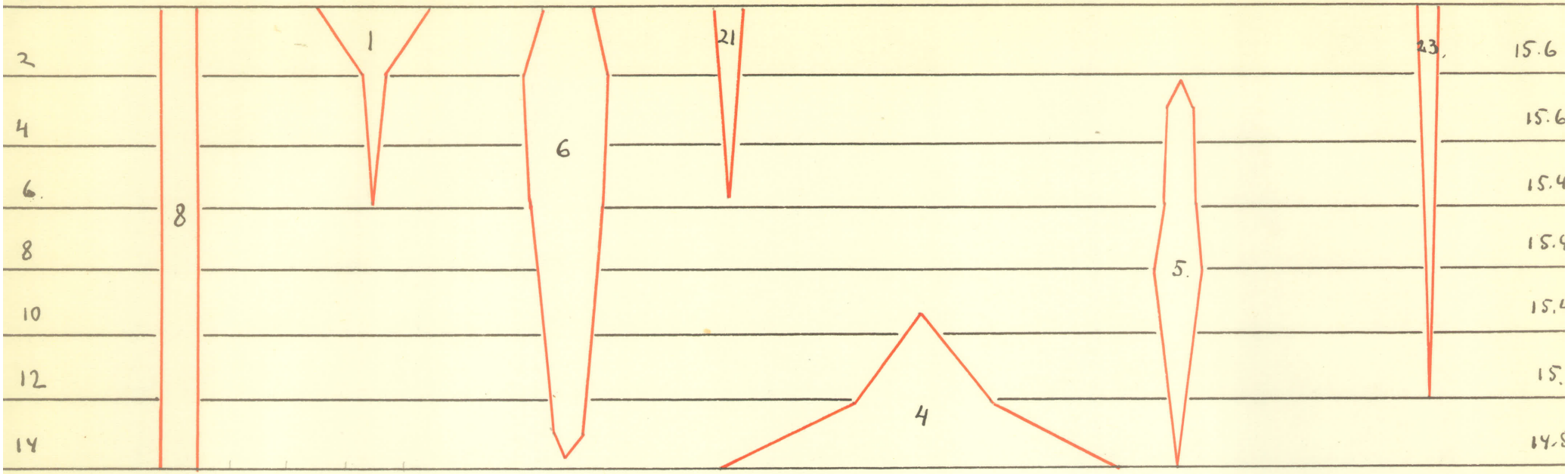
P L A T E XXVI.



JACQUES LAKE. 7-VIII-26. I a.m. (night).

Air T. 9 C. Barom. 648 mm.

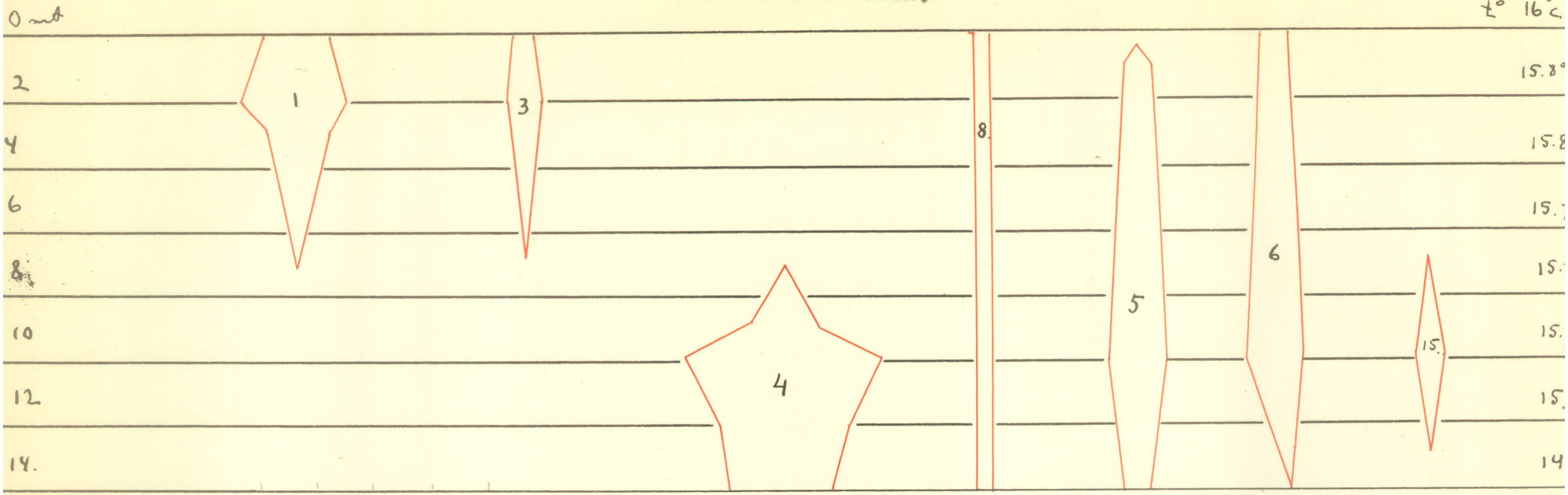
PLATE XXVII.



EDITH LAKE. 6-VII-26. 12 noon.

North wind. Cloudy.

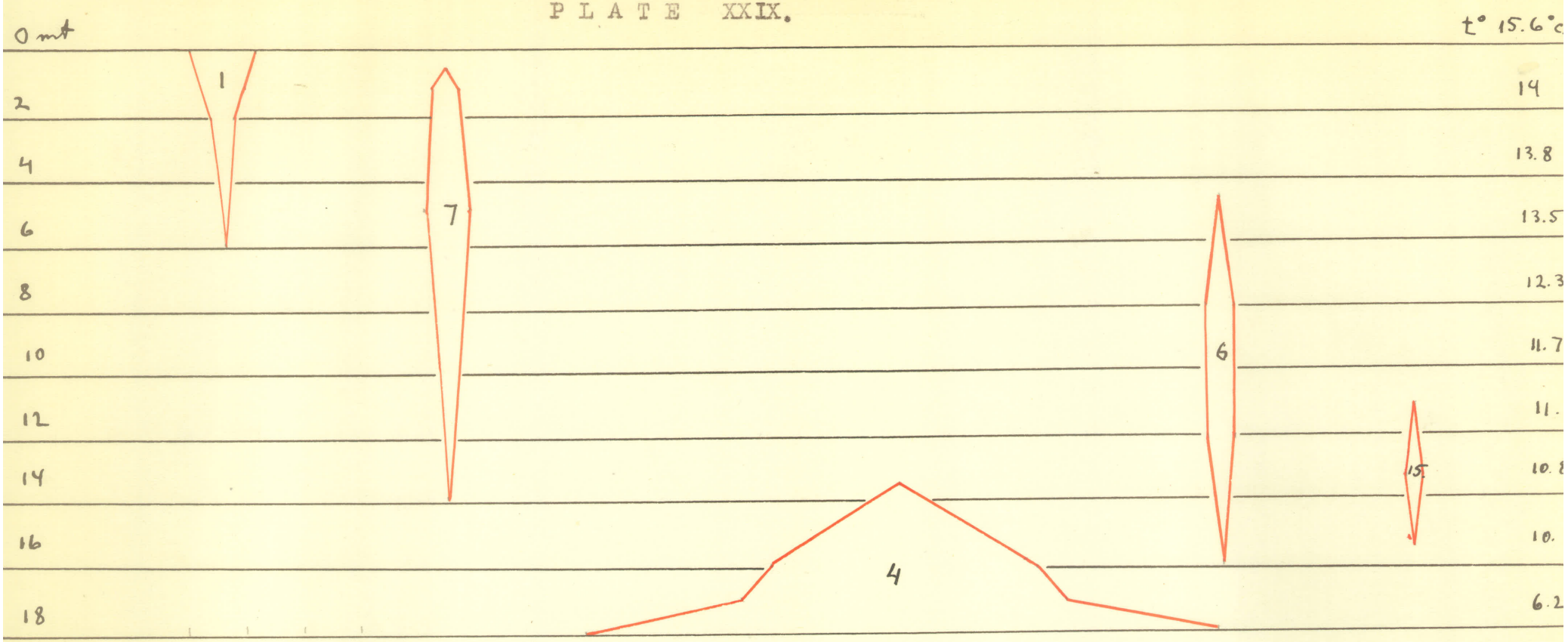
PLATE XXVIII.



ANNETTE LAKE. 9-VIII-26. 7 p. m.

Sunshine; N.W. wind; air T. 16.9 C.

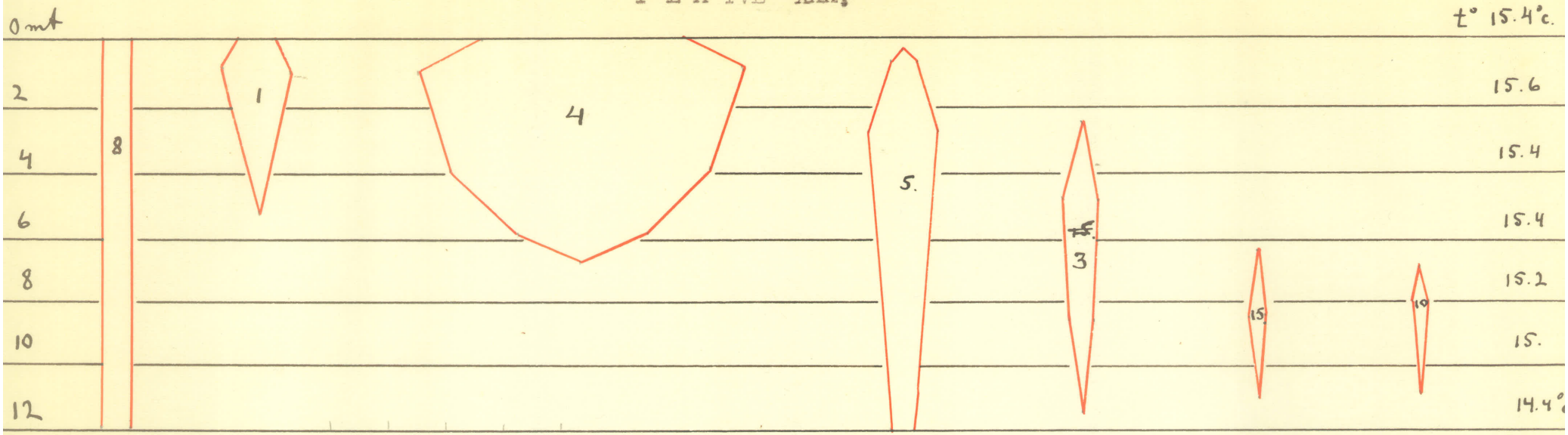
P L A T E XXIX.



BEAUVERT LAKE. IO-VIII-26. I2 noon.

Sunshine; air T. I9.9 C.

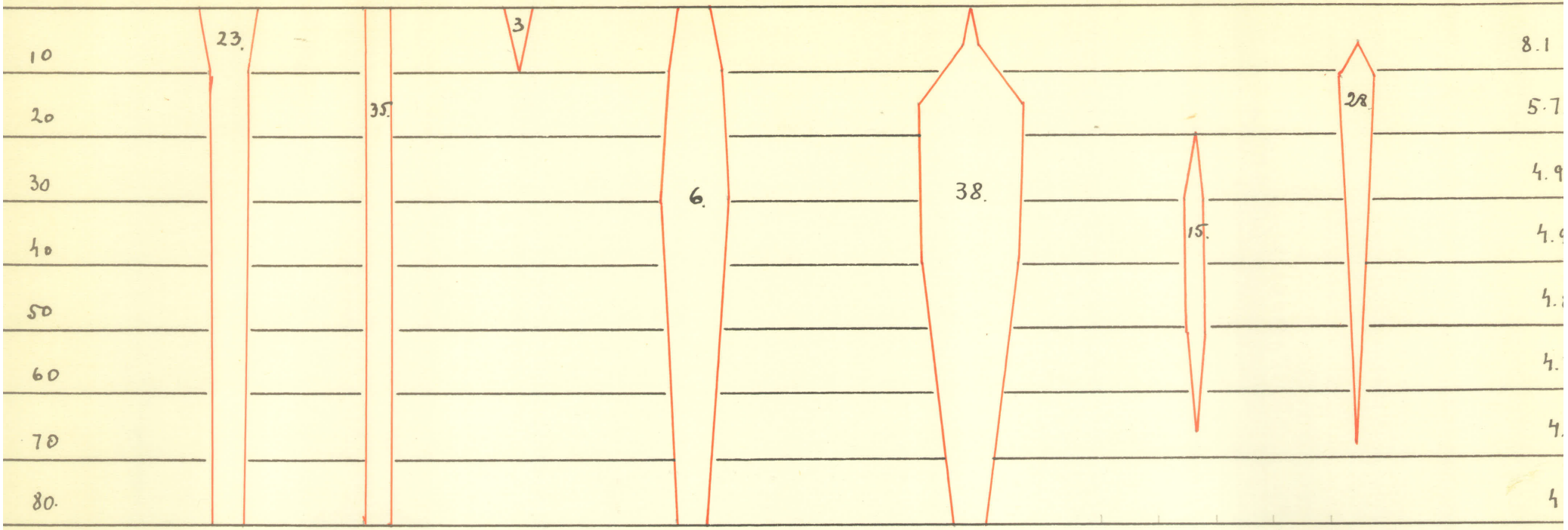
P L A TVE XXX.



EDITH LAKE. II-VII-26. 7.30 p.m.

Fair; air T.17.5 C.

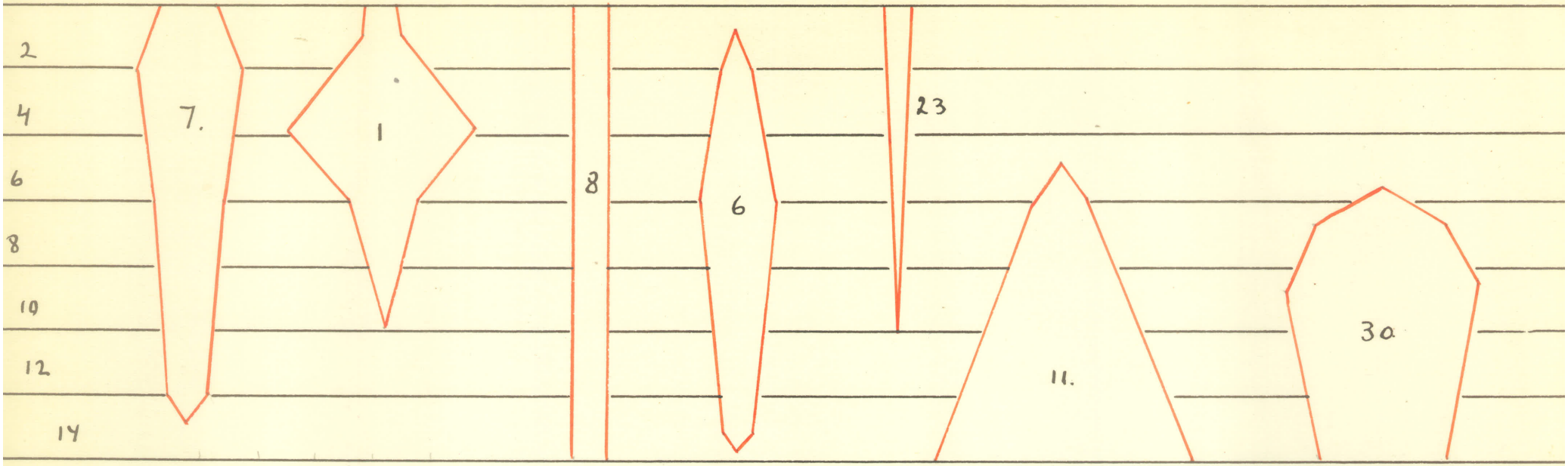
PLATE XXXI.



MALIGNE LAKE. II-VIII-26 3.30 p.m.

Sunshine. Air T. 18.8 C. Barom. 631 mm.

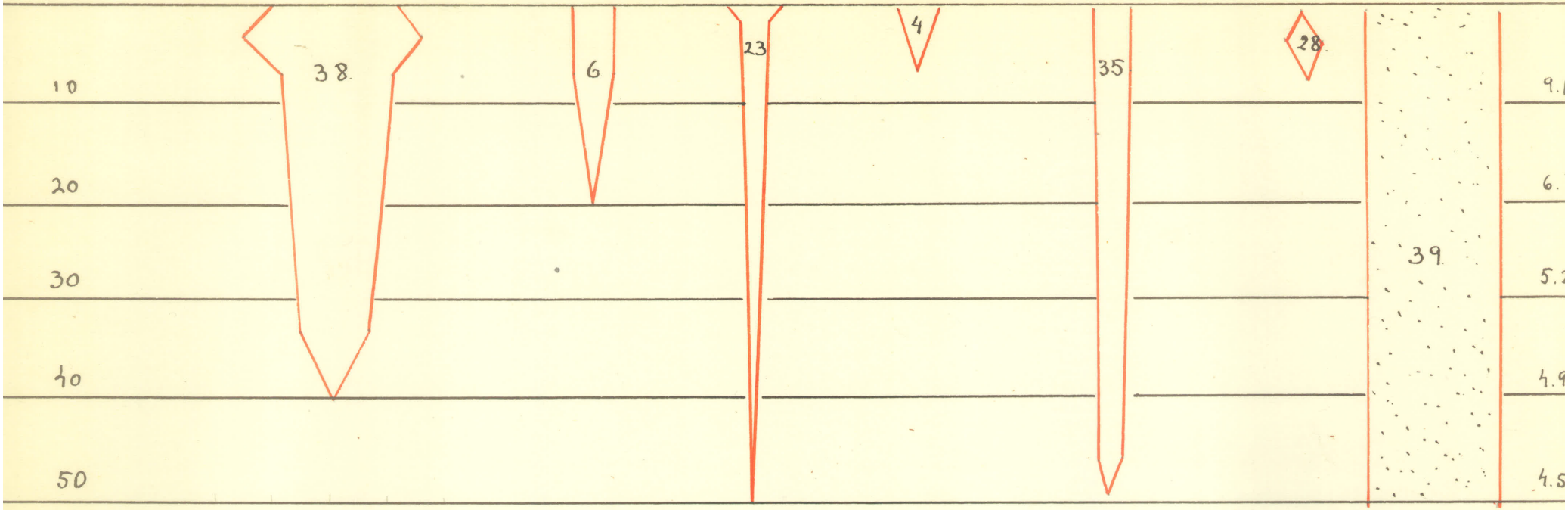
P L A T E XXXII.



PYRAMID LAKE. 12-VIII-26. 4.30 p.m.

Fair.

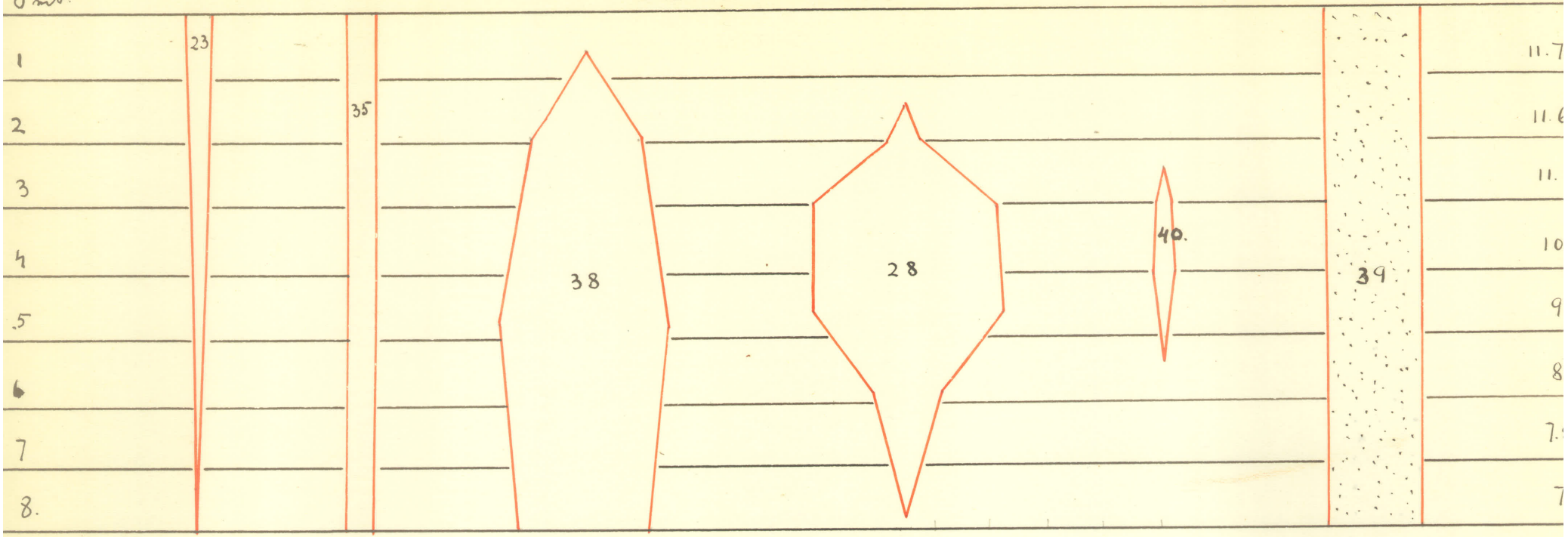
PLATE XXXIII.



MALIGNE LAKE. I"-VIII/26. 4 p.m.

Upper end; cloudy;air T. 15.6 C. Barom. 631 mm. Secchi disk 0.6 mt.

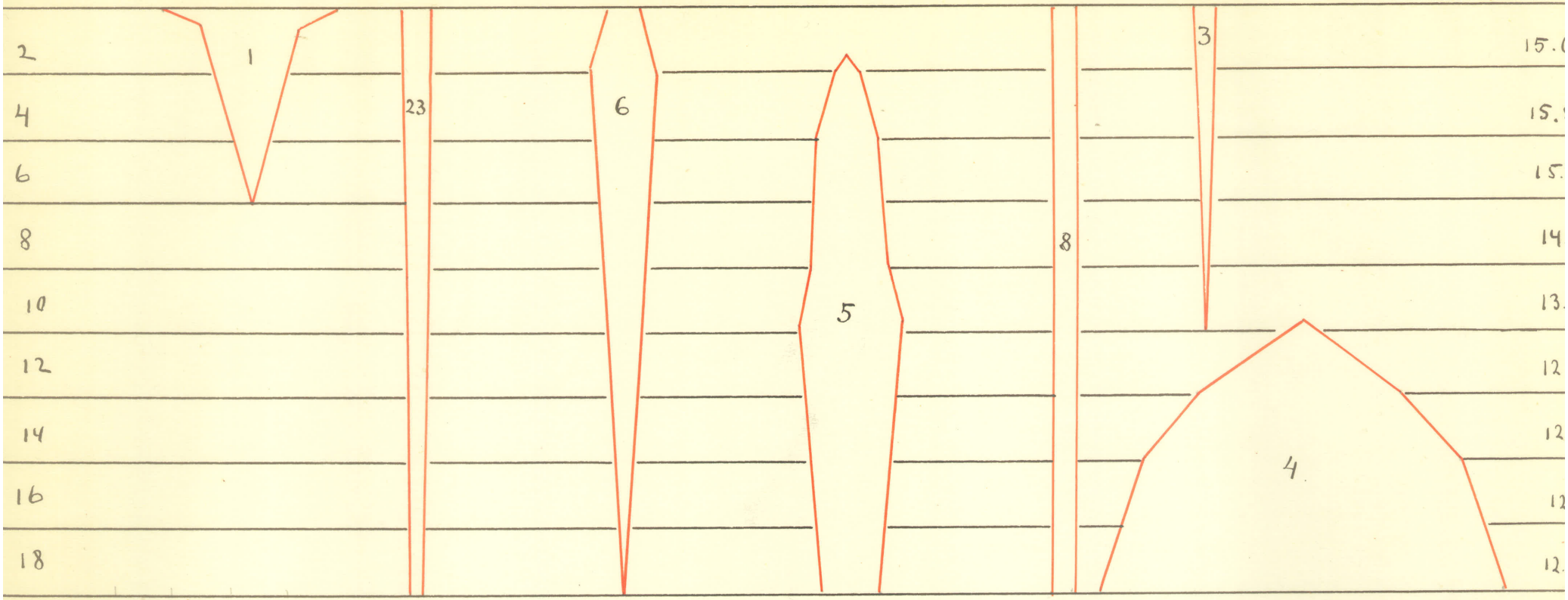
PLATE XXXIV.



MALIGNE LAKE. I3-VIII-26 3 p.m.

Lower ene; fair; air T.I9.5 C. Secchi disk I.5 mt.

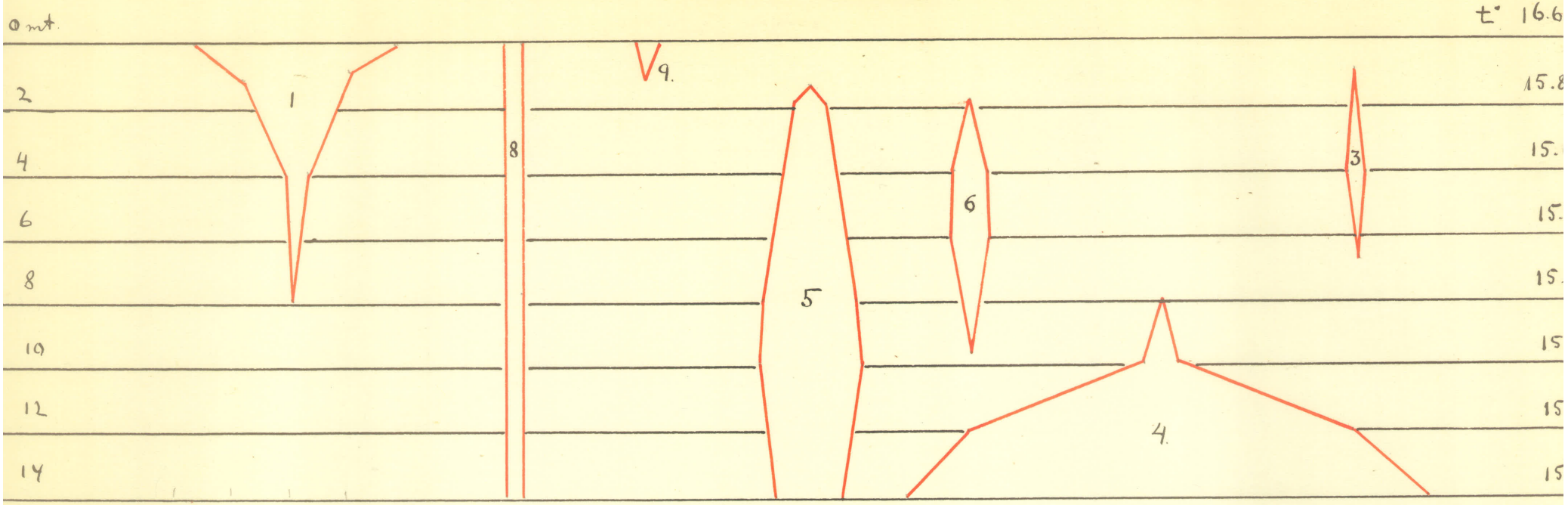
PLATE XXXV.



ANNETTE LAKE. 18-VIII-26. 12 noon.

Sunshine; air T.27 C. Barom. 672 mm.

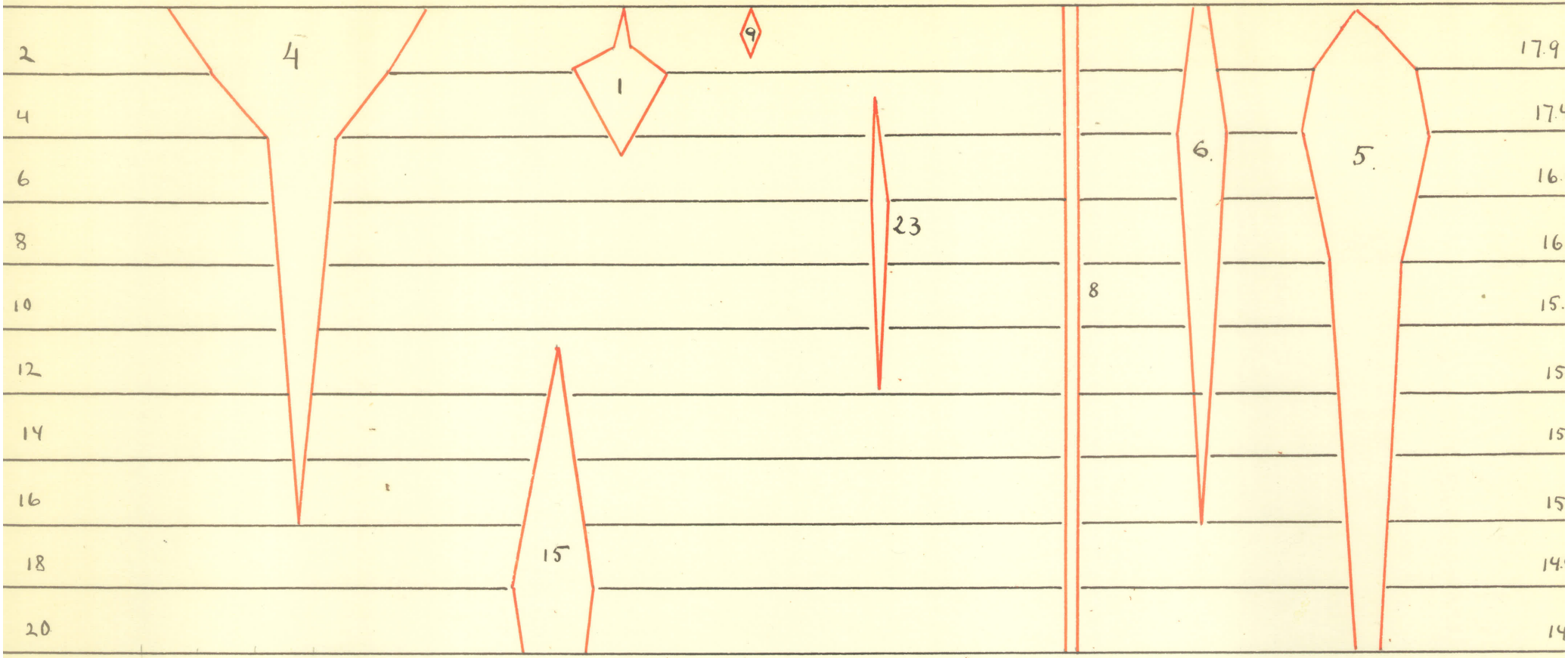
PLATE XXXVI.



EDITH LAKE. 12-VIII-26 5p.m.

West wind. air T.5 C. Barom. 672 mm.

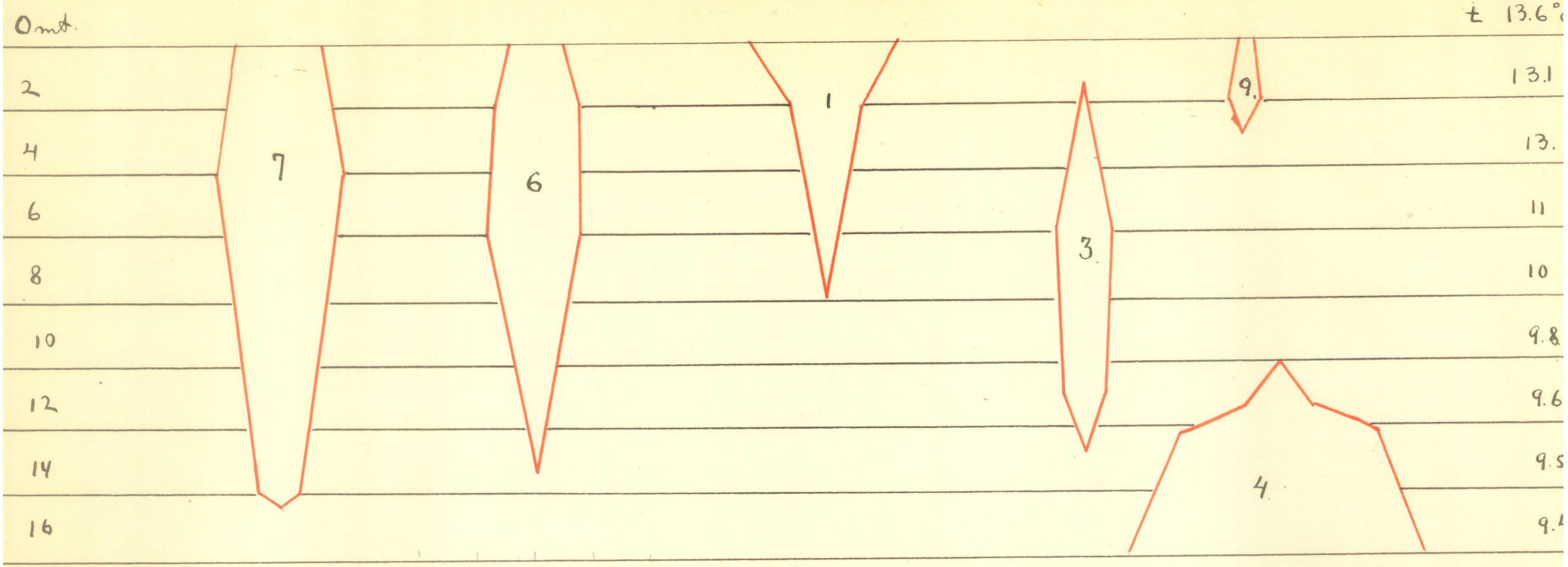
PLATE XXXVII.



ANNETTE LAKE. 30-VIII-26. 6 p.m.

Fair. Air T. 19 C. Barom. 657 mm.

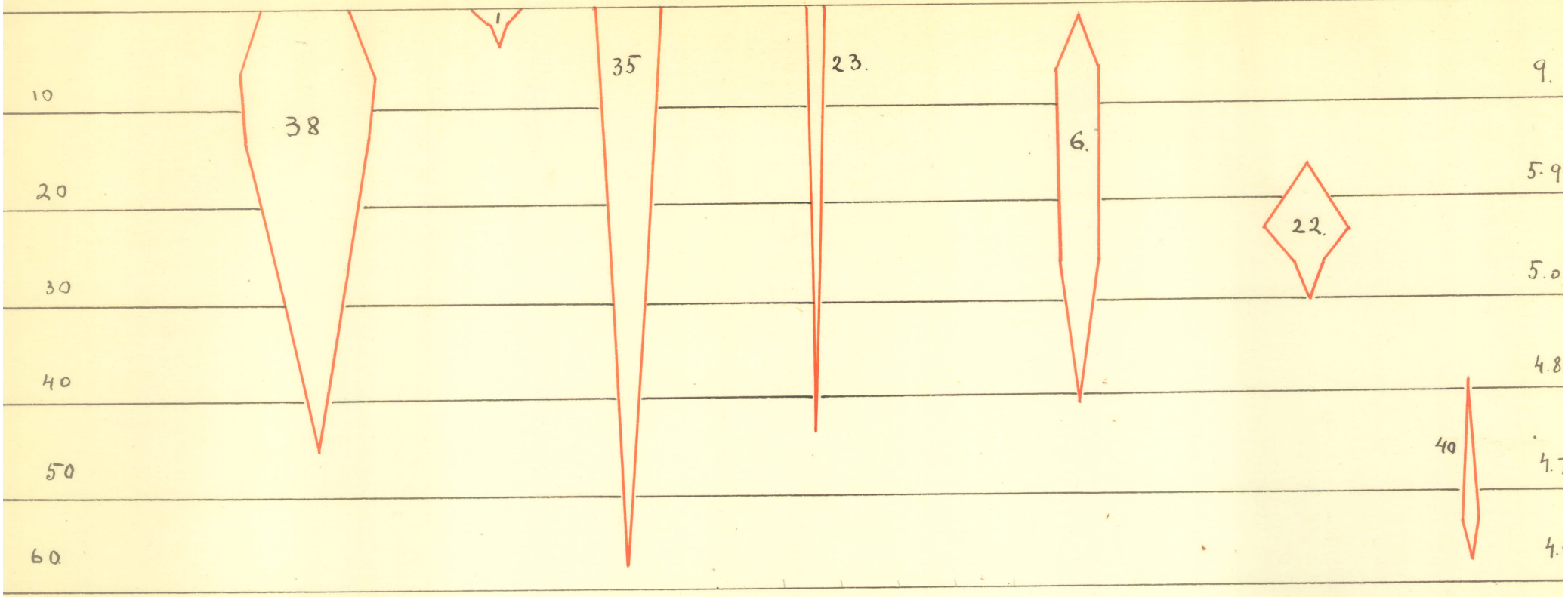
PLATE XXXVIII.



BEAUVERT LAKE. 3-IX-26. II p.m.

Sunshine; air T. 16.5 C.

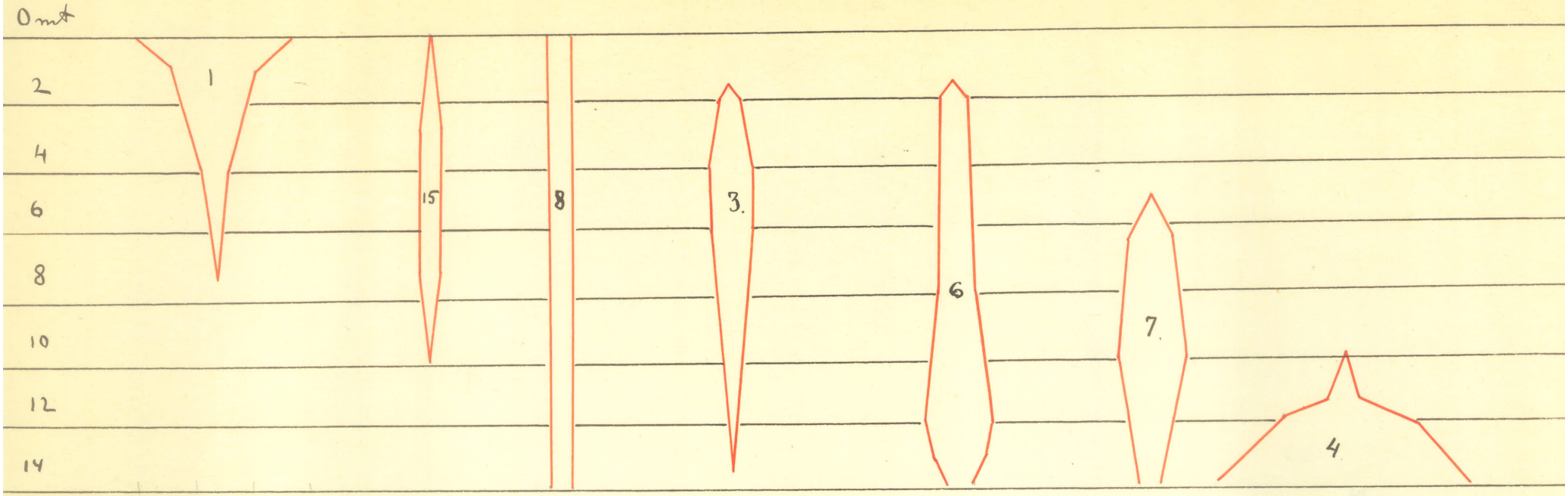
PLATE XXXIX.



MALIGNE LAKE. 25-VIII-26. 5.30 p.m.

Upper end.;fair;air T. 15.6 C. barom.625 mm.

PLATE XL.



BEAUVERT LAKE. 21-VIII-26. Ip.m.

Fair; barom. 676 mm.