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Table of Contents, Translation [from the Hungarian to German] of Table Headings, and Textual Explanations to the 1935 Yearbook: Supplement to the 1935 Hydrographic Yearbook

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STAT

Hydrographic Institute of the Royal Hungarian

Ministry of Agriculture

Budapest

TABLE OF CONTENTS, TRANSLATIONS OF TABLE HEADINGS AND TEXT ILLUSTRATIONS OF THE 1935 ANNUAL

Supplement to the 1935

Hydrographic Annual

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Royal Hungarian Ministry
of Agriculture
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TABLE OF CONTENTS, TRANSLATIONS OF TABLE HEADINGS AND TEXT ILLUSTRATIONS OF THE 1935 ANNUAL

Page 1 Hydrographic Annual 1935, Volume XI.

Issued by the Hydrographic Institute of the Royal Hungarian Ministry of Agriculture.

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PREFACE

This year the Institute celebrated the fiftieth anniversary of its founding. The general financial situation did not allow issuance of a special jubilee edition on this occasion. Therefore it was our desire to at least give our jubilee annual a somewhat richer content.

So we publish this year, instead of information on the preceding year from only 24 water-gaging stations, detailed data from 36 stations. Each of the more important watercourses is represented by information from at least one gaging station.

We have supplemented the data of other gaging stations with main figures on stage fluctuations for the past ten years.

In the hydrometeorological section, in addition to annual precipitation tables for individual seasons, we present the

synoptic tables showing precipitation departures from the 30-year average. A special table gives precipitation data during the growing period (1 April to 30 September). The annual contains ten special appendixes this year which we present at the end of this summary.

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The Organization of the Hydrographic Institute in 1935

Director: Ministerial Councilor Johann Dieter

The Institute has the following departments:

1. Records of stream beds
2. Hydrology
3. Water level service
4. Hydrometry
5. Research Department
6. Administration

Personnel: 12 engineers, 3 technicians, 3 water masters, 7 draftsmen, 1 administrative official, 2 secretaries, and 2 helmsmen on two houseboats.

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The Activities Report for 1935

1. Stream Bed Records

This department has introduced a so-called "comparative low water line" in order to facilitate the preparation of plans of

deep stream beds and the planning of reclamation work. This is a leveled line passing through the zero datum of the Budapest water-gaging station and approximately parallel to the low water line established in 1930. Its absolute height is determined by total kilometer readings and its relative height is above the zero datums of all gaging stations. Since the zero datums of gaging stations vary with stream bed changes, and are not everywhere at the same low water line because of changes in location of gaging stations, the zero water level became a term valid only for local conditions, and its height between two stations is largely uncertain. From this resulted the necessity of introducing a new comparative level line which naturally should be reestablished every ten years.

The department continued the leveling of a well net for purposes of groundwater observation and started work on a new situational plan and longitudinal section of the Danube.

2. Hydrology

Collection and analysis of data for studying the water supply of Balaton and Velenceer Lakes and also of some smaller ponds was continued. The department also participated in the analysis of precipitation observations made by the Meteorological Institute.

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3. Water Gaging Service

The department supervises an observation net embracing 92 first class gaging stations and analyzes observational data. Its duties also consist in the preparation of synoptic tables of

daily stage levels, the international information service, and stage predictions.

4. Hydrometry

The department supervises water measurements (120 in 1935) and standardization of hydrometric vanes in addition to recording the results.

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5. Research Department

The net of artesian wells for observing fluctuations of the groundwater-level fluctuations was increased by 28 new wells. The well net in operation at the end of 1935 is shown in appendix 2. According to that the number of wells supervised by the Hydrographic Institute was 100 (asterisk), the net established and administered by Professor S. Rohringer of the Institute of Technology includes 149 artesial wells (black dots), the Forestry Institute has more than 24 artesian wells (squares), and the new artesian wells are successively established on 106 places marked with crosses.

Appendix 3 contains tabular information on water levels in 69 wells for 1933-1935.

The department has built a new reinforced concrete calibration channel for hydrometric vanes. The channel is 100 meters long, 2.8 meters wide and 1.15 meters deep. (See plan, Appendix 4). For determining the bucking speed of the vanes a basin at the end of the canal is used. This basin is 26 meters long and 0.4 x 0.5 meters in profile, and the current velocity of the water can be

regulated in it. A sliding plate serves to measure and regulate current velocity. There is at the end of the main channel an office and storage building.

Master plans have been prepared for building new and reconstructing present watermark posts. Appendix 5 shows a diagonal watermark post, which is placed upon a steel construction consisting of I beams. The girder beams are covered above low water line with reinforced concrete. Appendix 6 shows a solution in steel; appendix 7 contains the plan of a vertical reinforced concrete watermark post; appendix 8 shows the attachment of water level gages to bridgeheads and bridge piers.

The Research Department ceased to exist during the year because its engineers were transferred to construction work. The revision of projects submitted by offices for cultural and electrical constructions, previously performed by this department, is now performed by other departments of the Institute.

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6. Special and General Duties

The Institute gave expert opinions on the numerous cases submitted, performed administrative work connected with publishing the water supply service's communications (water construction reports and other works) and administered the Hydrographic Museum.

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RESULTS OF OBSERVATIONS AND THEIR UTILIZATION

General Information

General explanations on the use of the Annual. Definition and explanation of abbreviations used. Instead of translating

this chapter into German we put the necessary remarks in the individual tables.

Page 15 Part 1. Water Volume of Rivers

1. Water Volume of Our Rivers in 1935

The description of water volume and ice conditions on the Danube (page 15-16), Theiss (Theiss page 16), and its tributaries (page 17).

The tables comprise the most important data of some characteristic stations.

TEXT OF TABLE HEADINGS

Gaging Station	Average Water level 1935	Average of the 1876-1935 annual averages	Highest water level		Lowest water level	
			1935	1876-1935	1935	1876-1935
	in centimeters					

The table on page 17 showing the tributaries contains in addition to the above columns another column with names of the tributaries.

In water level data ▭ means stable ice, ⬚ means moving ice.

The data on ice conditions on tributaries are in the lower table on page 17.

River	Gaging Station	Duration of		Thickness of ice, by months	centimeter
		Moving Ice	Stable Ice	January-February	December

Page 18 Balaton Lake

The average water level at the Siofok gaging station was 74 centimeters in 1935, the highest, 98 centimeters; and the lowest, 47 centimeters. The lake was frozen from 12 January to 21 February.

Page 19 2. Table of Hydrogradients

The water level is shown in Ritter's hydrogradients in the synoptic hydrographic tables published daily. We define a hydrogradient as the tenth part of the water level fluctuation between the highest and lowest gage readings. Our table contains the limits of ten water level phases in 35 telegraphically reporting gaging stations, composed in accordance with the foresaid. The first figure column shows the lowest ice-free water level values in centimeters as observed during the past 15 years, and the last column contains the highest water level values as recorded by gaging stations since 1890. The older extreme values were not taken into consideration for establishing the hydrogradients because of bed changes in the meantime.

Page 20 3. Alphabetic Index of Gaging Stations

Consecutive number Gaging station Page

The underlines watermark posts under 5 (pages 22-57) show in addition to daily water levels also other detailed information.

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4. Index of Gaging Stations Arranged According to Rivers

River | Consecutive number | Gaging station | Page

The underlined gaging stations under 5 (Page 22-57) contain in addition to daily water levels other detailed data.

River — Gaging Station

Position of the station, the distance from the mouth in kilometers (for the Danube stations, from Budapest chain bridge as well

Elevation of 0-datum above Adriatic — Observations since: — Watershed in square kilometers

Daily water levels, 7 a.m. centimeters	cm in water level	Frequency of water levels in 1935	Frequency	Duration	Frequency	Duration
			Days			
Months		Months	in 1935		average 1925-1934	

Days

1935

1925-1934

Water levels with moving ice

Water levels with stable ice

KV= Monthly minimum

KOV= Monthly average

NV= Monthly maximum

KV= Monthly minimum

KOV= Monthly average

NV= Monthly maximum

of the decade

(Frequency of water levels from month to month in past years. The data are expressed in full days).

Frequency and duration of water levels in observation year 1935 and the average for 1925-1934

KV [KV] = Lowest water level
without or with ice

KKV = Medium-: low water

KOV = Medium water level

KNV = Medium-high water

NV [NV] = Highest water level
without or with ice

ATV = Usual water level
(Duration 182.5 days)

LKV [LKV] = The lowest known water level
without or with ice

LNV [LNV] = The highest known water level
without or with ice

For the decade 1925-34 or of the past year

Graphic Representation:

(a) of the water volume graph

(b) of the moistening duration line

(c) of the frequency of water levels (each gradient equals 25 centimeters)

Average for 1925-1934

Graphic Representation of the Gaging Station Profile

The observed highest and lowest water levels and the elevation of O-datum (zero water) are shown. In bridge profiles the piers are shown.

Water discharge: m^3/sec

Moistening duration, days

Frequency, days

River Discharge Measurements During Recent Years:

No.	Time of measuring	Water Level	Water level change	Profile area in river bed	Profile area in inundation area	Average Velocity in river bed	Average Velocity in inundation area	Discharge volume
		cm	mm/hour	m^2		m/sec		m^3/sec

The measurements are entered in the water volume graph under their consecutive numbers. Peak values are marked with asterisks, and with a full point if they were obtained during falling or rising stage.

The data for stations Pozsony, Komaron, Tiszaujlak, and Zahony originate from Czechoslovakia Hydrographic Service.

Pages 58-71 6. Records, Daily Water levels and Main Figures in 56 Gaging Stations

The stations are arranged systematically as follows: Danube and tributaries, Theiss and tributaries.

Each page contains data from four stations; the quarter-page is arranged as follows:

River: Gaging Station

Location of the station, the distance from the mouth in km

Elevation of 0- above Adriatic Observations since: Watershed: km^2

Days Months

Daily water levels in at 7 a.m., cm

Water levels with moving ice [- - -]

Water levels with stable ice [———]

1935 KV = Monthly minimums

KOV = Monthly averages 1935

NV = Monthly maximums

KV = Monthly minimums

1925/1934 KOV = Monthly average of the decade

NV = Monthly maximums

KV [KV] = Lowest water level without or with ice

KKV = Medium-low water of the decade 1925/1934

KOV = Medium water or of the past year

KNV = Medium-high water

NV [NV] = Highest water level without or with ice

ATV = Usual water level (duration 182.5 days)

LKV | LKV | = The lowest known water level without or with ice

LNV | LNV | = The highest known water level without or with ice

The detailed data, like those in chapter 5 with 36 stations, will follow for all other stations in time.

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7. River Discharge Measurements in 1935

Table headings indicate content:

Consecutive number	Register of deeds No.	Place of measurement, River, Gaging Station	Time	Water level	Water level changes during measurements	Profile area	Average velocity	Highest surface velocity		Discharge intensity	Inclines	Level width	Discharge volume	Discharge volume calculated by surface velocity		Average depth	Greatest depth	Measurement method
			Month	cm	mm/	F	Vk	Vom	b	q lit/sec / Km²	i cm/Km	B M	Q m³/sec	Qo m³/sec	a	tk m	tk m	
			Day		hour	m²	m/sec	m/sec										

Note: The stations are arranged according to the mentioned system; the river names are in capitals.

Difficulties resulting from the very small inclines (up to 0.01 degrees and sharp curves of our lowland rivers produce very often such insuperable obstacles that measurements cannot be undertaken.

Entries in the last column mean:

p.m. = Vane measurement, point method.

r.m. = Vane measurement, detailed Hajos method.

f.m. = Surface measurement.

Measurements 1 and 27 were made by the Czechoslovak Hydrographic Institute: only the data published here was made available to us.

Page 74-75 8. Water Level Progress Lines 1935 (26 stations included)

On the horizontal lines, designating the zero datum at the gaging station, are the elevations of the 0-marks and the station names. The horizontal lines indicate halves of a meter, the vertical lines one day each. The river names are in capitals.

Page 76 II. METEOROLOGICAL SECTION

Page 76-80 1. Precipitation, Temperature, and Evaporation in Hungary in 1935

Short description of weather conditions of the past century and explanation of the following tabular appendixes. The table on page 77 contains some 24-hour precipitation maximums.

Page 81-82 2. Monthly and Annual Precipitations in Millimeters on 185 observation posts.

Data from the most important observation posts. Stations arranged according to watersheds: D = watershed of the Danube,

T = watershed of the Theiss. The roman figures indicate second class watersheds. (See appendix 1). The names of stations telegraphing daily reports are underlined.

Text of Table Headings

Name	Geographic Location		Elevation Above Sea Level	Monthly Volume of Precipitation	Annual Volume	30-year Average	Deviations from Average
	Longitude East	Latitude Northern					
	° ′	° ′					
	of the precipitation station			Months	mm	mm	mm %

Page 83 3. Precipitation Distribution in 1935

Precipitation chart with rain levels from 50 to 50 millimeters.

Page 84 4. Deviation of Annual Precipitation in 1935 from 30-year Average

Continuous lines: positive deviation

Dotted line: negative deviation

Heavy line: normal precipitation

Page 85-88 5. The Distribution of Precipitation According to Seasons in Hydrological Year 1934-35

(a) Winter 12/1/1934 - 2/28/1935

(b) Spring 3/1 - 5/31/1935

(c) Summer 6/1 - 8/31/1935

(d) Autumn 9/1 - 11/30/1935

Precipitation amount in millimeters

Page 89-90 6. Deviation of precipitation from 30-year average in 1935 -- in percent

(a) Spring 3/1 - 5/31/1935

(b) Summer 6/1 - 8/31/1935

Continuous lines: more precipitation (positive deviation)

Dotted lines: less precipitation (negative deviation)

Heavy lines: normal precipitation

Page 91-92 7. (a) Precipitations during 1935 growing season (1 April - 30 September), and (b) its deviation from 30-year average.

Page 93 8. Monthly precipitations in past year in millimeters and percent of the normal annual volume (black columns) together with monthly average for 30 years (dotted) at 16 characteristic stations.

Page 94 9. Monthly temperature averages for past 60 years (continuous lines) and in past year (dotted line) at eight stations

10. Monthly values of evaporation in millimeters in 1935 (dotted line) compared with 20 year average (continuous line) in four stations (measured with Wild's scale).

Monthly reports and annuals of the Royal Hungarian Meteorological Institute (Budapest, II Kitaibel Pal-u 1) give detailed data on meteorological reports.

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Appendixes: (In a separate envelope at the end of the volume)

1. Hungary's net of hydrographic and meteorological stations in 1936 (1:750,000)

2. Situational plan of artesian well net for groundwater observations

3. Groundwater-level movements

4. Plan of the new calibration basin for hydrometric vanes

5. Diagonal watermark post, solution I

6. Diagonal watermark post, solution IIa and IIb

7. Vertical watermark post on reinforced concrete pillars

8. Attachment of cast iron gauges to vertical brick walls

9. Reinforced concrete bolts for identification of recording profiles and cast iron level bolts

10. Directives for examination of bed gravel mixtures

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