INDIAN COTTON COMMITTEE

MINUTES OF EVIDENCE

TAKEN BEFORE THE

INDIAN COTTON COMMITTEE

NOTICE

The first five volumes of the Minutes of Evidence taken before the Indian Cotton Committee, 1917-19 were issued in 1920. The accompanying Volume VI—Appendix contains Maps and Diagrams pertaining to the Evidence recorded during the Enquiry and should be added to the volumes previously issued.

CALCUTTA
SUPERINTENDENT GOVERNMENT PRINTING, INDIA
1920

INDIAN COTTON COMMITTEE

MINUTES OF EVIDENCE

TAKEN BEFORE THE

INDIAN COTTON COMMITTEE

VOLUME VI

APPENDIX

MAPS AND DIAGRAMS

CALCUTTA
SUPERINTENDENT GOVERNMENT PRINTING, INDIA
1920

Agents for the Sale of Books Published by the Superintendent of Government Printing, India, Calcutta.

IN EUROPE.

Constable & Co., 10, Orange Street, Leicester Square, London, W.C.

Kegan Paul, Trench, Trübner & Co., 68-74, Carter Lane, E.C., and 25, Museum Street, London, W.C.

Bernard Quaritch, 11, Grafton Street, New Bond Street, London, W.

P. S. King & Sons, 2 & 4, Great Smith Street, Westminster, London, S.W.

H. S. King & Co., 65, Cornhill, E.C., and 9, Pall Mall, London, W.

Grindlay & Co., 54, Parliament Street, London, S.W.

Luzac & Co., 46, Great Russell Street, London, W.C.

W. Thacker & Co., 2, Creed Lane, London, E.C.

T. Fisher Unwin, Ltd., No. 1, Adelphi Terrace, London, W.C.

Wm. Wesley & Son, 28, Essex St., Strand, London.

B. H. Blackwell, 50 & 51, Broad Street, Oxford.

Deighton, Bell & Co., Ltd., Cambridge.

Oliver and Boyd, Tweeddale Court, Edinburgh.

E. Ponsonby, Ltd., 116, Grafton Street, Dublin.

Ernest Leroux, 28, Rue Bonaparte, Paris.

Martinus Nijhoff, The Hague, Holland.

IN INDIA AND CEYLON.

Thacker, Spink & Co., Calcutta and Simla.

Newman & Co., Calcutta.

R. Cambray & Co., Calcutta.

S. K. Lahiri & Co., Calcutta.

B. Banerjee & Co., Calcutta.

The Indian School Supply Depôt, 309, Bow Bazar Street, Calcutta, and 226, Nawabpur, Dacca.

Butterworth & Co. (India), Ltd., Calcutta.

Rai M. C. Sarcar Bahadur and Sons, 90/2A, Harrison Road, Calcutta.

The Weldon Library, 57, Park Street, West, Calcutta.

Standard Literature Company, Limited, Calcutta.

Lal Chand & Sons, Calcutta.

Association Press, Calcutta.

Higginbotham & Co., Madras.

V. Kalyanarama Iyer & Co., Madras.

G. A. Natesan & Co., Madras.

S. Murthy & Co., Madras.

Thompson & Co., Madras.

Temple & Co., Madras.

P. R. Rama Iyer & Co., Madras.

Vas & Co., Madras.

E. M. Gopalakrishna Kone, Madura.

Thacker & Co., Ltd., Bombay.

A. J. Combridge & Co., Bombay.

D. B. Taraporevala, Sons & Co., Bombay.

Mrs. Radhabai Atmaram Sagoon, Bombay.

Sunder Pandurang, Bombay.

Gopal Narayan & Co., Bombay.

Ram Chandra Govind & Son, Kalbadevi, Bombay.

Proprietor, New Kitabkhana, Poona.

The Standard Bookstall, Karachi.

Mangaldas Harkisandas, Surat.

Karsandas Narandas & Sons, Surat.

A. H. Wheeler & Co., Allahabad, Calcutta and Bombay.

N. B. Mathur, Supdt., Nazir Kanun Hind Press, Allahabad.

Munshi Seeta Ram, Managing Proprietor, Indian Army Book Depôt, Juhi, Cawnpore.

Rai Sahib M. Gulab Singh & Sons, Mufid-i-Am Press, Lahore and Allahabad.

Rama Krishna & Sons, Lahore.

Supt., American Baptist Mission Press, Rangoon.

Manager, the "Hitavada," Nagpur.

S. C. Talukdar, Proprietor, Students and Co., Cooch Behar.

A. M. & J. Ferguson, Ceylon.

Manager, Educational Book Depôts, Nagpur and Jubbulpore.*

Manager of the Imperial Book Depôt, 63, Chandney Chauk Street, Delhi.*

Manager, "The Agra Medical Hall and Co-operative Association, Ltd." (Successors to A. John & Co., Agra).*

Supt., Basel Mission Book and Tract Depository, Mangalore.*

P. Varadachary & Co., Madras.*

H. Liddell, Printer, etc., 7, South Road, Allahabad.*

Ram Dayal Agarwala, 184, Katra, Allahabad.*

D. C. Anand & Sons, Peshawar.*

Manager, Newal Kishore Press, Lucknow.*

* Agents for the sale of Legislative Department Publications only.

VOLUME VI.

Plans and Diagrams.

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No. 21.—Diagram showing areas of rabi crops on Native States branches of the Sirhind Canals (Major Works).
(Annexure X to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab. Vol. III, pages 68—74.)

No. 22.—Diagram showing capacity of Sirhind Canal Main line.
(Annexure XI to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab. Vol. III, pages 68—74.)

No. 23.—Diagram showing price of wheat and water rate, Ludhiana District, Punjab.
(Annexure I to oral evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab. Vol. III, page 75.)

No. 24.—Diagram showing price of cotton and water rate, Ludhiana District, Punjab.
(Annexure II to oral evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab. Vol. III, page 75.)

No. 25.—Diagram showing mean discharges of Punjab rivers in rabi for eleven years 1903—14.
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No. 26.—Diagram showing rise and fall of the River Jhelum in 1915-16.
(Annexure V to evidence of Mr. W. P. Sangster, C.I.E., Superintending Engineer, Lower Jhelum Circle, Punjab. Vol. III, pages 76—88.)

No. 27.—Diagram showing rise and fall of the River Chenab in 1915-16 at Garhi Gola.
(Annexure VII to written evidence of Mr. F. T. Bates, Superintending Engineer, Lower Chenab Canal Circle, Punjab. Vol. III, pages 110—118.)

No. 28.—Diagram illustrating water supplies in the Sidhnai Canal, April to June.
(Annexure IV to written evidence of Mr. A. R. Murray, Superintending Engineer, Derajat Circle, Punjab. Vol. III, pages 125—131.)

No. 29.—Diagram illustrating water supplies in the Sidhnai Canal, September and October.
(Annexure V to written evidence of Mr. A. R. Murray, Superintending Engineer, Derajat Circle, Punjab. Vol. III, pages 125—131.)

No. 30.—Diagram illustrating water supplies in the Sikandrabad Canal, April to June.
(Annexure VI to written evidence of Mr. A. R. Murray, Superintending Engineer, Derajat Circle, Punjab. Vol. III, pages 125—131.)

No. 31.—Diagram illustrating water supplies in the Sikandrabad Canal, September and October.
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No. 32.—Diagram showing rise and fall of the River Chenab in 1915-16 at Alexandra Bridge.
(Annexure IV to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 33.—Diagram showing rise and fall of the River Ravi in 1915-16 below the Sidhnai Dam.
(Annexure V to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 34.—Water consumption diagram of the Lower Chenab Canal for 1915-16.
(Annexure VI to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 35.—Diagram showing the duration and amount of supply in the Sidhnai Canal for 1915-16.
(Annexure VII to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 36.—Working record of the Lower Chenab Canal, 1915-16.
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No. 37.—Working record of the Lower Jhelum Canal, 1915-16.
(Annexure IX to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 38.—Diagram comparing percentages of the Chief Crops irrigated by various canals in the Punjab in 1915-16.
(Annexure X to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 39.—Diagram comparing percentages of the Chief Crops irrigated in villages cultivated by different classes of cultivators during 1915-16.
(Annexure XI to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 40.—Plan illustrating rotations practised in certain squares on the Lower Chenab Canal.
(Annexure XII to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 132—139.)

No. 41.—Diagram showing efficiency attained by using Kennedy gauge outlets on Lower Chenab Canal.
(Annexure II to oral evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab. Vol. III, pages 140—142.)

No. 42.—Diagram showing comparative costs per acre per crop for irrigation by ordinary wells and by tube-wells.
(Annexure I to evidence of Mr. T. A. Miller Brownlie, Agricultural Engineer, Punjab. Vol. III, pages 143—145.)

No. 43.—Diagram showing hydrographs of the River Indus at Bukkur and Kotri, Sind.
(Annexure I to evidence of Mr. A. B. Timms, Executive Engineer, Jamrao Canals, Northern District, Sind. Vol. III, pages 158—161.)

No. 1. Annexure I to evidence of Mr. F. H. Vick, Agricultural Engineer, United Provinces.

ANNEXURE I.

MAP OF SARAWA AND PART OF HAPUR PARGANAS MEERUT DISTRICT.

Scale—1 Inch = 1 Mile.

MEERUT DIVISION IRRIGATION

To Meerut

Meerut Distributary

P. MEERUT
P. SARAWA

ANUPSHAHR BRANCH
DIVISION IRRIGATION

Phapunda

Bijauli

Nitanand-pur

Gobind-pur

Kaul

Kali Nadi

Naglapatu

Khanpur

Yadgar-pur

Khandaoli

Dhanauli

Kharaoli Drain

Sadhullapur

Chadpur

KHARKHANDA RY. STN.

Kharkhanda

Kharkhari

Chhatri

Badholi

Dehjagir

Road Bungalow

Pucca Road

Rasulpur Dhantala

Burhanpur

Nalpur

Khaspur

Setkua

Atrara

P. SARAWA
P. HAPUR

Gangheri

Kurhi

Uldan

Mohabalpur

Panchi

Fakharpur

Kabutta

Rajpura

Asra

Muradpur

Nizamsar

Kaili

Pirnagar

Kharkhari

Payandah-pur

Sudria

Tiala

Malakpur

Sarawa

Jogipur

Niagaon

Dhirkhera

Wajihalpur

Shamshuddinpur

Mirzapur

Haidarnagar

Dastoi

Dadri

Asuara

Dhanaura

Dhadra

Aminpur Nagaita

Badnauli

Jasrup-nagar Surpur

Dami

BABUGARH RY. STN.

O. R. RY.

To Moradabad

Shamsher-pur Jat

HAPUR RY. STN.

Road Bungalow

Jarauthi

Murad

Patna Dasela

Pucca Road

To Garhmuktesar

O. R. Ry.

To Delhi

Nizampur

Canal Bungalow 2nd Class

HAPUR

Tatarpur

East Kali Nadi

Sabri

Mansurpur

Sultanpur

MEERUT DIVISION IRRIGATION

Distributary

Imtaura

Lalpur

Gaundi

Sadiapur

Salai

Kanthi Khera

HAFIZPUR RY. STN.

Ghurgrala

Hasanpur

Mirpur

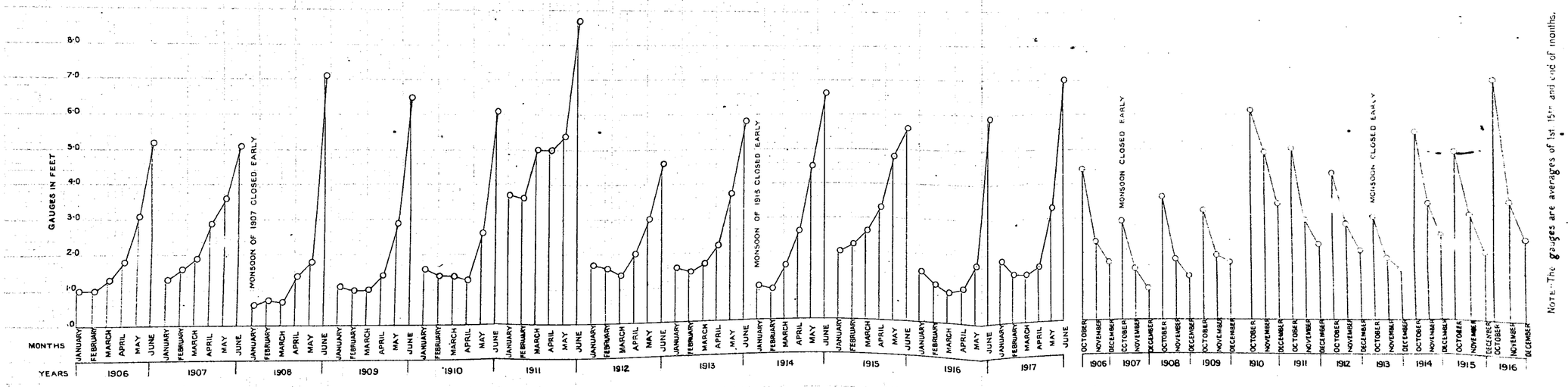
F. HOWARD VICK,
Agricultural Engineer,
United Provinces.

Photo, Zinco. February, 1920.—No. 50 80-1-1500

No. 2. Annexure IV to evidence of Mr. A. C. H. Laurie, Superintending Engineer, Second Circle, Agra, United Provinces.

DIAGRAM SHOWING AVERAGE MONTHLY GAUGE OF GANGES RIVER AT RAIWALA.

For January to June shown Black, October to December shown Red.



NOTE.—The gauges are averages of 1st 15th and end of months.

Photo, Zinco. April, 1920.—V. 6080.

ANNEXURE V.

DIAGRAM SHOWING COTTON AREA IRRIGATED FROM THE LOWER GANGES CANAL

AND AVERAGE RAINFALL AND SUPPLY OF MAY AND JUNE IN THE CIRCLE.

No. 3. Annexure V to evidence of Mr. A. C. H. Laurie, Superintending Engineer, Second Circle, Agra, United Provinces.

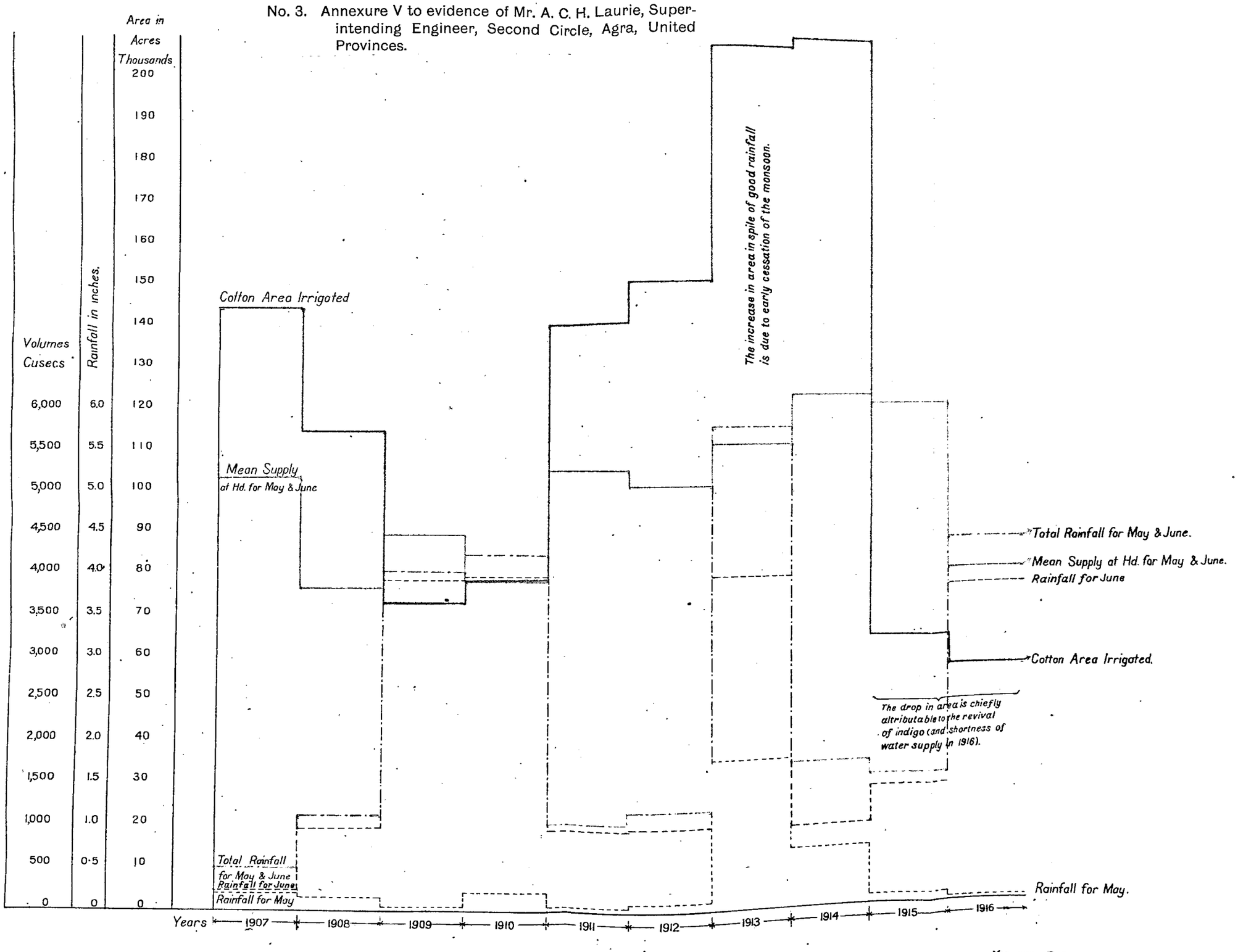


Photo.-Mechl. and Litho Dept., Thomason College, Roorkee

May, 1920.—No. 6080-4-1500

No. 4. Annexure VI to evidence of Mr. A. C. H. Laurie, Superintending Engineer, Second Circle, Agra, United Provinces.

DIAGRAM SHOWING AREA OF COTTON IRRIGATED FROM THE UPPER AND LOWER GANGES CANALS AND THE RAINFALL

of May and June for each year from 1902 to 1916.

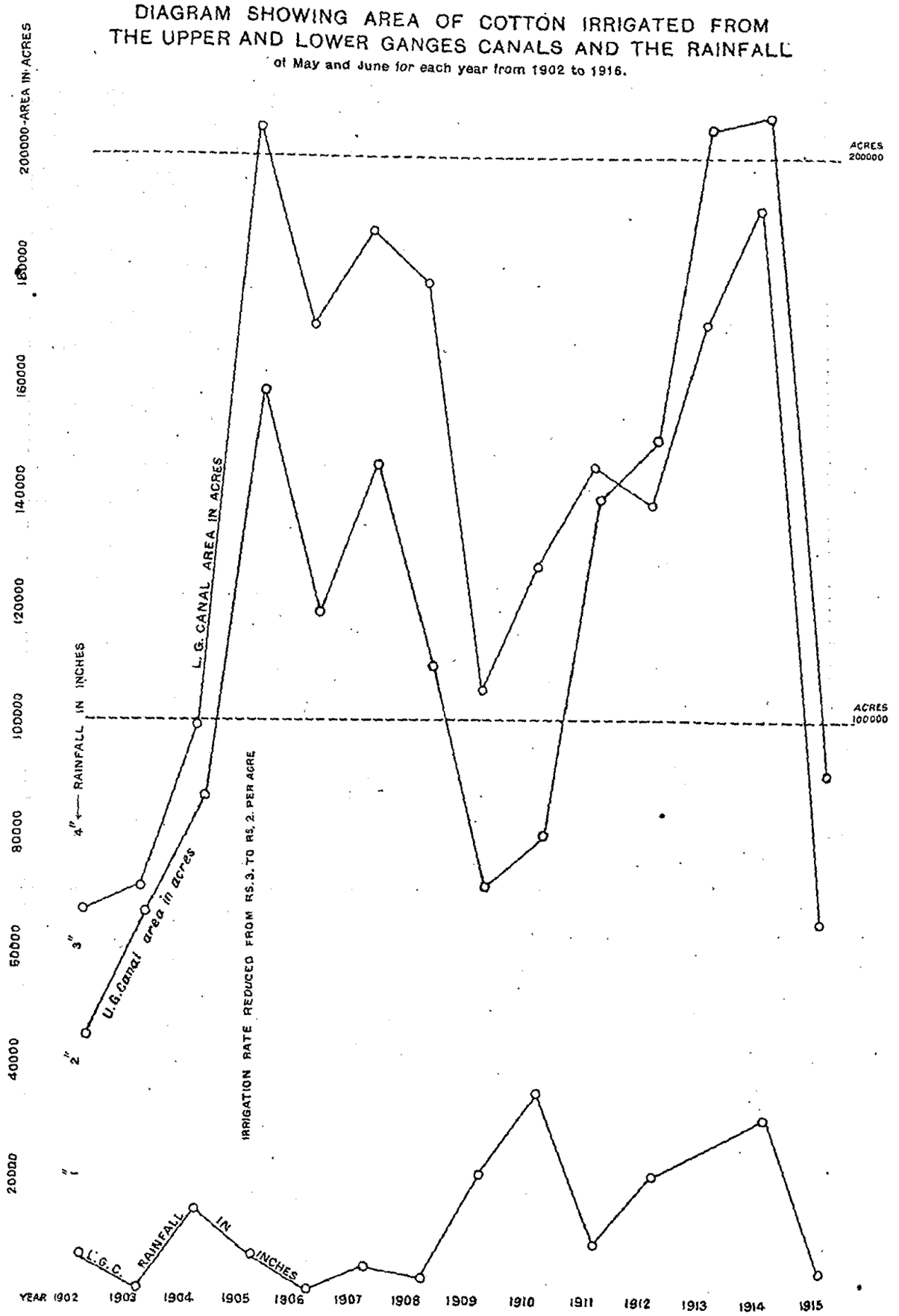
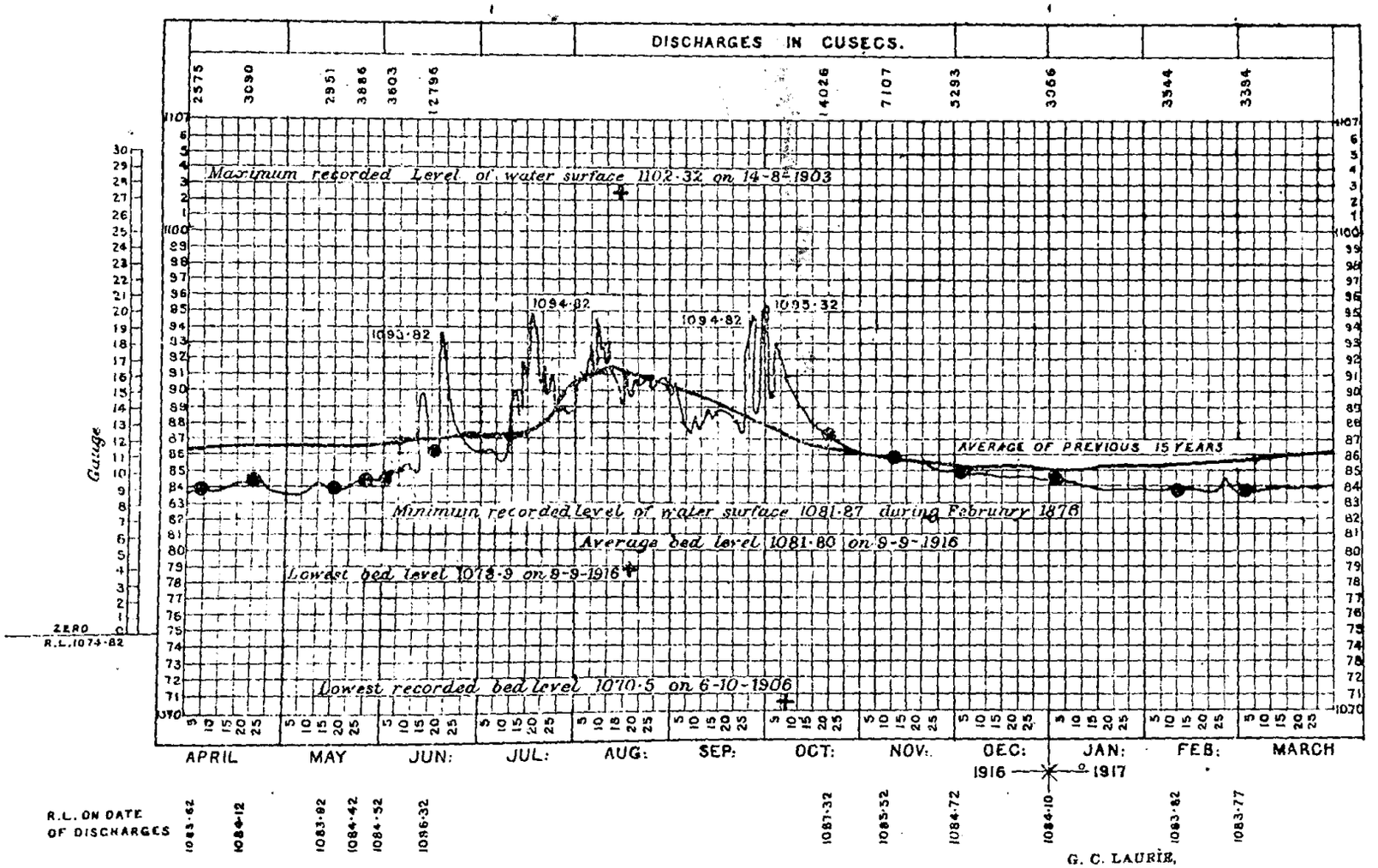


Photo. Zinco. May, 1920 — No. 6080-6-1500

No. 5. Annexure V to evidence of Mr. G. C. Laurie, Superintending Engineer, Western Jumna Canal Circle, Punjab.

RISE AND FALL OF THE RIVER JUMNA 1916-1917
AT HATHNIKUND.

Note.—The discharges at ● were actually observed.



G. C. LAURIE,
Superintending Engineer.
Western Jumna Canal Circle.
3rd January, 1918.

Photo. Zinco, February, 1920.—No. 0090-S. 1500

No. 6. Annexure II to evidence of Mr. H. W. M. Ives, Superintending Engineer, Upper Jhelum Canal Circle, Punjab.

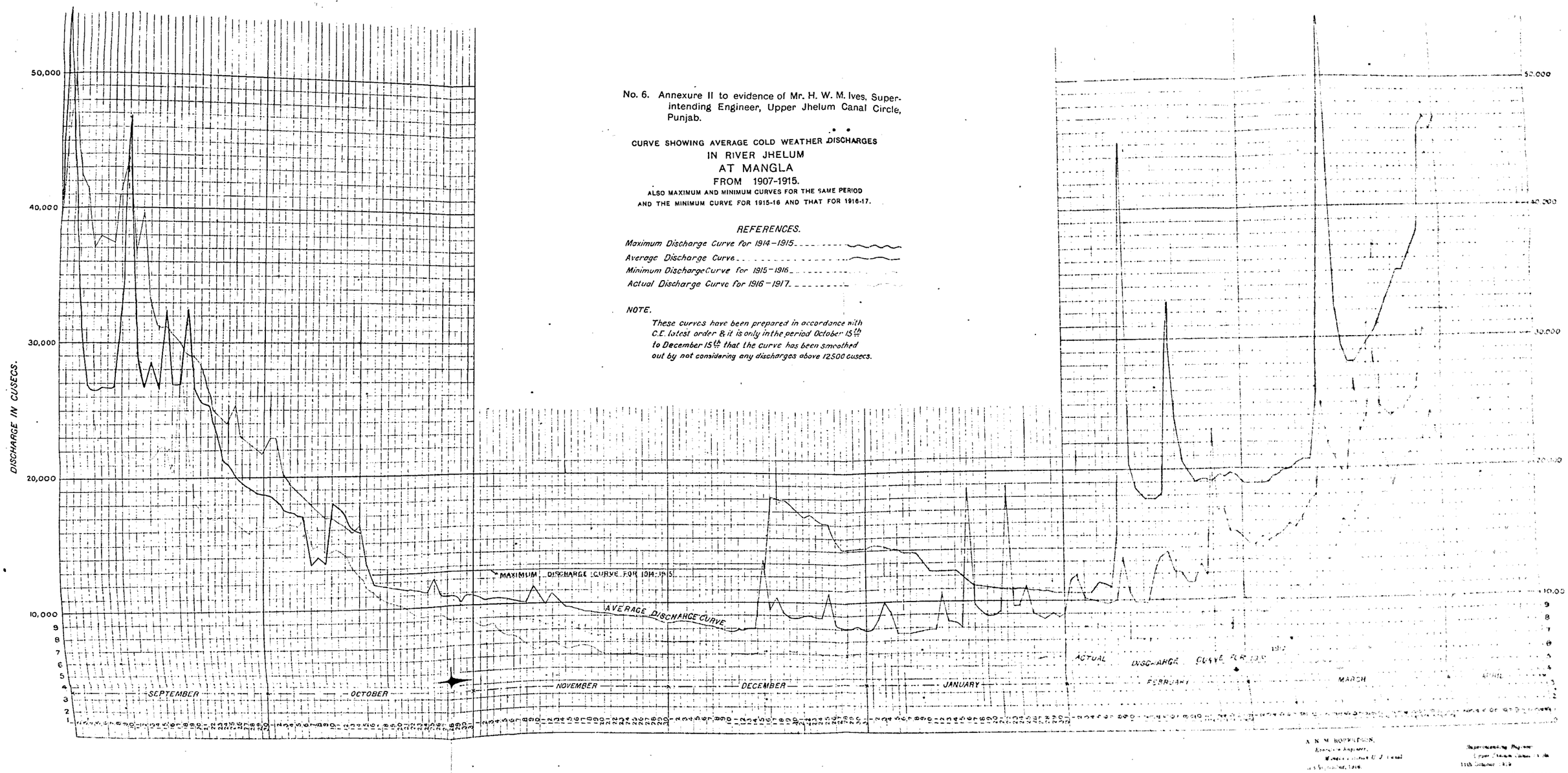
CURVE SHOWING AVERAGE COLD WEATHER DISCHARGES
IN RIVER JHELUM
AT MANGLA
FROM 1907-1915.
ALSO MAXIMUM AND MINIMUM CURVES FOR THE SAME PERIOD
AND THE MINIMUM CURVE FOR 1915-16 AND THAT FOR 1916-17.

REFERENCES.

Maximum Discharge Curve for 1914-1915.
Average Discharge Curve.
Minimum Discharge Curve for 1915-1916.
Actual Discharge Curve for 1916-1917.

NOTE.

These curves have been prepared in accordance with C.E. latest order & it is only in the period October 15th to December 15th that the curve has been smoothed out by not considering any discharges above 12500 cusecs.



A. N. M. ROBERTSON.

No. 7. Annexure I to evidence of Mr. A. S. Gibb, Executive Engineer, Upper Bari Doab Canal, Punjab.

DIAGRAM SHOWING CURVE OF EACH SUPPLY FAVOURABLE TO AMERICAN COTTON.

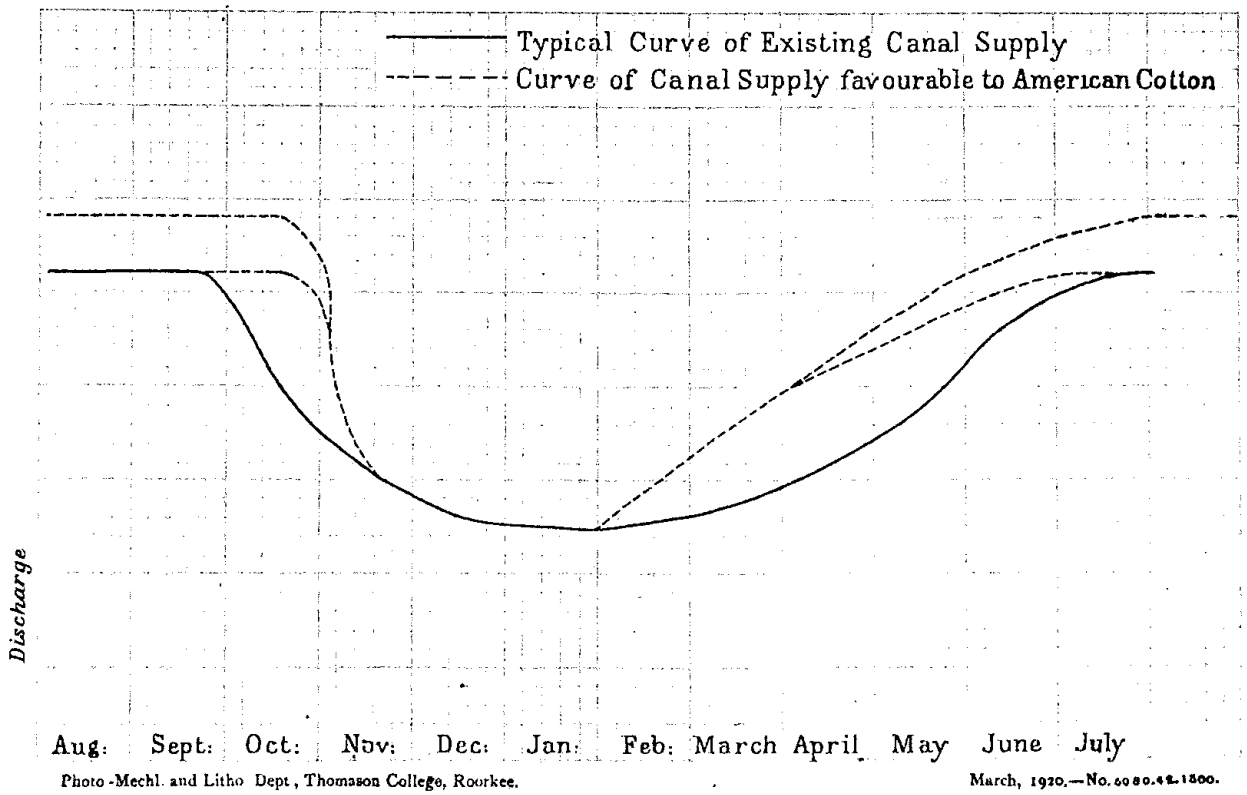


Photo-Mechl. and Litho Dept, Thomason College, Roorkee. March, 1920.—No. 6080.42.1800.

No. 8. Annexure II to evidence of Mr. A. S. Gibb, Executive Engineer, Upper Bari Doab Canal, Punjab.

TYPICAL PUNJAB RIVER SUPPLY DIAGRAM.

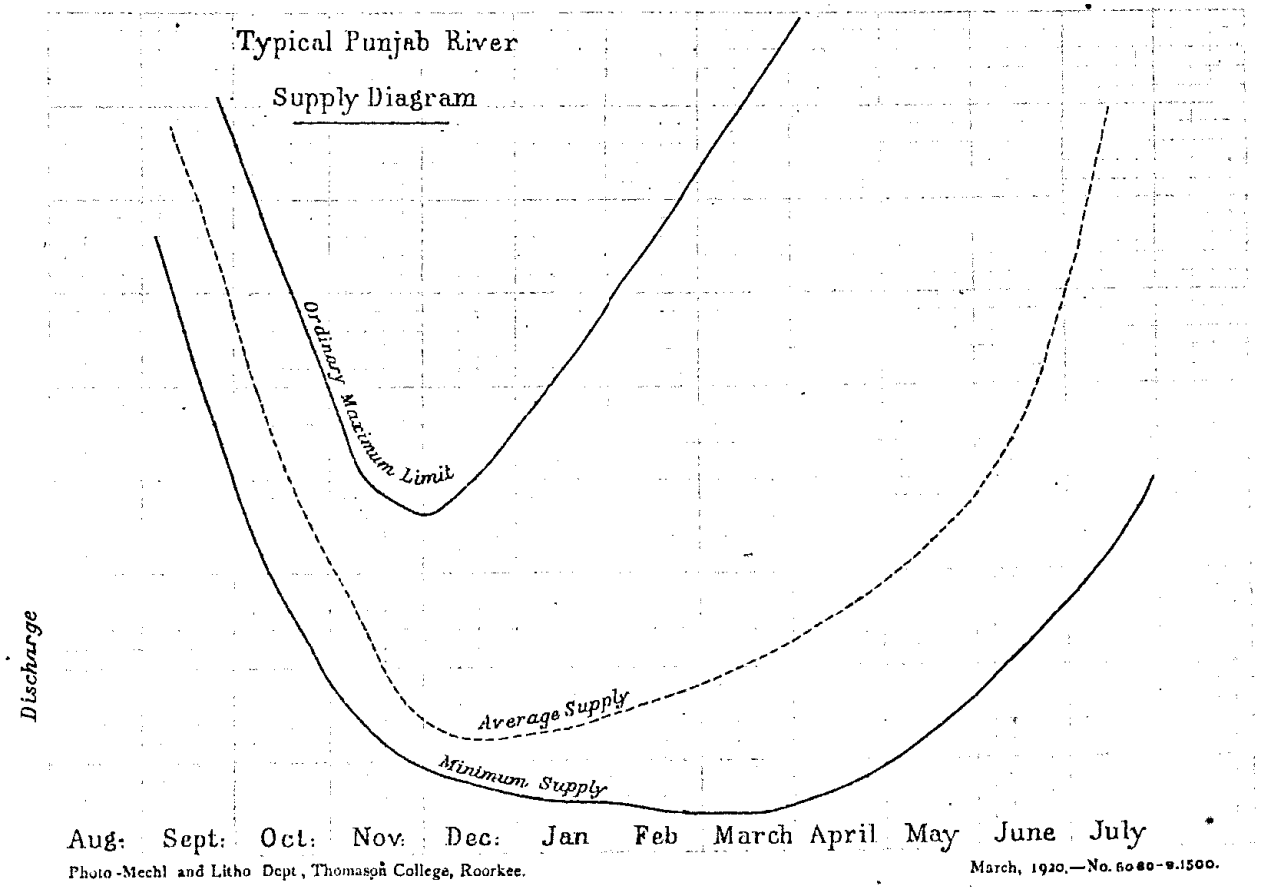


Photo-Mechl and Litho Dept, Thomason College, Roorkee.

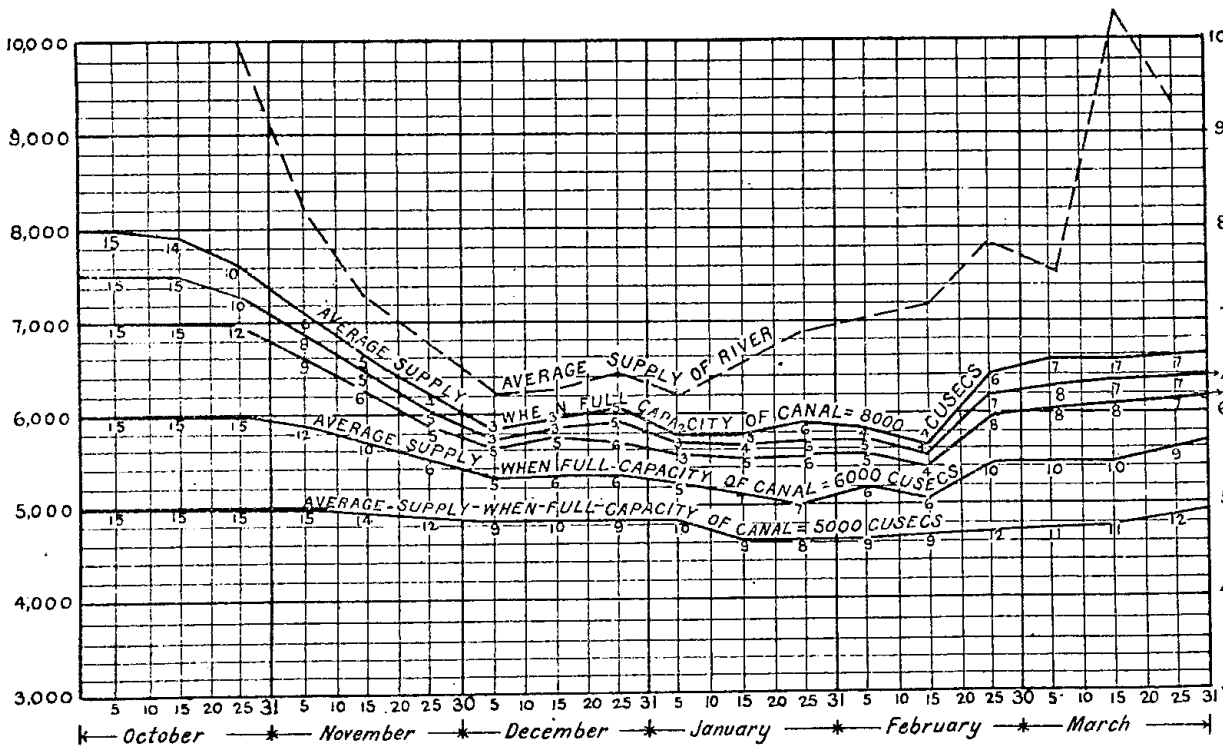
March, 1920.—No. 60 80-9.1500.

No. 9. Annexure III to evidence of Mr. A. S. Gibb, Executive Engineer, Upper Bari Doab Canal, Punjab.

DIAGRAM SHOWING AVERAGE RABI SUPPLIES THAT CAN BE TAKEN BY CANALS OF DIFFERENT FULL CAPACITY

RABI

AVERAGE BASED ON FIGURE FOR TENDAY PERIODS FOR 15 YEARS 1902-03 TO 1916-17.



Average Rabi supplies for Canals of different Full Capacities based on record of 15 Years (Black Curves)

Canal of 8000 cusecs Capacity will take 6463 cusecs average supply
" 7500 " " " " 6249 " " "
" 7000 " " " " 6019 " " "
" 6000 " " " " 5482 " " "
" 5000 " " " " 4820 " " "

Average supply when full Capacity of Canal = 7500 Cusecs
" " " " " " = 7000 "

N.B. Numbers on curves indicate for each half month The number of years out of a total of 15 years in which the available river supply equals or exceeds the full capacity of the Canal.

DATUM LINE.

A. S. GIBB,
Executive Engineer,

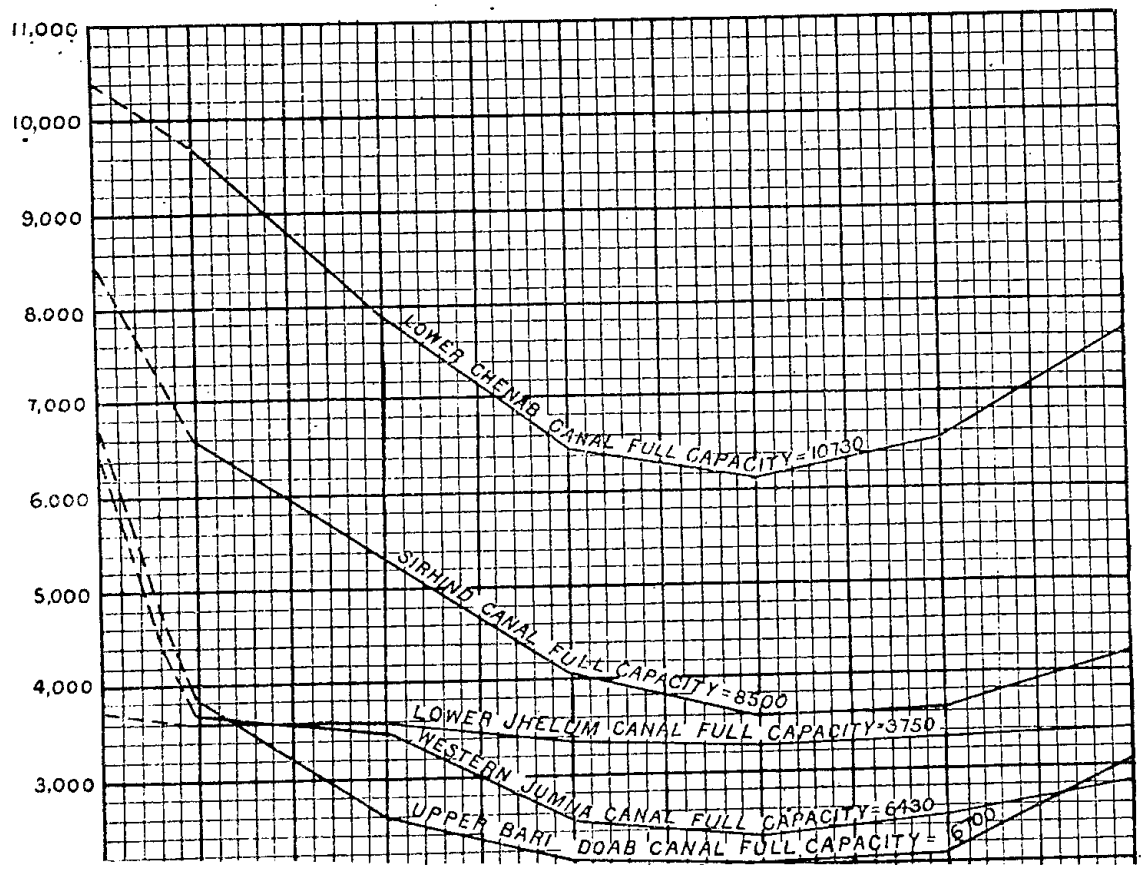
Photo. Zinco., February, 1920 —No. 6080-2-1500

No. 10. Annexure IV to evidence of Mr. A. S. Gibb, Executive Engineer, Upper Bari Doab Canal, Punjab.

DIAGRAMS SHOWING AVERAGE MONTHLY SUPPLIES

TAKEN BY CANALS

RABI



Averages of 16 years 1899-00 to 1914-15 except Lower Jhelum which is averaged for 10 years only 1904-05 to 1914-15.

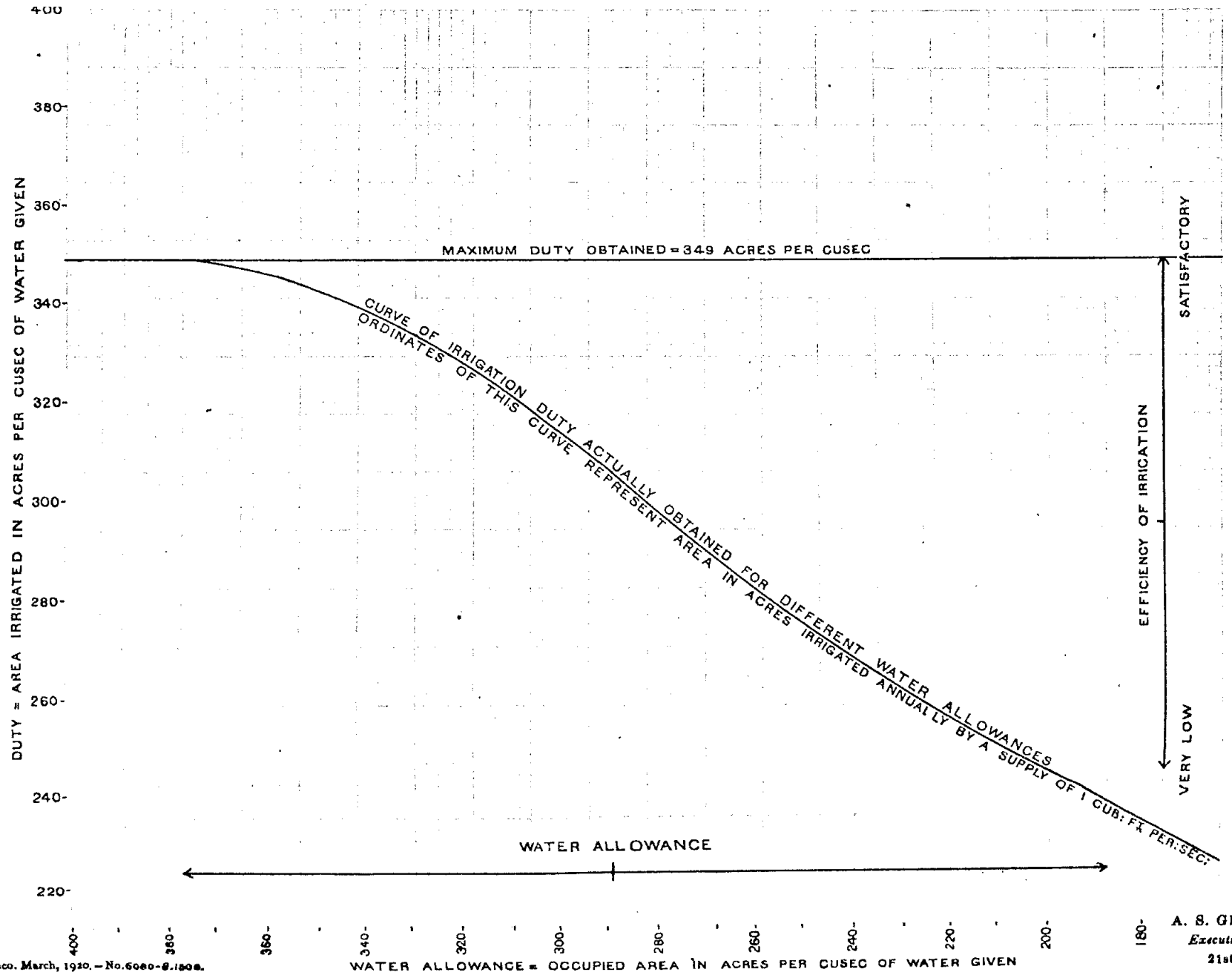
	FULL CAPACITY OF CANAL. (a)	AVERAGE RABI SUPPLY. (b)	$\frac{a-b}{b} \times 100$	$\frac{b}{a} \times 100$
Western Jumna	6430	2889	122·5	43·4
Sirhind	8500	4583	85·5	53·9
Upper Bari Doab	6700	2613	156·4	39·0
Lower Chenab	10730	7435	44·3	69·3
Lower Jhelum	3750	3334	9·2	88·9

No. 11. Annexure V to evidence of Mr. A. S. Gibb, Executive Engineer, Upper Bari Doab Canal, Punjab.

DIAGRAM SHOWING COMPARATIVE EFFICIENCIES OF IRRIGATION DONE

FOR VARYING DEGREES OF LIBERALITY OF WATER SUPPLY ALLOWED

DERIVED FROM OBSERVATIONS MADE ON LOWER CHENAB CANAL-PUNJAB-INDIA.



A. S. GIBB,
Executive Engineer.
21st December, 1917.

Photo, Zinco. March, 1920.—No.6080-8.1808.

No. 14. Annexure III to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

TY

RE

No. 12. Annexure VI to evidence of Mr. A. S. Gibb, Executive Engineer, Upper Bari Doab Canal, Punjab.

DIAGRAM SHOWING THE RELATION BETWEEN DUTY & INTENSITY OF IRRIGATION ON PUNJAB CANALS FOR KHARIF (1ST APRIL TO 30TH SEPTEMBER).

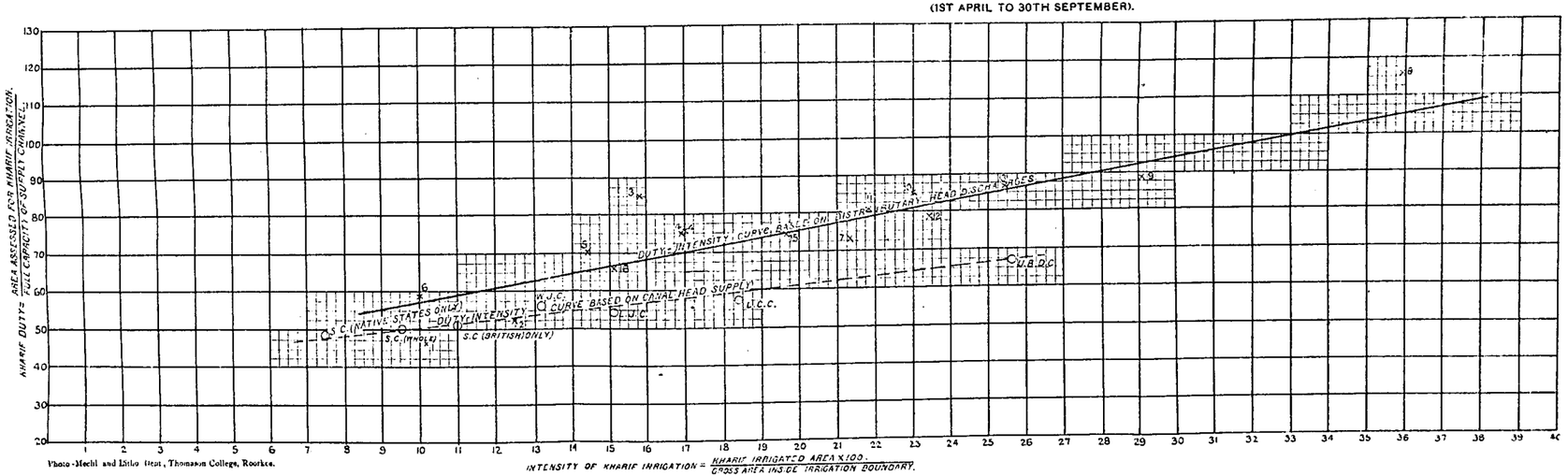


Photo-Mechl and Litho Dept, Thomason College, Roorkee.

Points marked S x = Canal Divisions—Duties based on Distributary head. Authorized supply i.e. the supplies available when measured at Distributary heads does not include Absorption from Branches feeding Distributaries or passing through the Division, nor escaped supply (Averages of 5 years)

Points marked O L J C = Canal System—Duties based on capacity of the canal at its head i.e. the supply that is available for Distribution throughout the system whether used, includes all absorption from main line, Branches Distributaries etc and all supply escaped. (Averages for 16 years)

1. Karnal Division Western Jumna Canal
2. Delhi " " " "
3. Rohtak " " " "
(Average of 2 Years Only)
4. Hissar Division Western Jumna Canal.
5. Ferozepur Division Sirhind Canal
6. Bhatinda " " "
7. II Division Upper Bari Doab Canal.
8. III " " " "
9. IV. " " " "
(Average of 4 Years Only)
10. Lyallpur Divn Lower Chenab Canal.
11. Upper Gugera Divn " " "
12. Lower " " " "
13. Burala " " " "
14. Jhang " " " "
15. II Division Lower Jhelum Canal.
16. III " " " "

S.C.=Sirhind Canal
W.J.C.=Western Jumna Canal
U.B.D.C=Upper Bari Doab Canal.
L.C.C=Lower Chenab Canal.
L.J.C=Lower Jhelum Canal.

A. S. GIBB.
Executive Engineer.

February, 1920—No. 1020-S., 1920.

No. 14. Annexure III to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

No. 13. Annexure VII to evidence of Mr. A. S. Gibb, Executive Engineer, Upper Bari Doab Canal, Punjab.

DIAGRAM SHOWING THE RELATION BETWEEN DUTY & INTENSITY OF IRRIGATION ON PUNJAB CANALS FOR RABI. (1ST OCTOBER TO 31ST MARCH).

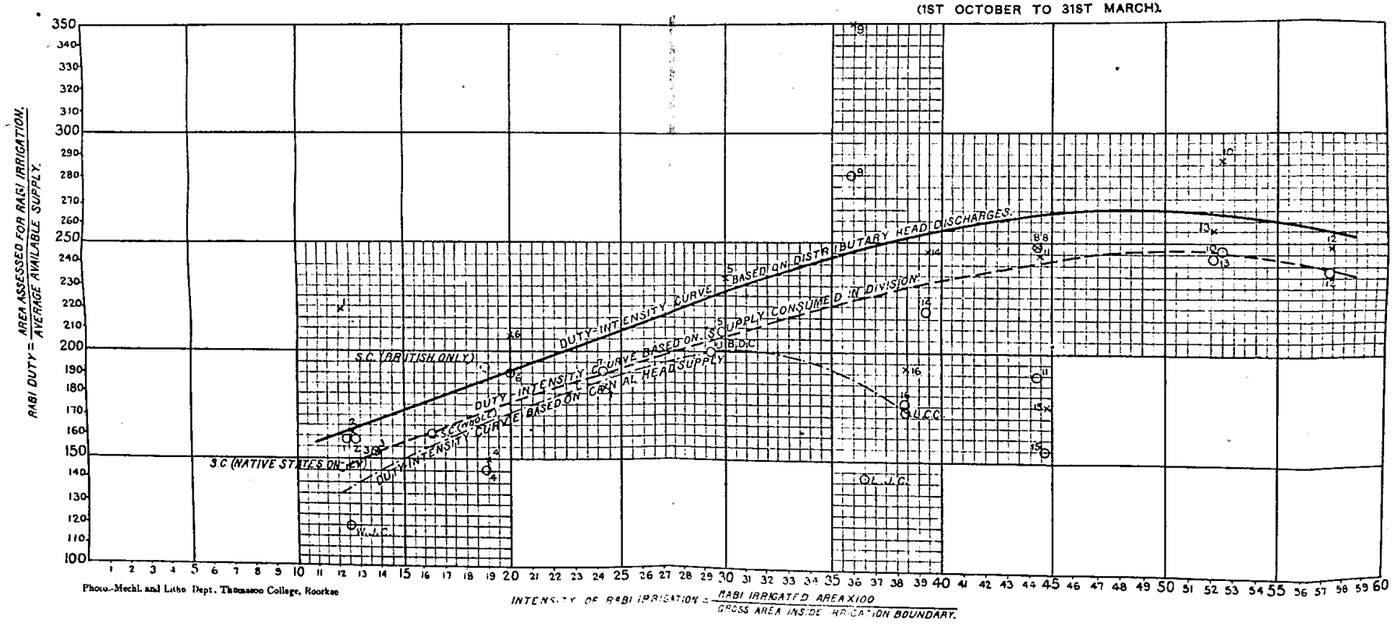


Photo.-Mech. and Litho Dept., Thomason College, Roorkee

REFERENCES.

Points marked 5O = Canal Divisions - Duties based on Total water consumed inside the Division Boundary as indicated by Gauges in Branches, including absorption from all channels (including canal Branches) within the Division Boundary, but excluding escaped supply (Averages of 5 Years)

Points marked 5 × = Canal Divisions - Duties based on Distributary head Discharges acknowledged by the division does not include absorption from Branches etc. feeding Distributaries or passing through the division nor escapage (Averages of 5 Years)

Points marked O W.J.C. Canal Systems - Duties based on supply entering canal head which includes all absorption in main line branches distributaries etc. and supply escaped (Averages of 5 Years)

1. Karnal	Division	Western	Jumna	Canal.	10. Lyallpur	Division Lower Chenab Canal.
2. Delhi	"	"	"	"	11. Upper Gugera	" " "
3. Rohtak	"	"	"	"	12. Lower "	" " "
	(Only 2 Years average)				13 Burala	" " " "
4. Hissar	"	"	"	"	14 Jhang	" " " "
5. Ferozepur	"	Sirhind Canal			15. II. Division Lower Jhelum Canal	
6. Bhatinda	"	"	"		16 III. "	" "
7. II. Division	Upper Bari Doab Canal				S.C. = Sirhind Canal W.J.C = Western Jumna Canal.	
8. III. "	"	"	"	"	L.C.C. = Lower Chenab Canal.	
9. IV. "	"	"	"	"	L.J.C = Lower Jhelum Canal.	
	(Only 4 Years Average)				U.B.D.C. = Upper Bari Doab Canal	

N.B. Points referring to Lower Jhelum Canal are not allowed for in Drawing the curves because its supply curve for Rabi is so very different from that of the others.
The exceptionally high duty of 9A & 9O = IV Division U.B.D.C. is due to the fact that approximately ⅓ of its gross area is served by Kharif Distributaries which give full watering only for Rabi.
The low duty of 11O = Upper Gugera Division is due to bad command and exceptional length of large Branch Channels in the Division.

A. S. GIBB
Executive Engineer

February, 1922 — No. 6080 — 1500

No. 14. Annexure III to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

PUNJAB CANALS

MAJOR WORKS

KHARIF CROPS.

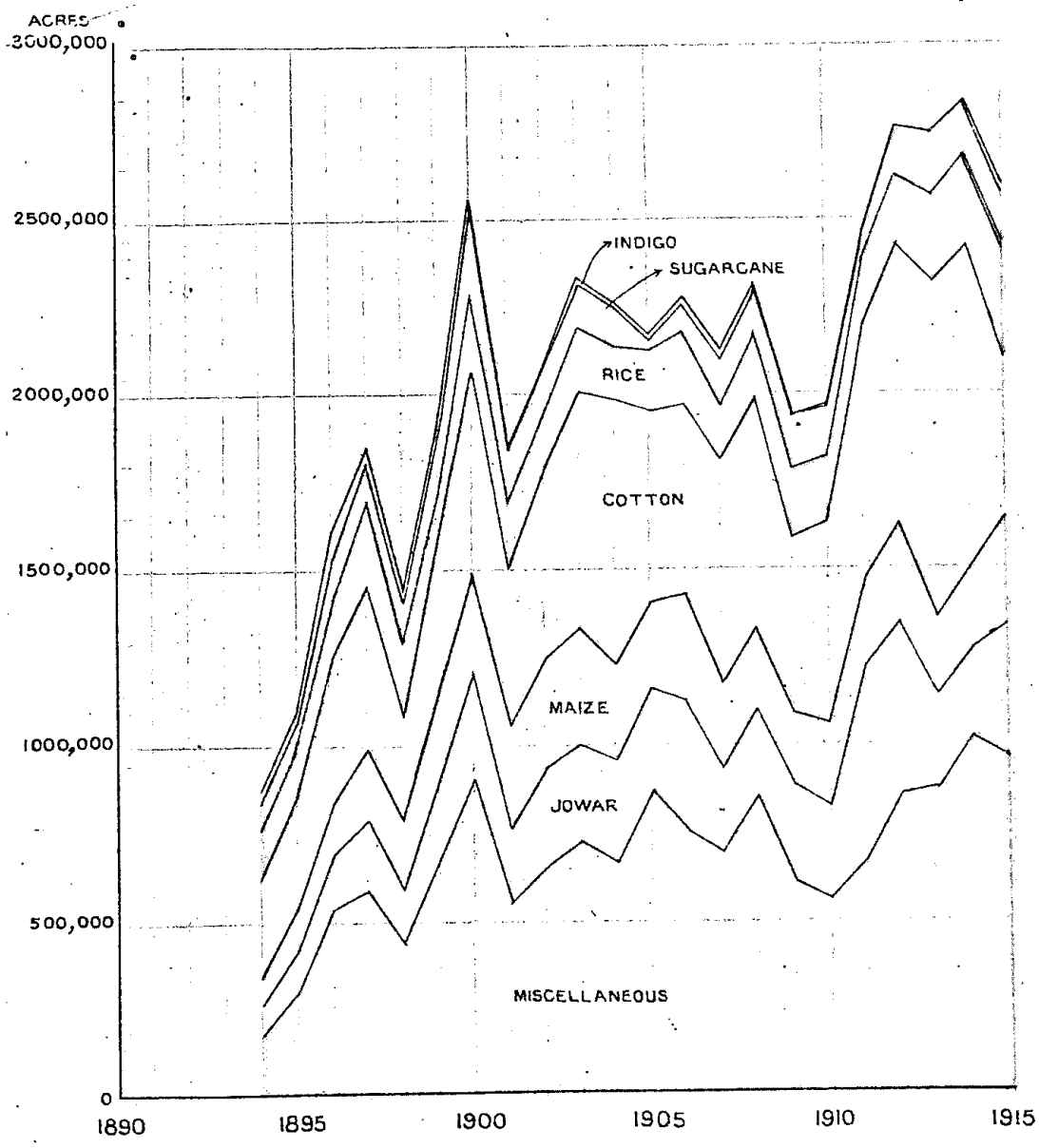


Photo. Zinco., March, 1920.—No.6080-12-1500

No. 15. Annexure IV to written evidence of Mr. H.W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

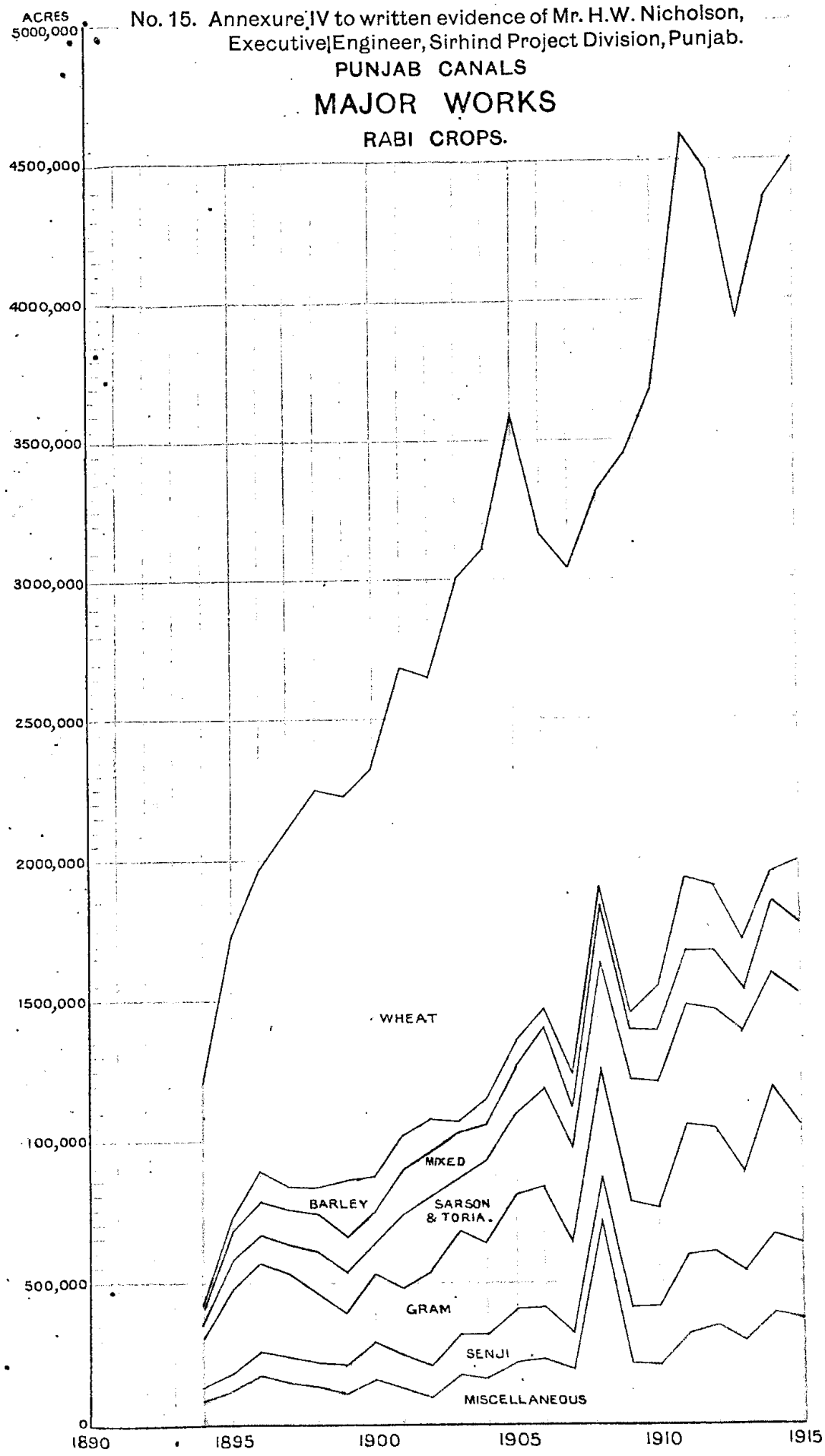


Photo. Zinco., March. 1920.—No.6080-13-1500

No. 16. Annexure V to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

PUNJAB CANALS

MINOR WORKS

KHARIF CROPS.

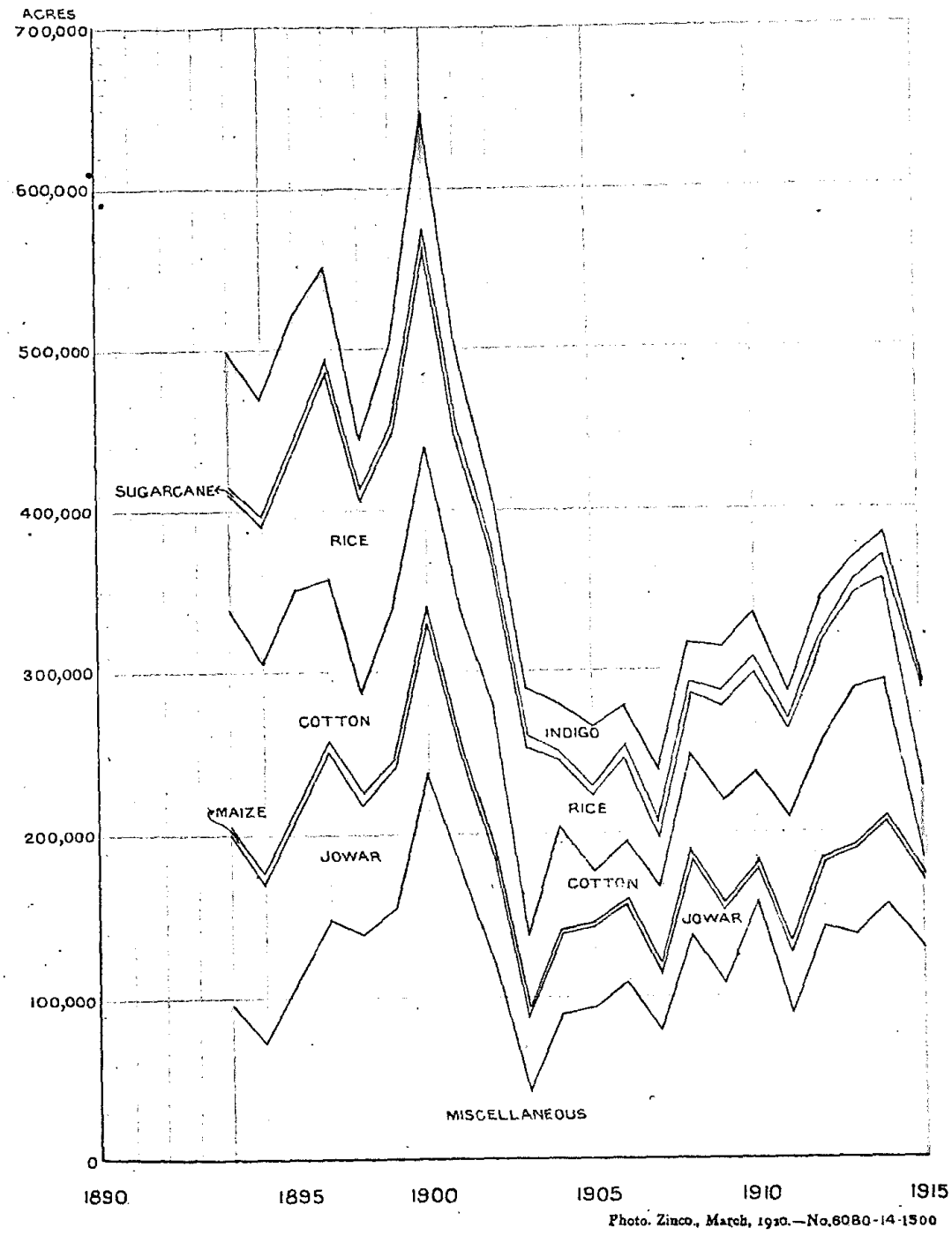


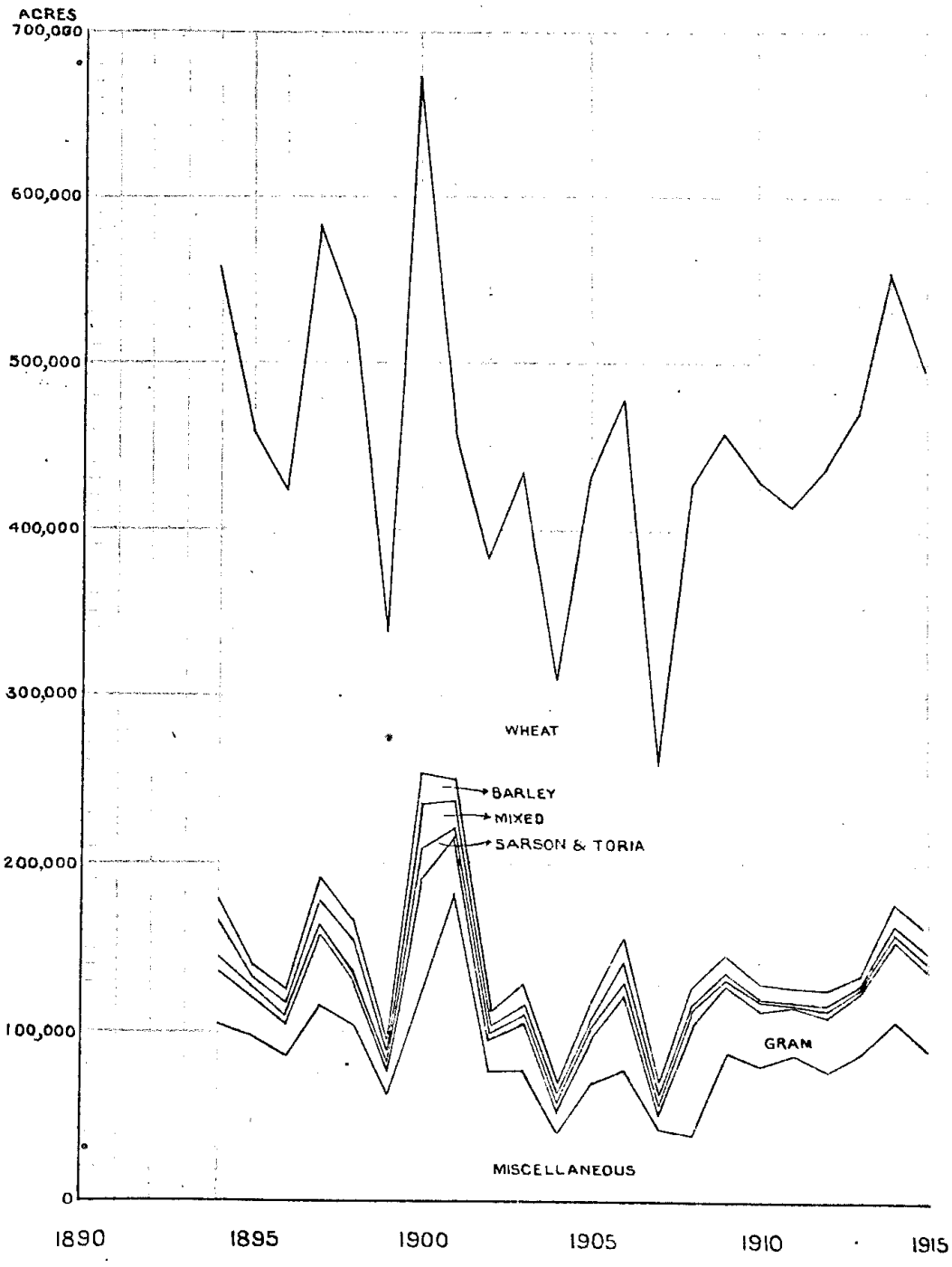
Photo. Zinco., March, 1910.—No.6080-14-1500

No. 17 Annexure VI to written evidence of Mr. H. W. Nicholson
Executive Engineer, Sirhind Project Division, Punjab.

PUNJAB CANALS

MINOR WORKS

RABI CROPS.



No. 18. Annexure VII to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

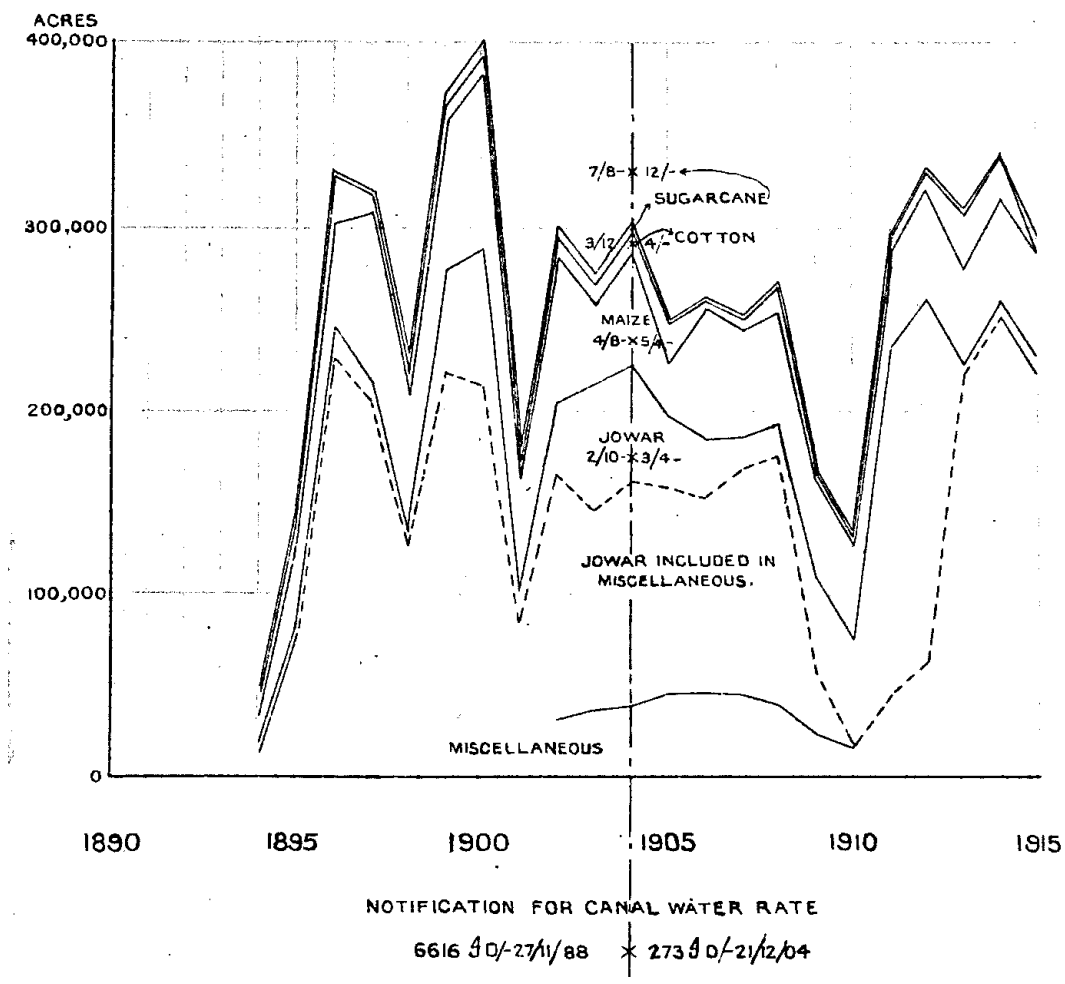
PUNJAB CANALS

SIRHIND CANALS

(MAJOR WORKS)

KHARIF CROPS

BRITISH BRANCHES.



No. 19. Annexure VIII to written evidence of Mr.H.W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

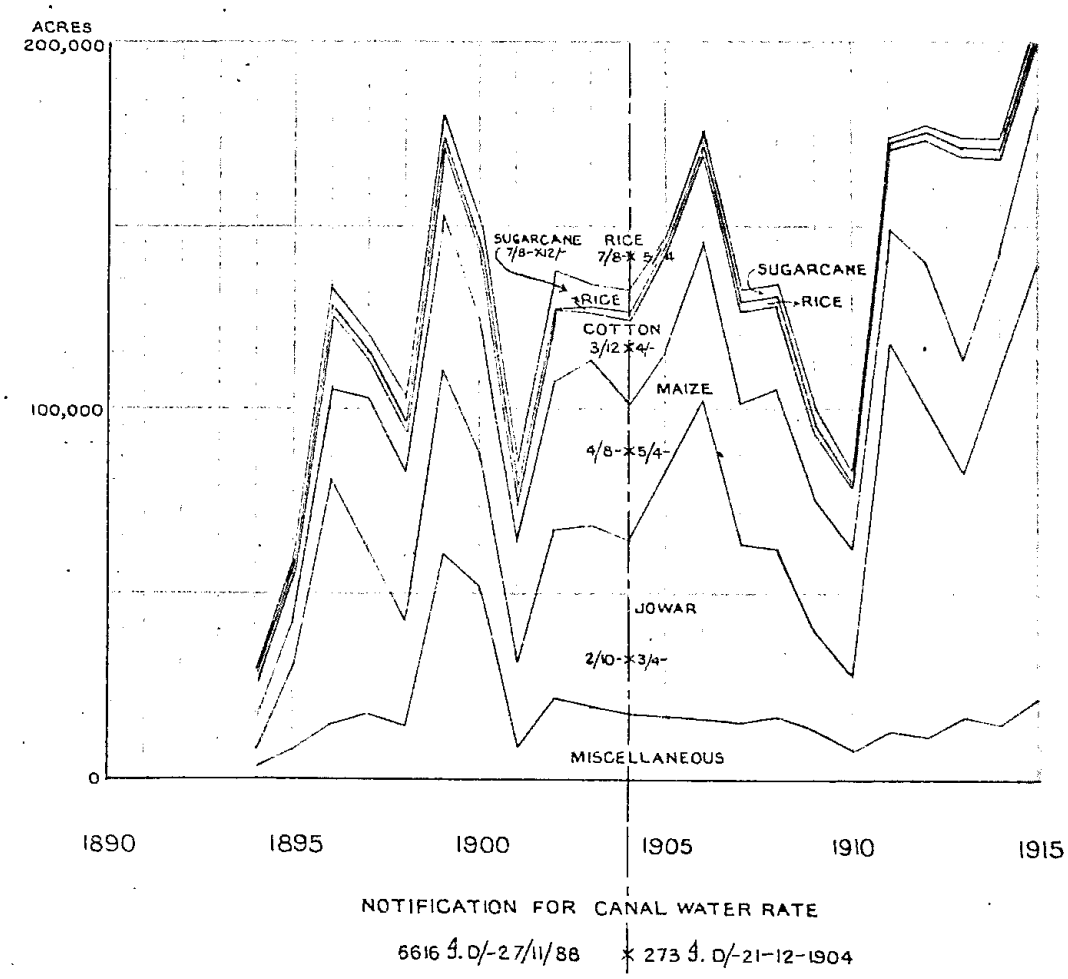
PUNJAB CANALS

SIRHIND CANALS

(MAJOR WORKS)

KHARIF CROPS

NATIVE STATES.



No.6080-17.1500.

No. 20. Annexure IX to written evidence of Mr. H.W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

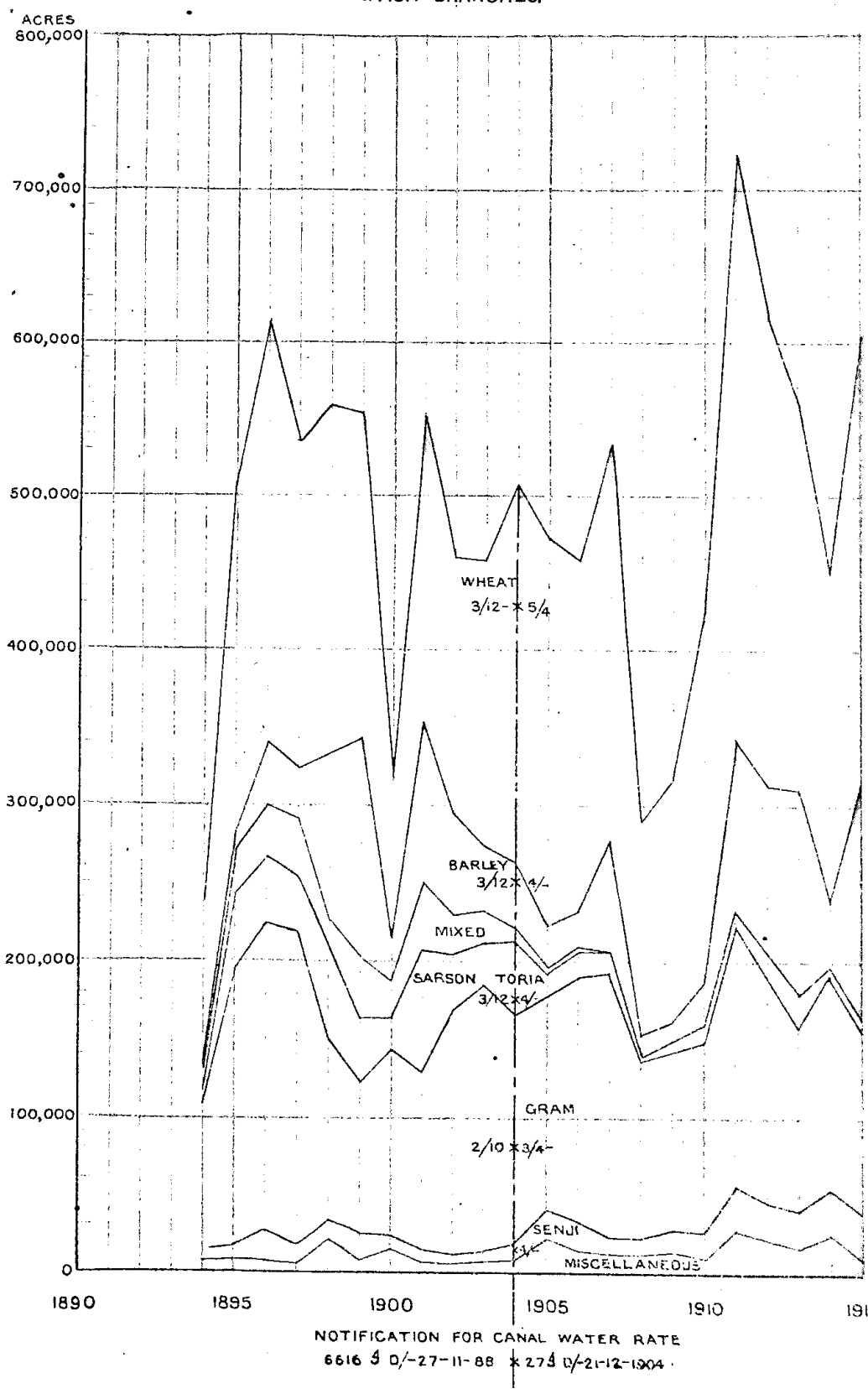
PUNJAB CANALS

SIRHIND CANALS

(MAJOR WORKS)

RABI CROPS

BRITISH BRANCHES.



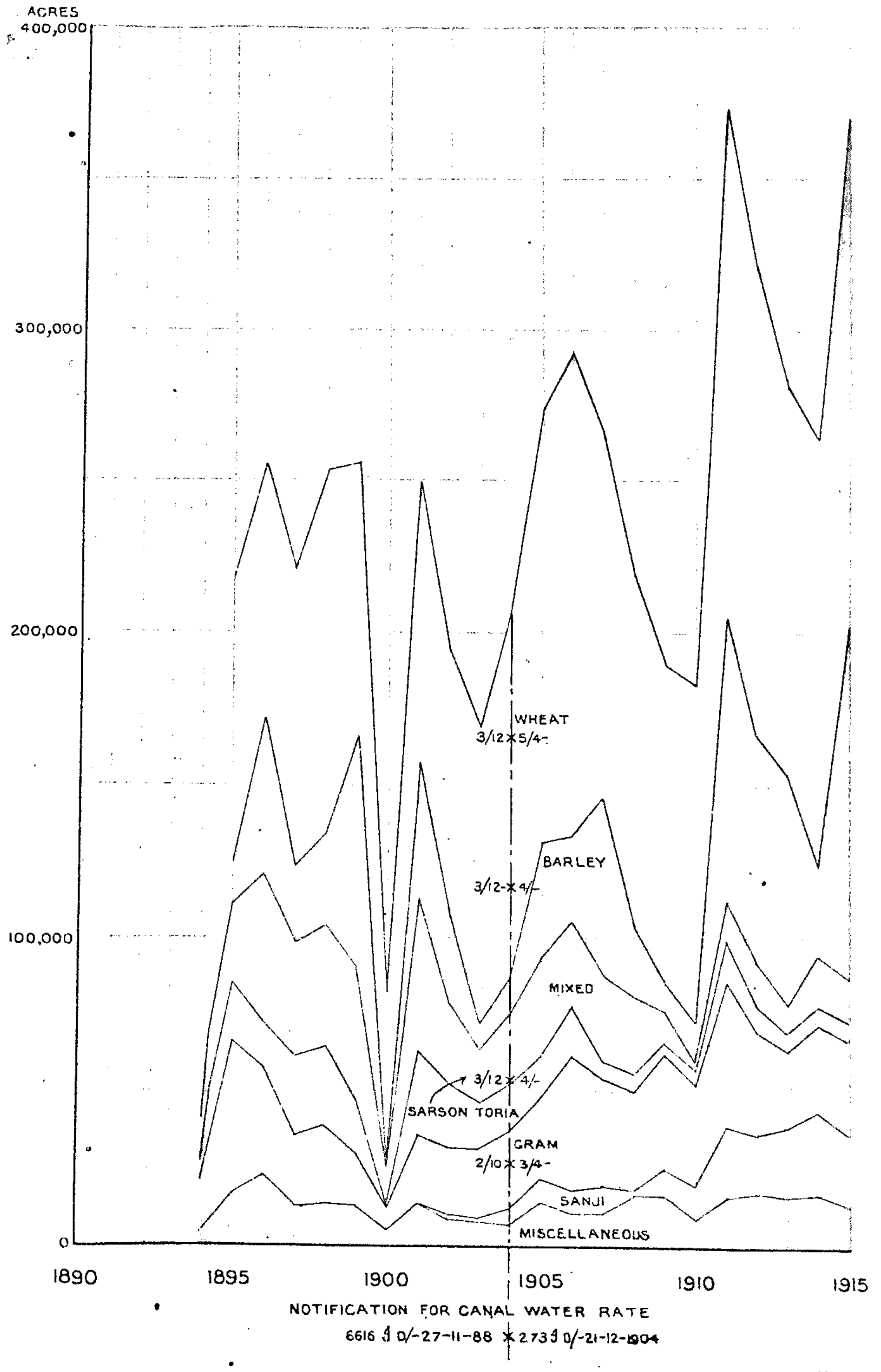
NOTIFICATION FOR CANAL WATER RATE

6616 ✓ D/-27-11-88 × 27✓ D/-21-12-1904

No. 6650-4-500.

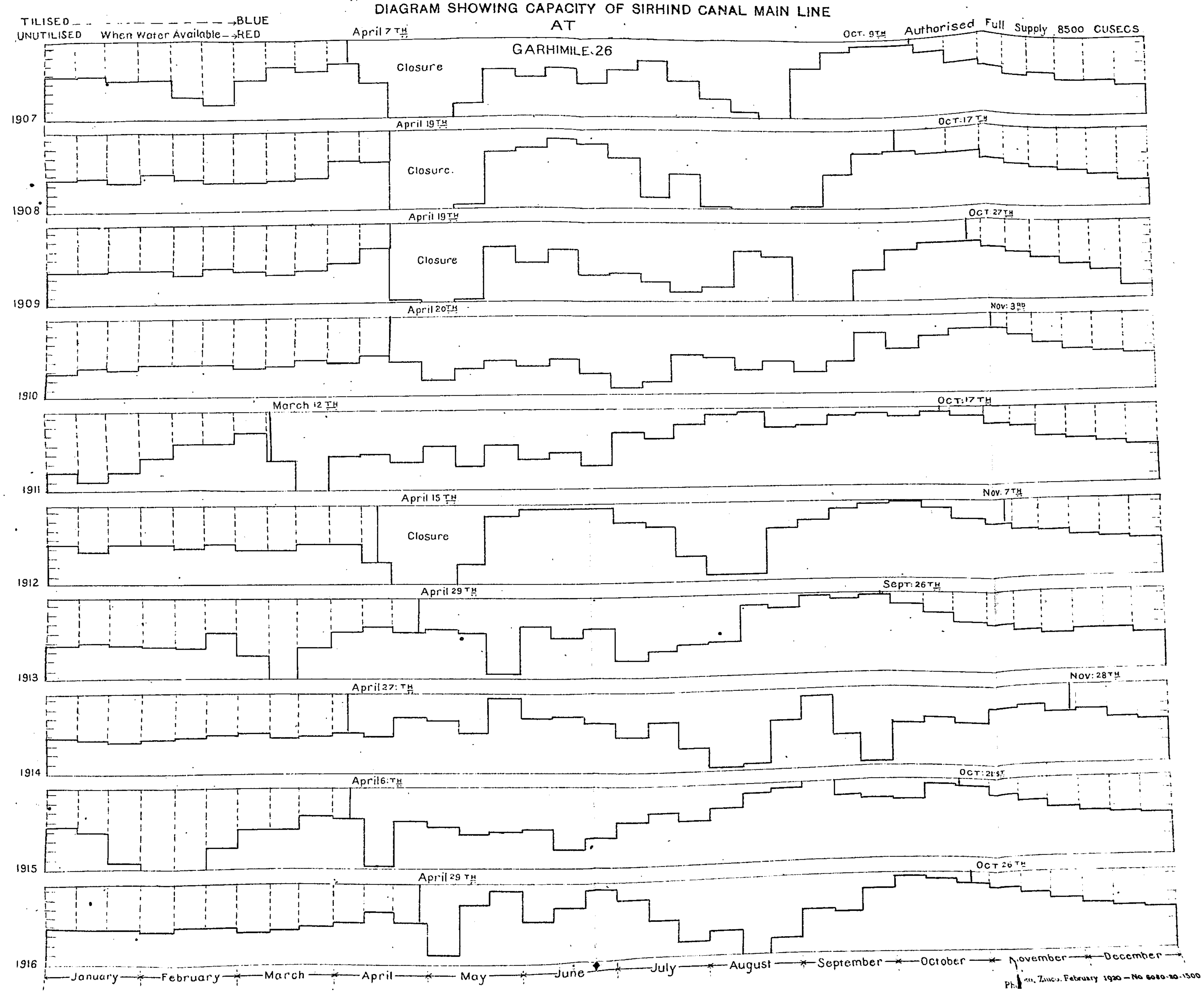
No. 21. Annexure X to written evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

PUNJAB CANALS
SIRHIND CANALS
(MAJOR WORKS)
RABI CROPS
NATIVE STATES.



No. 22. Annexure XI to written evidence of Mr. H.W. Nicholson,
Executive Engineer, Sirhind Project Division, Punjab.

DIAGRAM SHOWING CAPACITY OF SIRHIND CANAL MAIN LINE AT GARHIMILE 26



No. 23. Annexure I to oral evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

DIAGRAM SHOWING PRICE OF WHEAT
AND
WATER RATE
LUDHIANA DISTRICT.

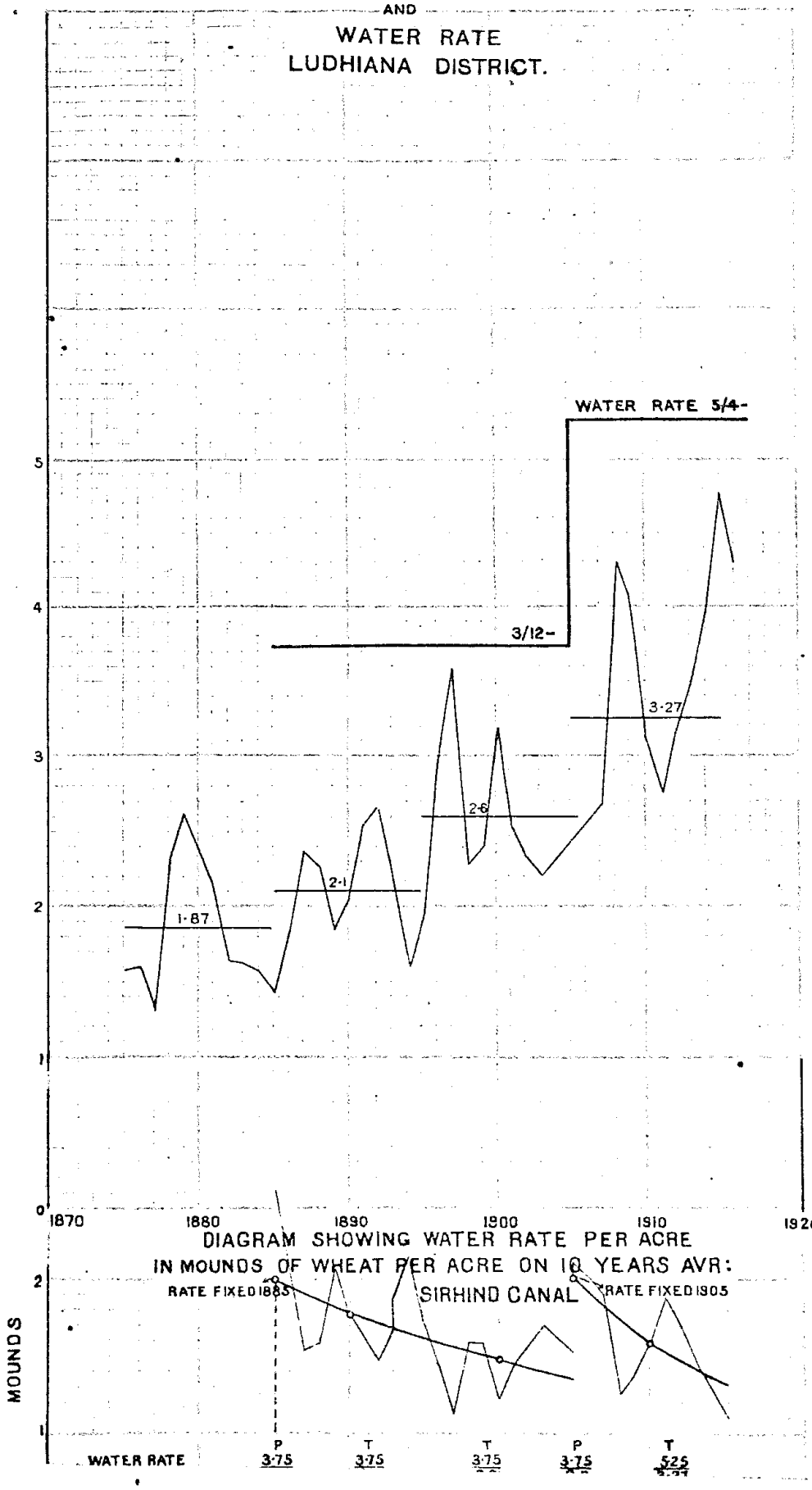


DIAGRAM SHOWING WATER RATE PER ACRE
IN MOUNDS OF WHEAT PER ACRE ON 10 YEARS AVR:
SIRHIND CANAL

No. 24. Annexure II to oral evidence of Mr. H. W. Nicholson, Executive Engineer, Sirhind Project Division, Punjab.

DIAGRAM SHOWING PRICE OF COTTON

LUDHIANA DISTRICT.

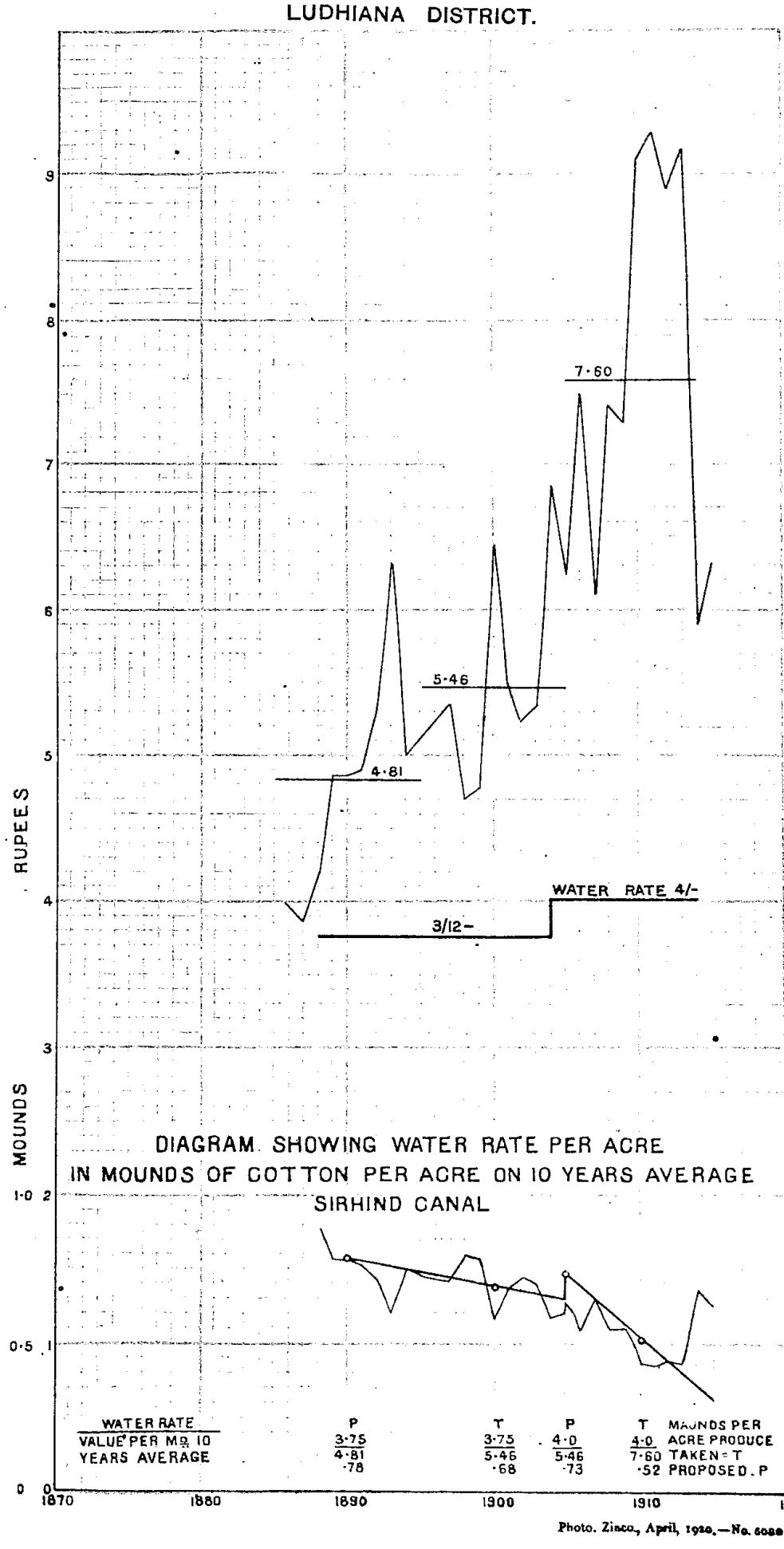


Photo. Zinco., April, 1920.—No. 6088-22. 1500

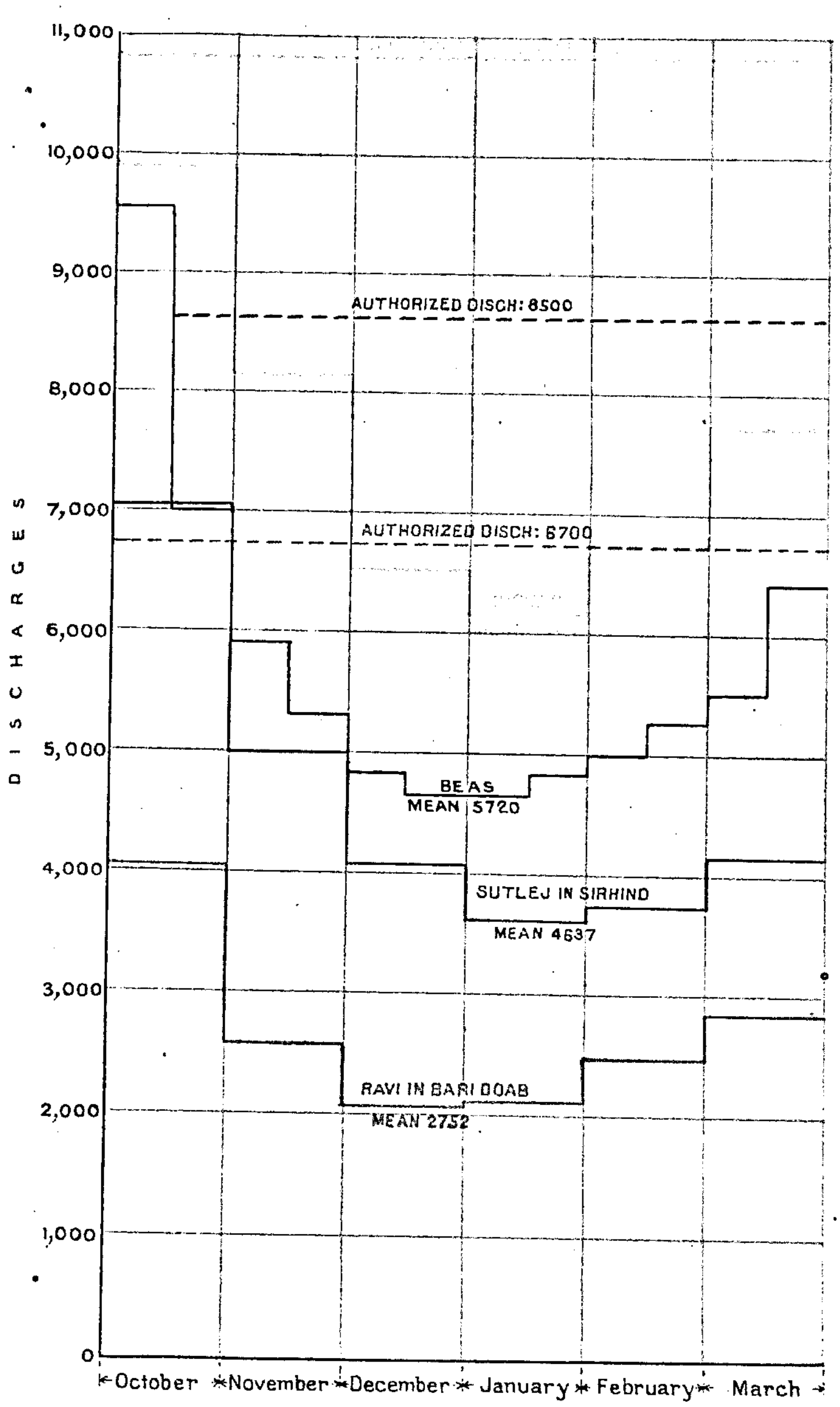
No. 25. Annexure III to oral evidence of Mr. H. W. Nicholson,
Executive Engineer, Sirhind Project Division, Punjab.

MEAN DISCHARGES OF RIVERS IN RABI

II YEARS MEAN 1903—14

MEASURED IN CANAL

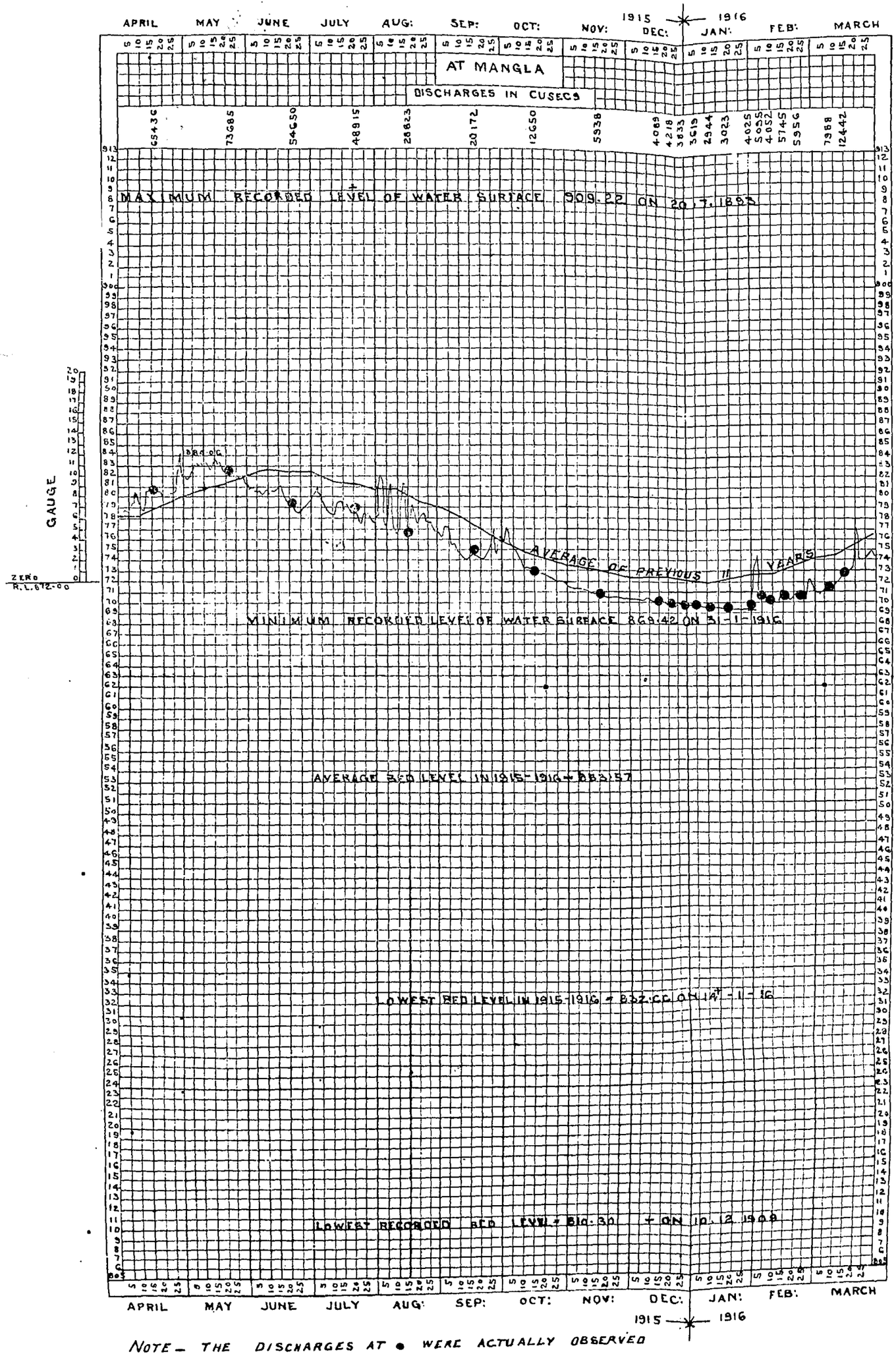
(EXCEPT BIAS).



No. 680-23

No. 26. Annexure V to evidence of Mr. W. P. Sangster, C. I. E., Superintending Engineer, Lower Jhelum Circle, Punjab.

RISE AND FALL OF THE RIVER JHELUM 1915-1916

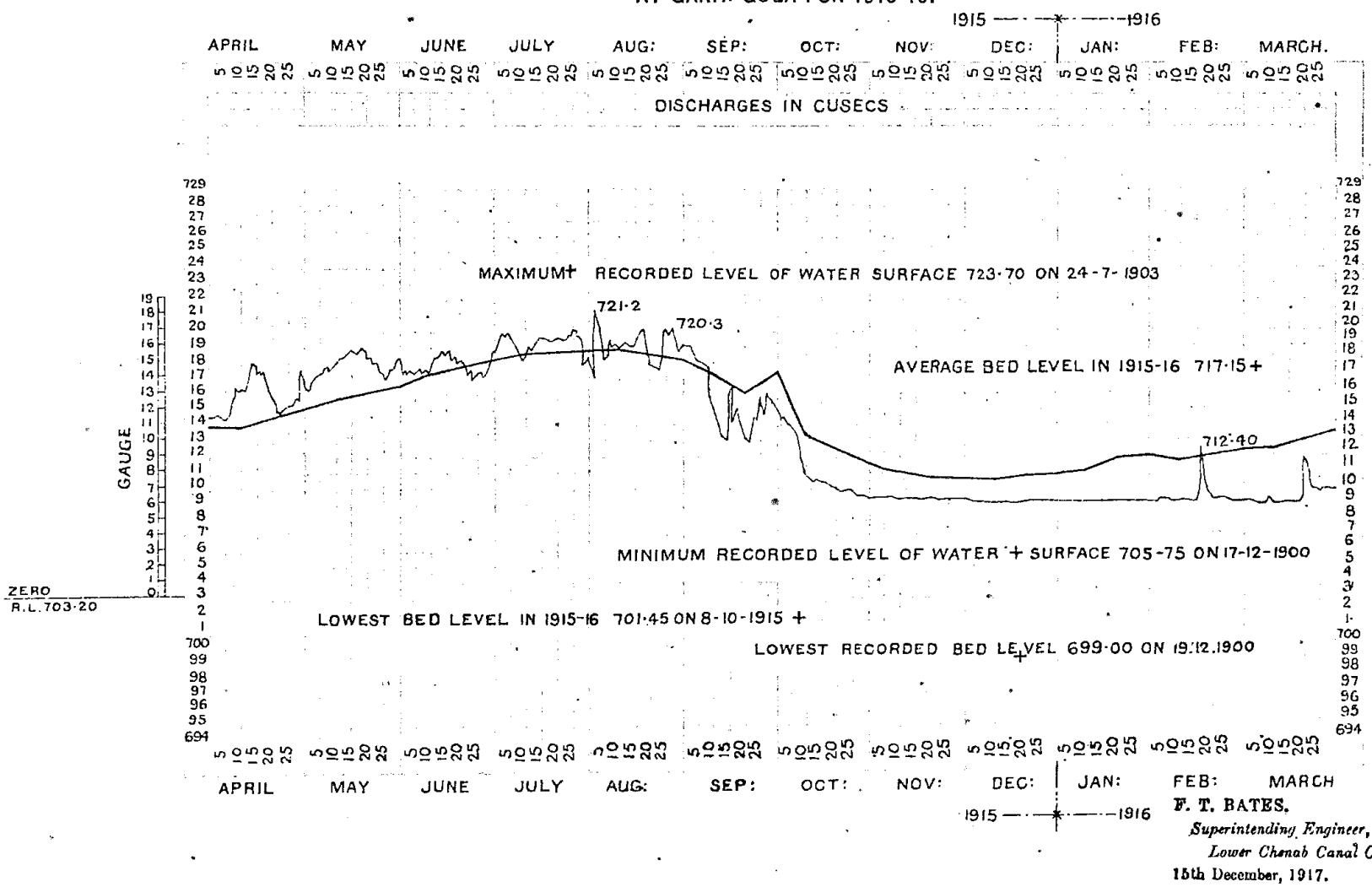


NOTE— THE DISCHARGES AT ● WERE ACTUALLY OBSERVED

ANNEXURE VII.

RISE AND FALL DIAGRAM

AT GARHI GOLA FOR 1915-16.



F. T. BATES.
Superintending Engineer,
Lower Chenab Canal Circle.
15th December, 1917.

Photo.-Mechl. and Litho. Dept., Thomason College, Roorkee.

March, 1920.—No. 6080-25.1500.

No. 27. Annexure VII to written evidence of Mr. F. T. Bates, Superintending Engineer, Lower Chenab Canal Circle, Punjab.

No. 28. Annexure IV to written evidence of Mr. A. R. Murray, Superintending Engineer, Derajat Circle, Punjab.

DIAGRAM ILLUSTRATING WATER SUPPLIES IN THE SIDHNAI CANAL APRIL TO JUNE.

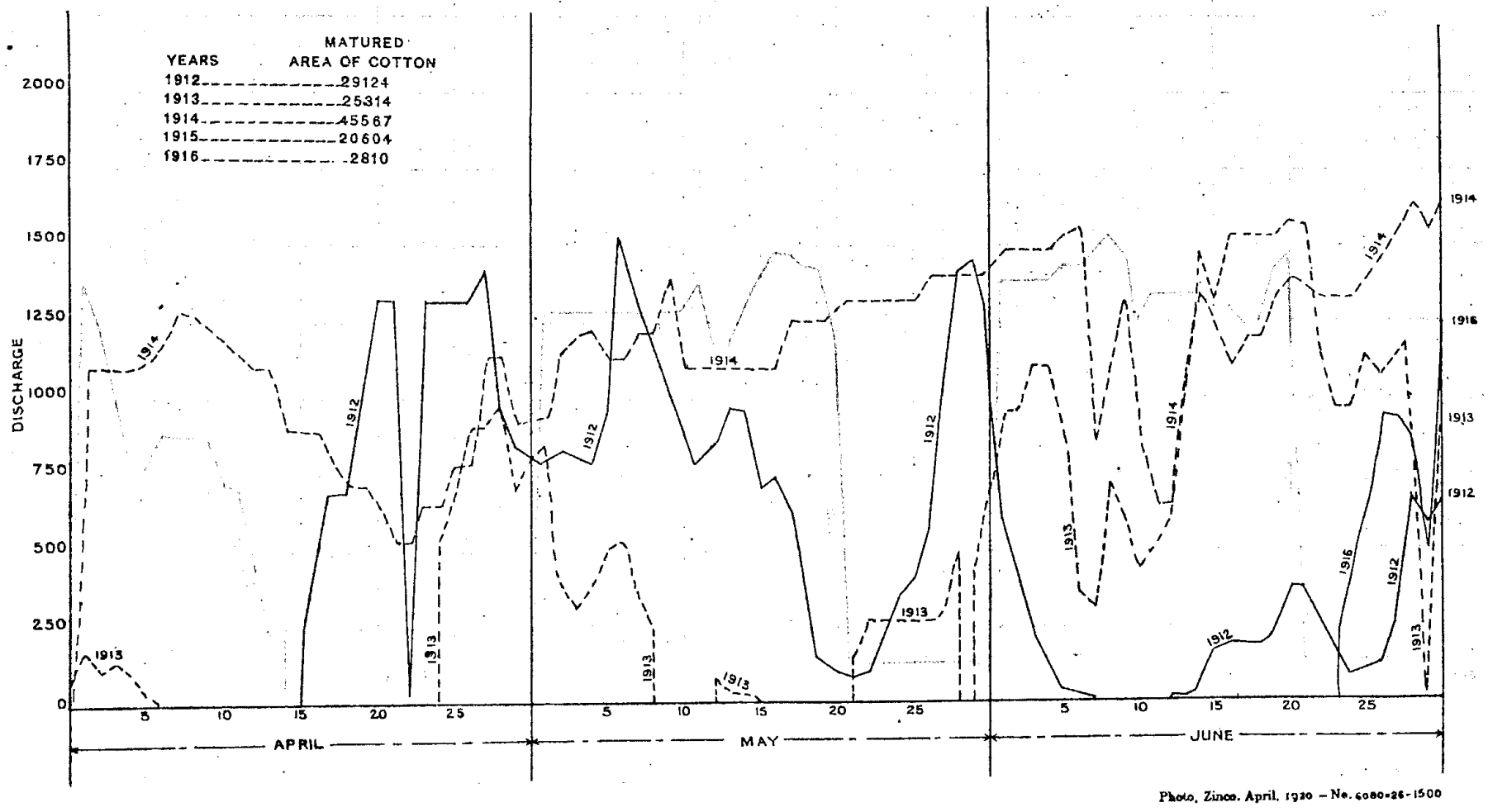


Photo. Zinco. April, 1920 — No. 4080-26-1500

No. 29. Annexure V to written evidence of Mr. A. R. Murray,
Superintending Engineer, Derajat Circle, Punjab.

DIAGRAM ILLUSTRATING WATER SUPPLIES IN THE SIDHNAI CANAL SEPTEMBER AND OCTOBER.

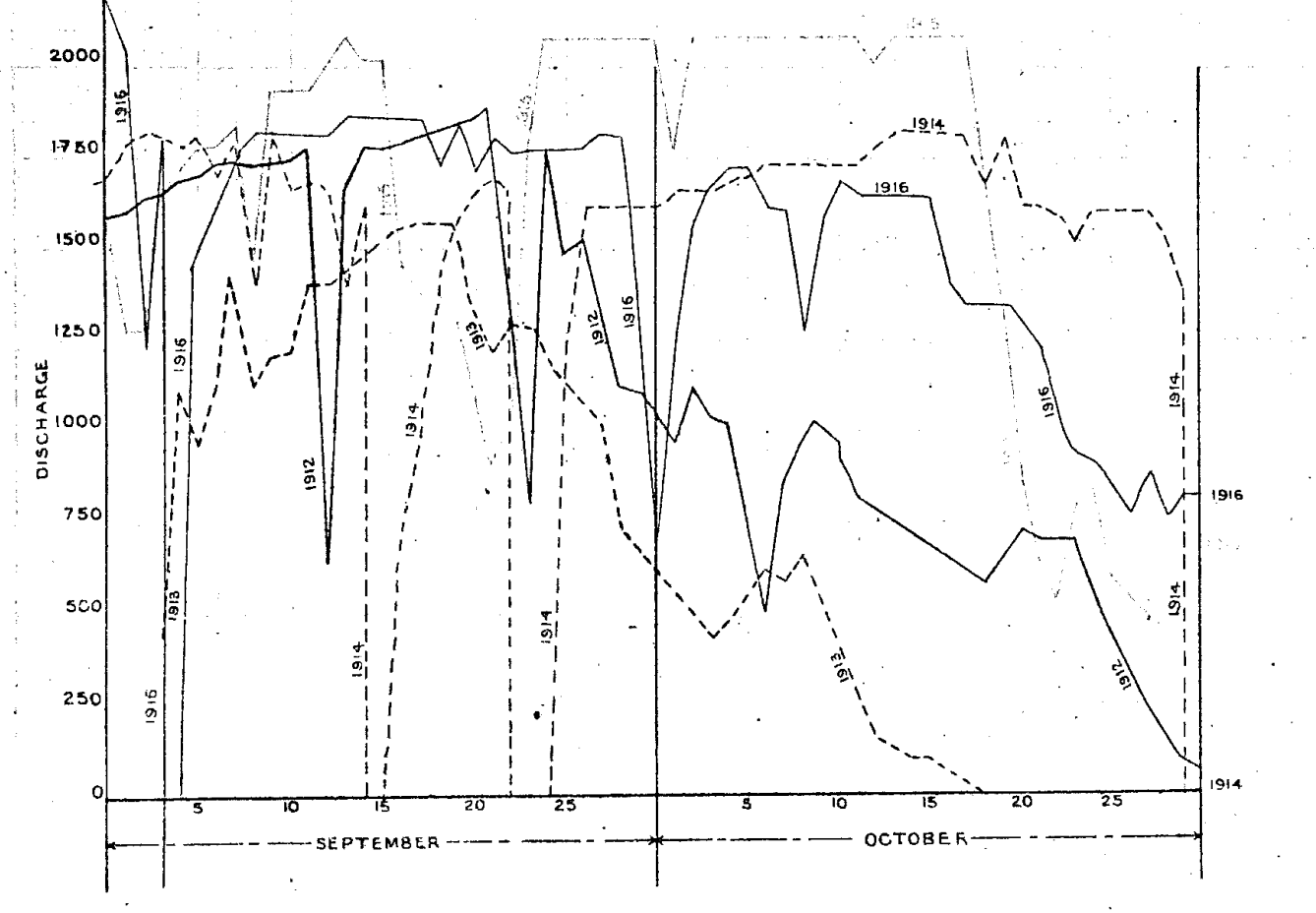


Photo. Zinco., April 1920. No. 6080-27-1500

No. 30. Annexure VI to written evidence of Mr. A. R. Murray,
Superintending Engineer, Derajat Circle, Punjab.

DIAGRAM ILLUSTRATING WATER SUPPLIES IN THE SIKANDRABAD CANAL APRIL TO JUNE.

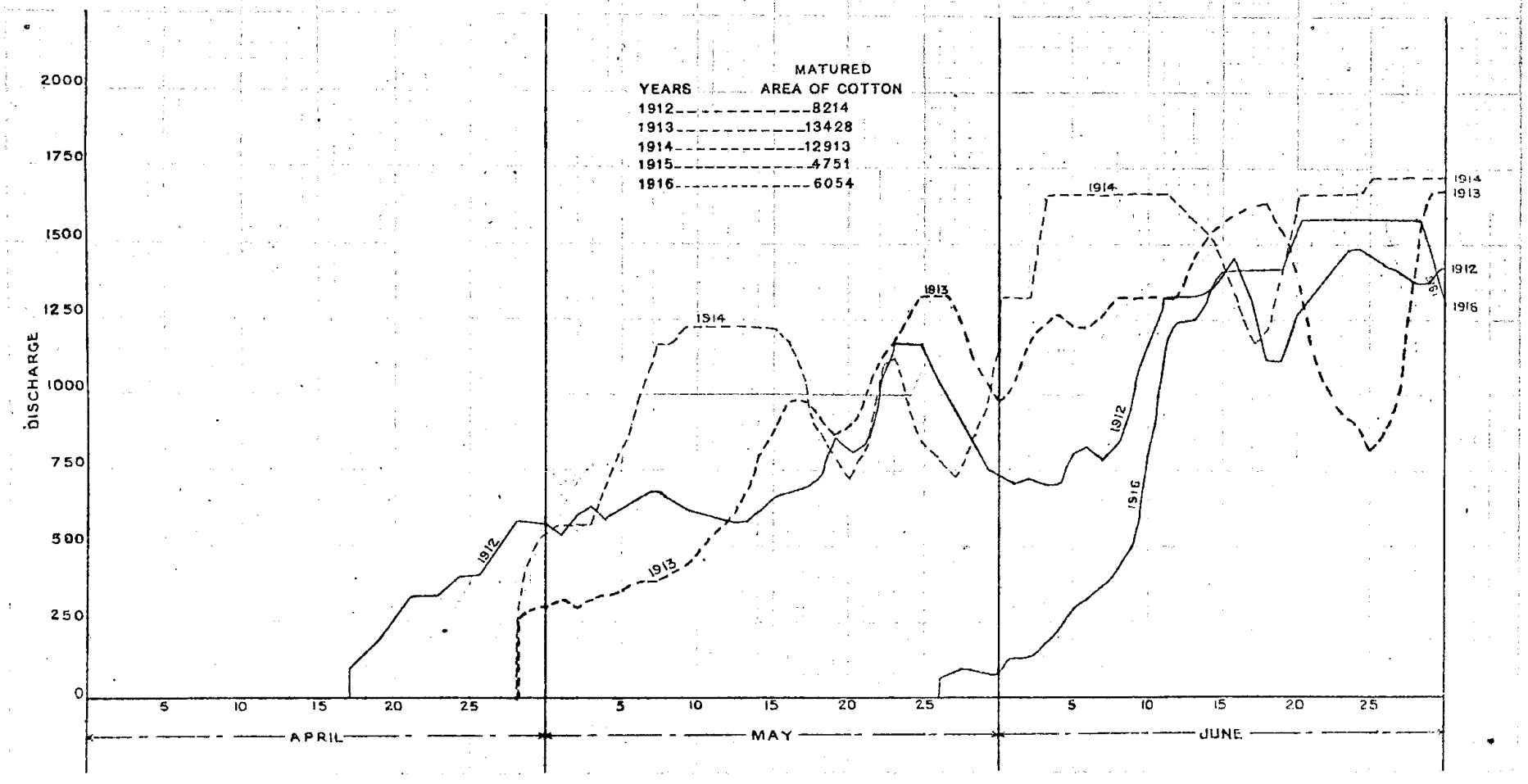


Photo. Zinco., April, 1920.—No. 608-28-1500

No. 31. Annexure VII to written evidence of Mr. A. R. Murray, Superintending Engineer, Derajat Circle, Punjab.

DIAGRAM ILLUSTRATING WATER SUPPLIES IN THE SIKANDRABAD CANAL SEPTEMBER AND OCTOBER.

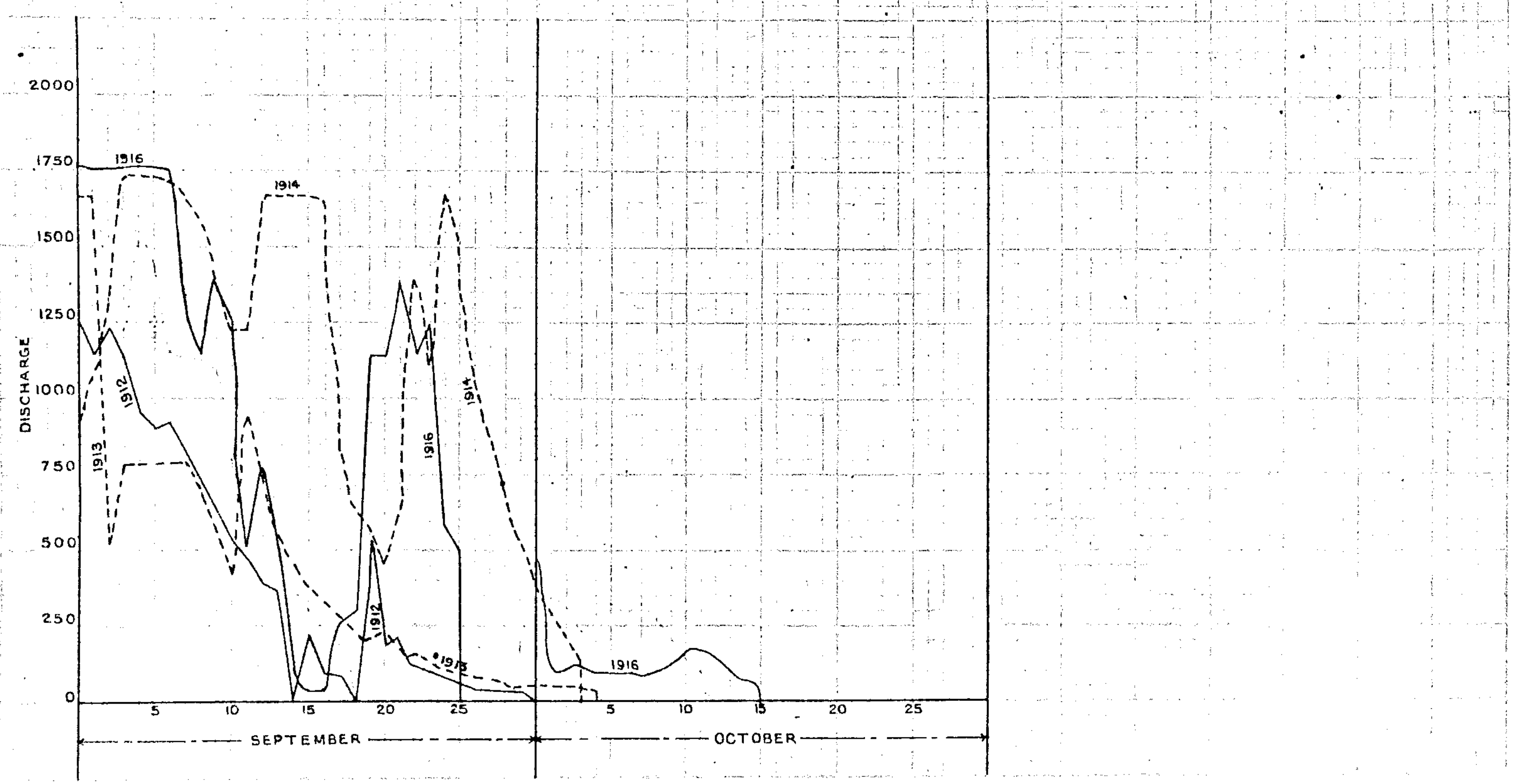
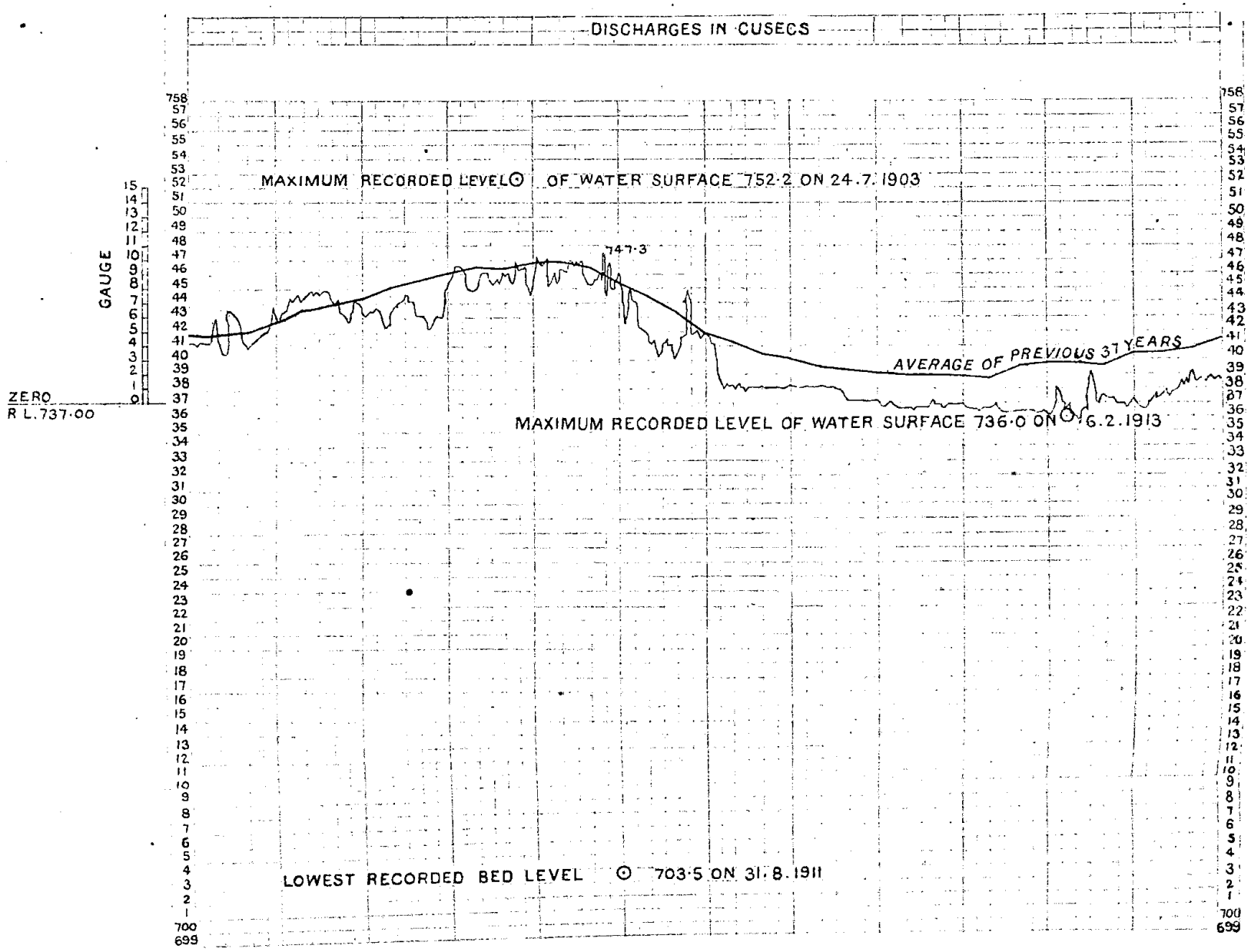


Photo. Zinco., April, 1920.—No. 6080-28. 1590

No. 32. Annexure IV to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

RISE AND FALL OF THE RIVER CHENAB 1915-1916
AT ALEXANDRA BRIDGE.

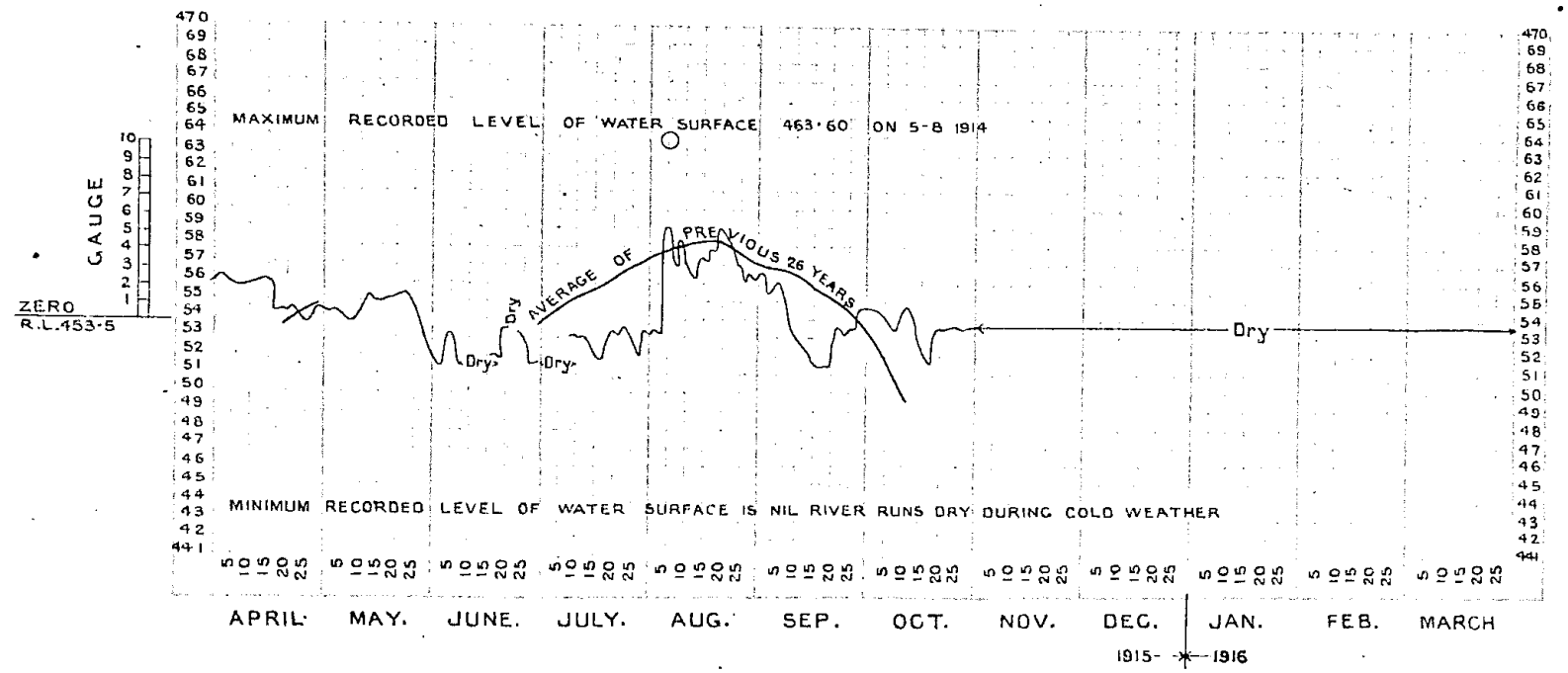


C. G. MAY,
Executive Engineer,
Project Division Lower Chenab Canal.
6th December, 1917.

Photo.-Mechl. and Litho. Dept., Thomason College, Roorkee.—No. 6080-30. 1500.

No. 33. Annexure V to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

RISE AND FALL OF THE RIVER RAVI 1915-1916
BELOW SIDHNAI DAM.



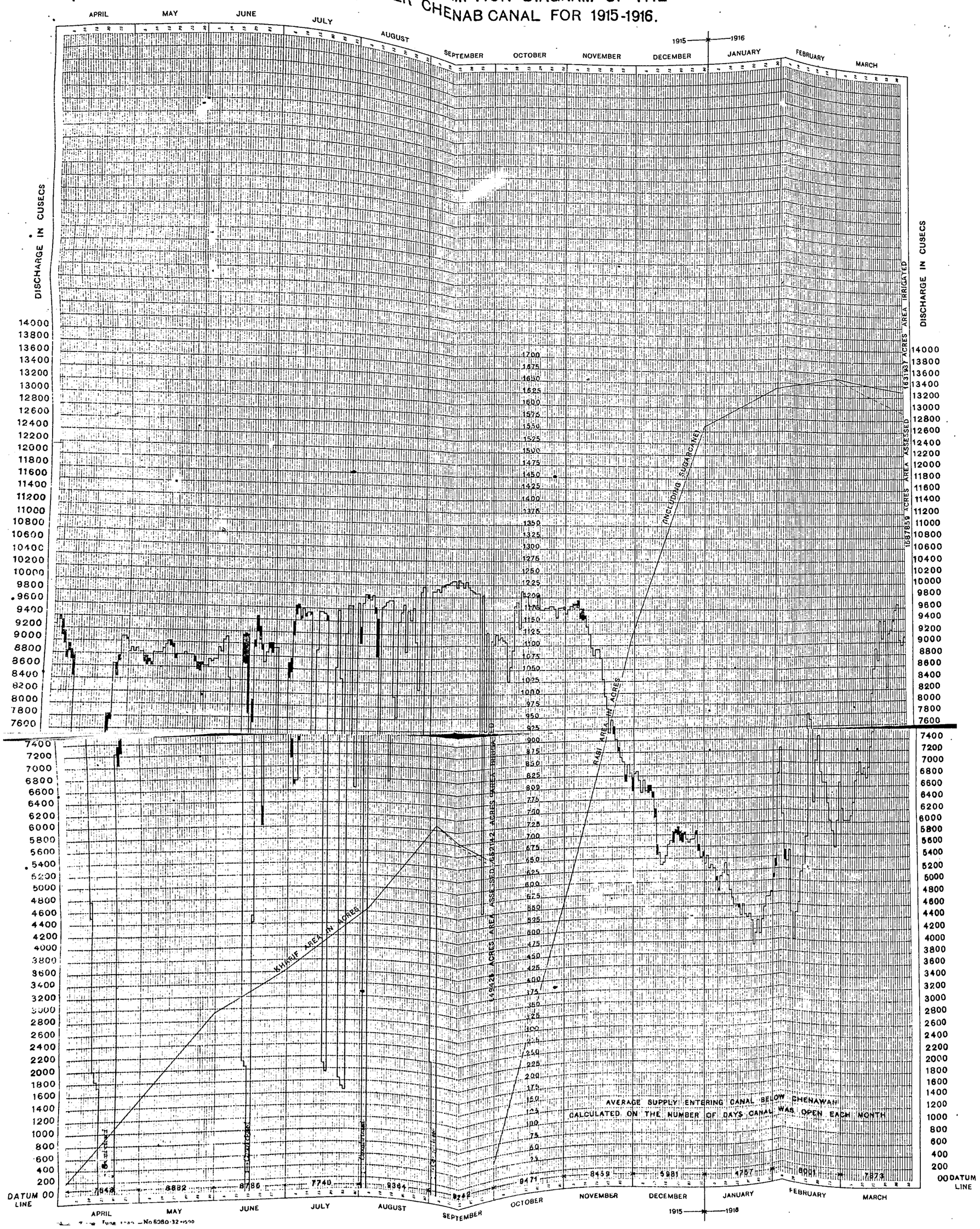
C. R. MAY,
Executive Engineer,
Project Division Lower Chenab Canal.
5th December, 1917.

Photo, Zinco. March, 1920.—No. 6080-3i·1500

No. 34. Annexure VI to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

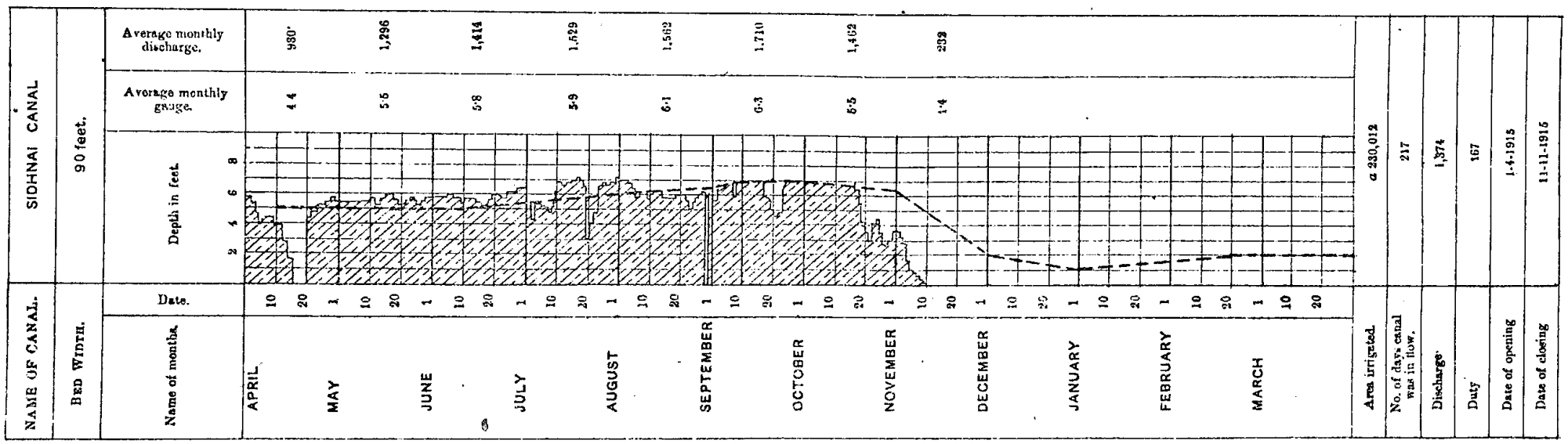
WATER CONSUMPTION DIAGRAM OF THE LOWER CHENAB CANAL FOR 1915-1916.

NOTE.—*The shaded portion shows the quantity of water escaped.*



No. 35. Annexure VII to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

DIAGRAM SHOWING THE DURATION AND AMOUNT OF SUPPLY IN THE SIDHNAI CANAL. FOR 1915–16.

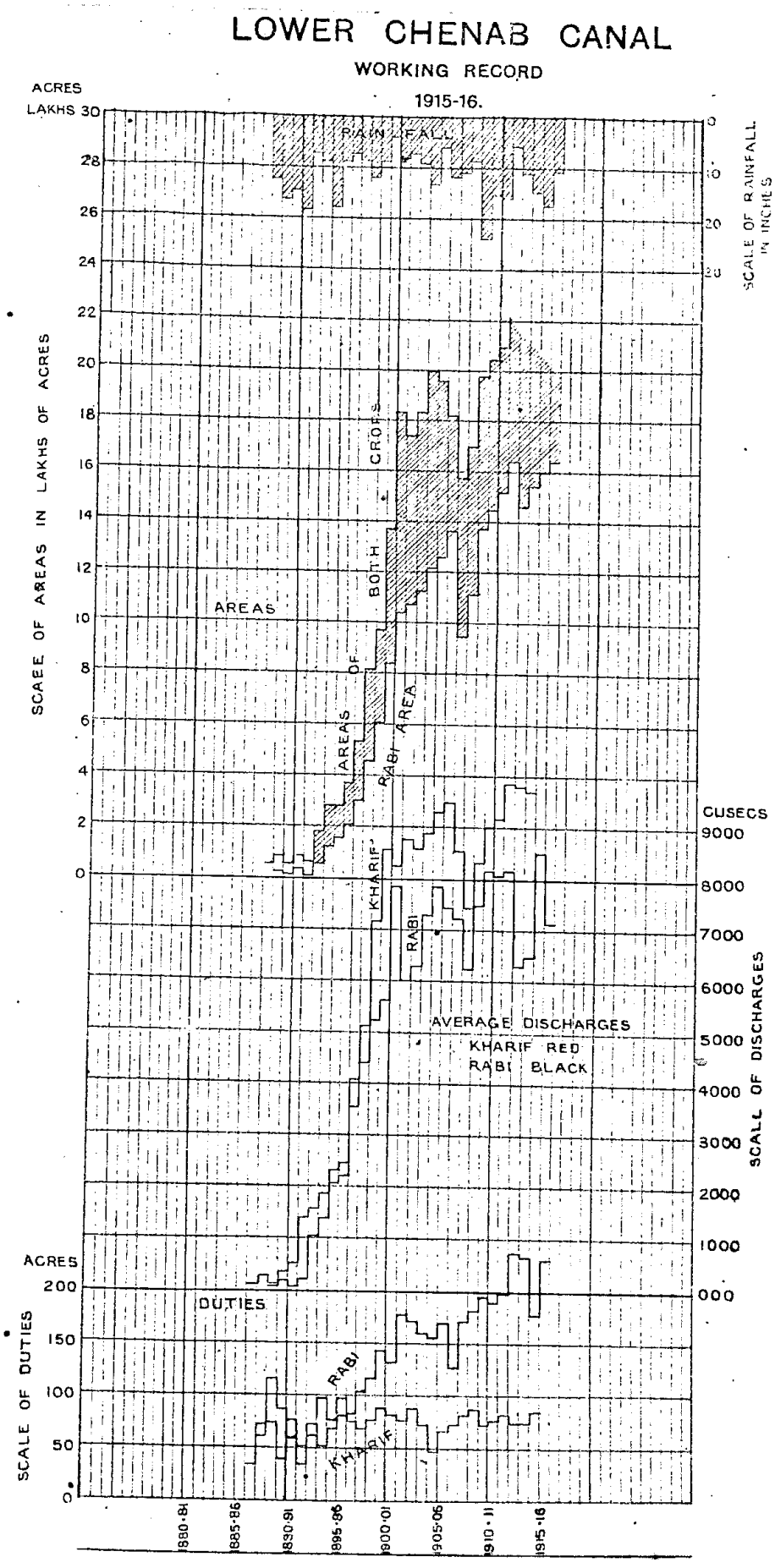


N.B.—*The think dotted lines showing the height and duration of supply in a favourable year*

a. Contains 4,013 + 20,376 *said to have been remitted on account of shortness of supply.*

Photo. Zinco., February, 1920.—No. 6080-33. 1500

No. 36. Annexure VIII to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.



B. N.—The intercepts in the red area show the Kharif acreage each year.

The discharges are measured at canal head, and give averages for each crop.

The duties are derived from these areas and discharges.

The Rabi winter supply is comparatively high and reliable on this canal.

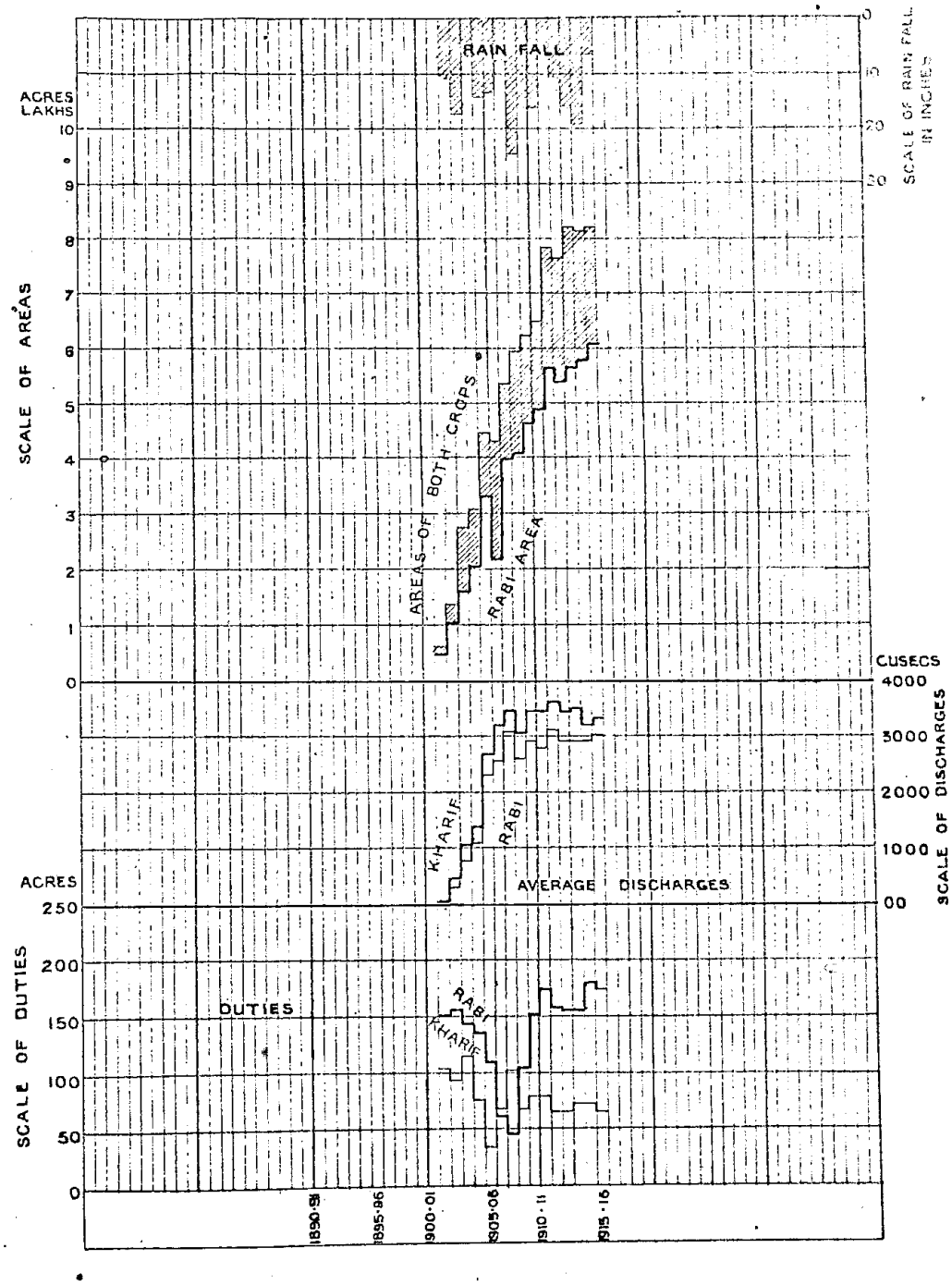
Photo. Zinco., March, 1920.—No. 6080-34-1500

No. 37. Annexure IX to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

LOWER JHELUM CANAL

WORKING RECORD

1915-16.



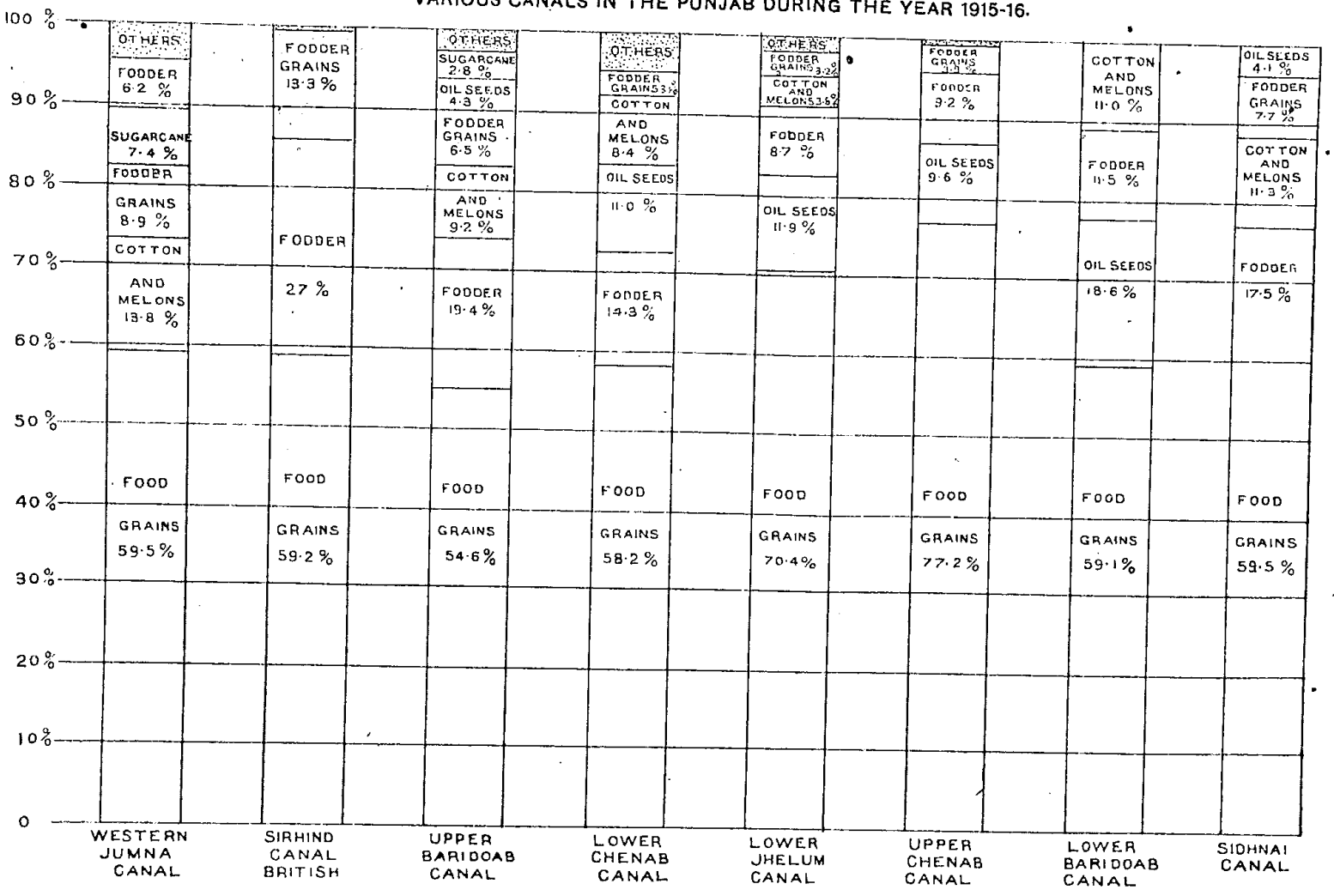
N. B.—The intercepts in red area give the Kharif irrigation each year. The discharges are measured at mile 14 of the main canal and give averages for each crop.

The duties are derived from these areas and discharges.

Photo. Zinco., March, 1920. No. 6080-35-1500

No. 38. Annexure X to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

DIAGRAM COMPARING THE PERCENTAGES OF THE CHIEF CROPS IRRIGATED BY VARIOUS CANALS IN THE PUNJAB DURING THE YEAR 1915-16.

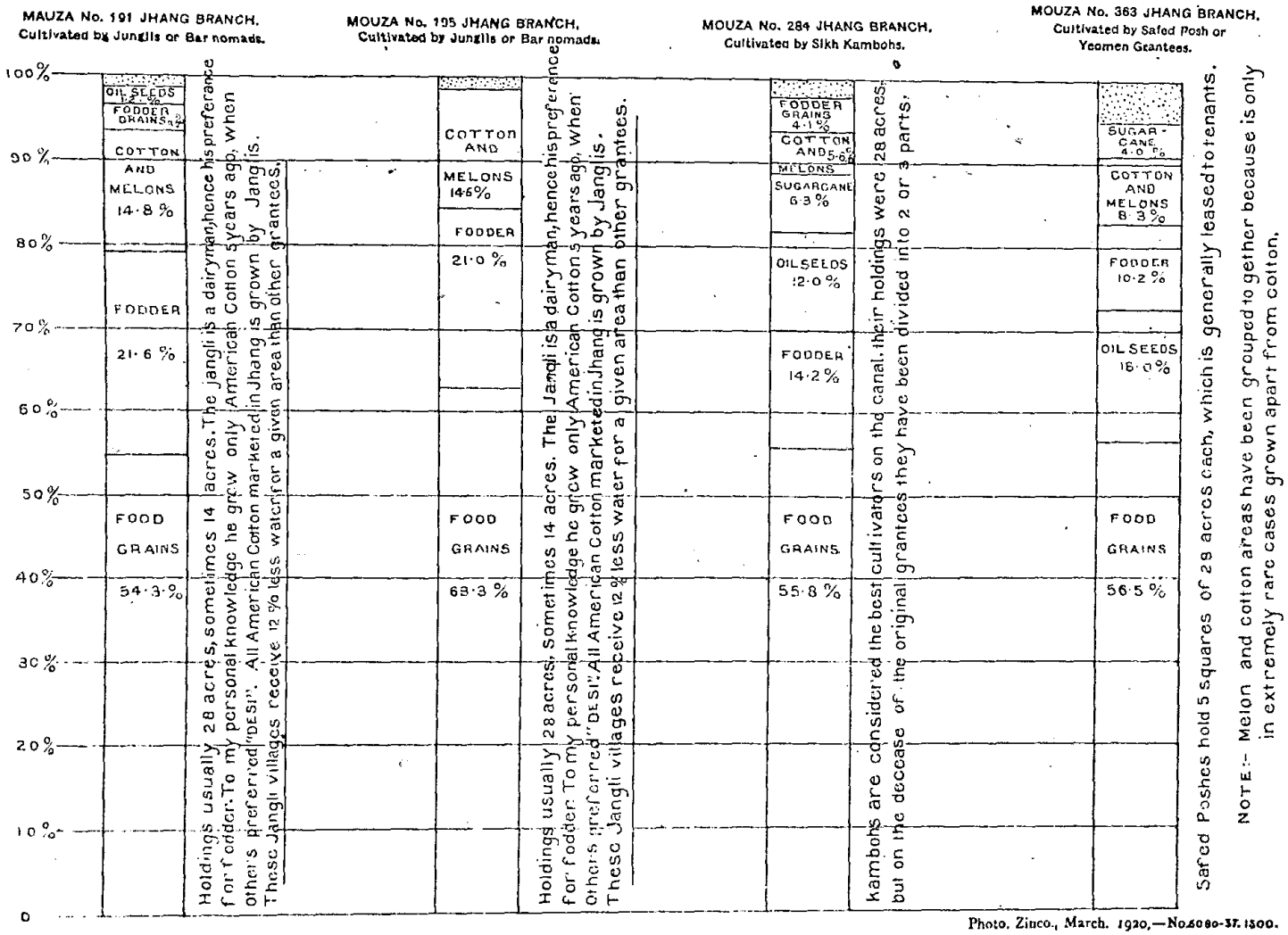


NOTE:—Melon and Cotton areas have been grouped together because the former is only in extremely rare Cases grown apart from Cotton—

Photo, Zinco. March, 1920.—No. 6060-36.1300.

No. 39. Annexure XI to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

DIAGRAM COMPARING THE PERCENTAGES OF THE CHIEF CROPS IRRIGATED IN VILLAGES CULTIVATED BY DIFFERENT CLASSES OF CULTIVATORS DURING THE YEAR 1915-16.



NOTE:- Melon and cotton areas have been grouped together because is only in extremely rare cases grown apart from cotton.

Photo. Zinco., March. 1920.—No.2080-37. 1300.

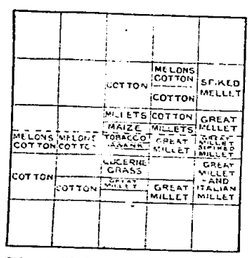
NO 40. Annexure XII to written evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

LOWER CHENAB CANAL

PLAN ILLUSTRATING ROTATION PRACTISED IN CERTAIN DEFINITE SQUARES.

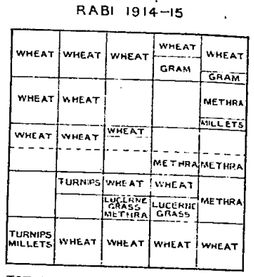
MAUZA NO. 191
SQUARE NO 50
SULTANPAKHRA DY
BAR NOMAD

KHARIF 1914



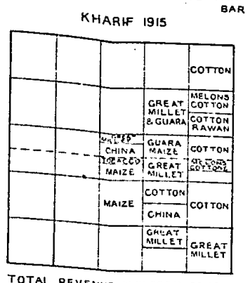
TOTAL REVENUE ASSESSED 40-9-6
WATER RATE 40-2-0

RABI 1914-15



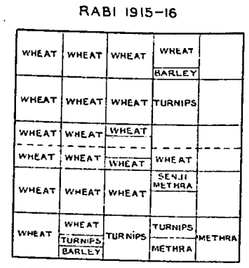
TOTAL REVENUE ASSESSED 71-7-0
WATER RATE 81-5-0

KHARIF 1915



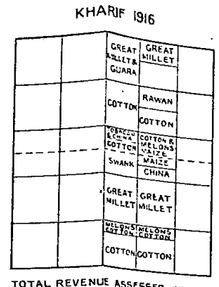
TOTAL REVENUE ASSESSED 38-14-0
WATER RATE 46-5-0

RABI 1915-16



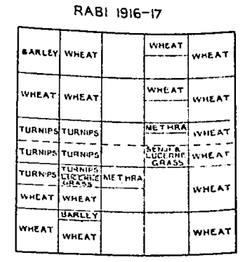
TOTAL REVENUE ASSESSED 74-12-3
WATER RATE 80-14-0

KHARIF 1916



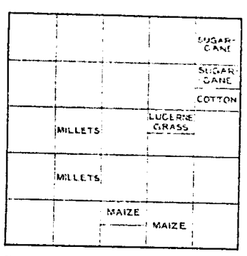
TOTAL REVENUE ASSESSED 35-0-9
WATER RATE 35-1-0

RABI 1916-17

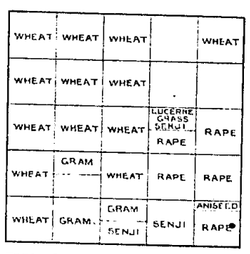


TOTAL REVENUE ASSESSED 66-13-6
WATER RATE 71-12-0

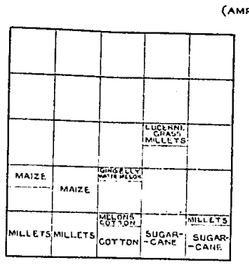
MAUZA NO 284
SQUARE NO 17
GHAPNI DY
KAMBOH SIKS ABADKAR
(AMRITSAR)



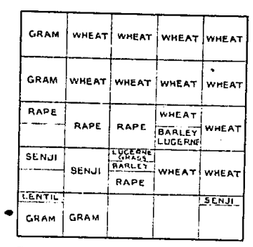
TOTAL REVENUE ASSESSED 26-3-9
WATER RATE 33-2-0



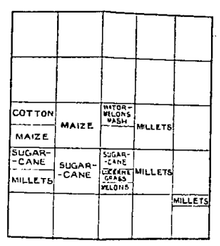
TOTAL REVENUE ASSESSED 80-14-3
WATER RATE 85-3-0



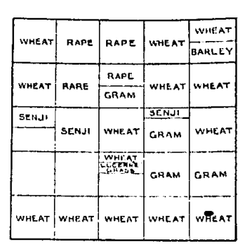
TOTAL REVENUE ASSESSED 26-11-0
WATER RATE 33-9-0



TOTAL REVENUE ASSESSED 66-12-6
WATER RATE 75-0-0

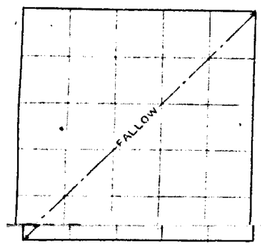


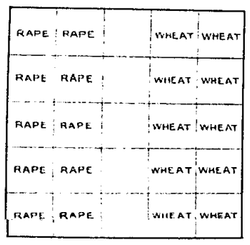
TOTAL REVENUE ASSESSED 29-11-6
WATER RATE 38-14-0



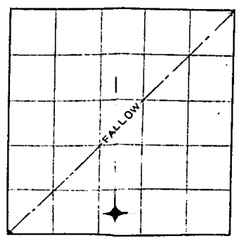
TOTAL REVENUE ASSESSED 82-7-6
WATER RATE 90-0-0

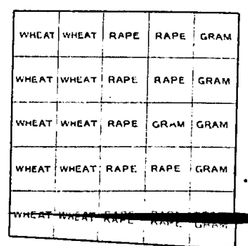
MAUZA NO 363
SQUARE NO 44
GOJRA DY
YEOMAN (THIS HOLDING INCLUDES 4 OTHER SQUARES)



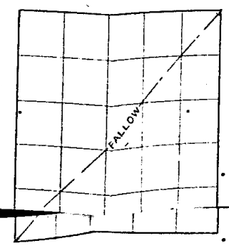


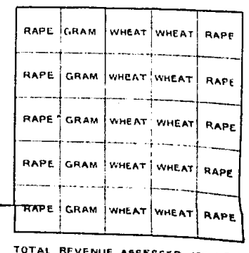
TOTAL REVENUE ASSESSED 100-15-10
WATER RATE 83-7-0





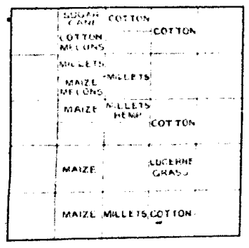
TOTAL REVENE ASSESSED 126-5-6
WATER RATE 96-0-0



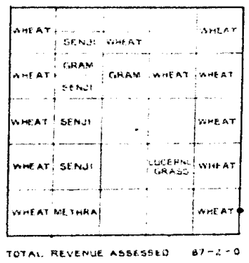


TOTAL REVENUE ASSESSED 126-3-0
WATER RATE 97-6-0

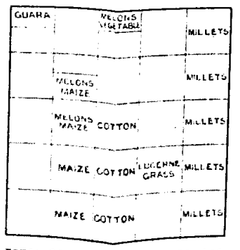
MAUZA NO 363
SQUARE NO 34
GOJRA DY
YEOMAN (DITTO)



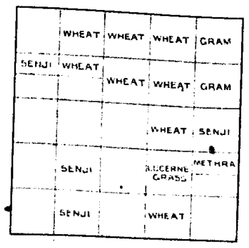
TOTAL REVENUE ASSESSED 65-8-6
WATER RATE 52-11-0



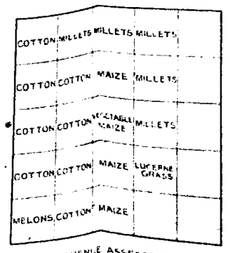
TOTAL REVENUE ASSESSED 87-2-0
WATER RATE 70-0-0



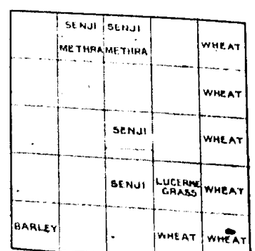
TOTAL REVENUE ASSESSED 72-6-8
WATER RATE 47-4-0



TOTAL REVENUE ASSESSED 71-6-6
WATER RATE 56-8-0



TOTAL REVENUE ASSESSED 97-8-0
WATER RATE 74-8-0



TOTAL REVENUE ASSESSED 57-0-8
WATER RATE 47-4-0

Executive Engineer,
Project Division Lower Chenab Canal.

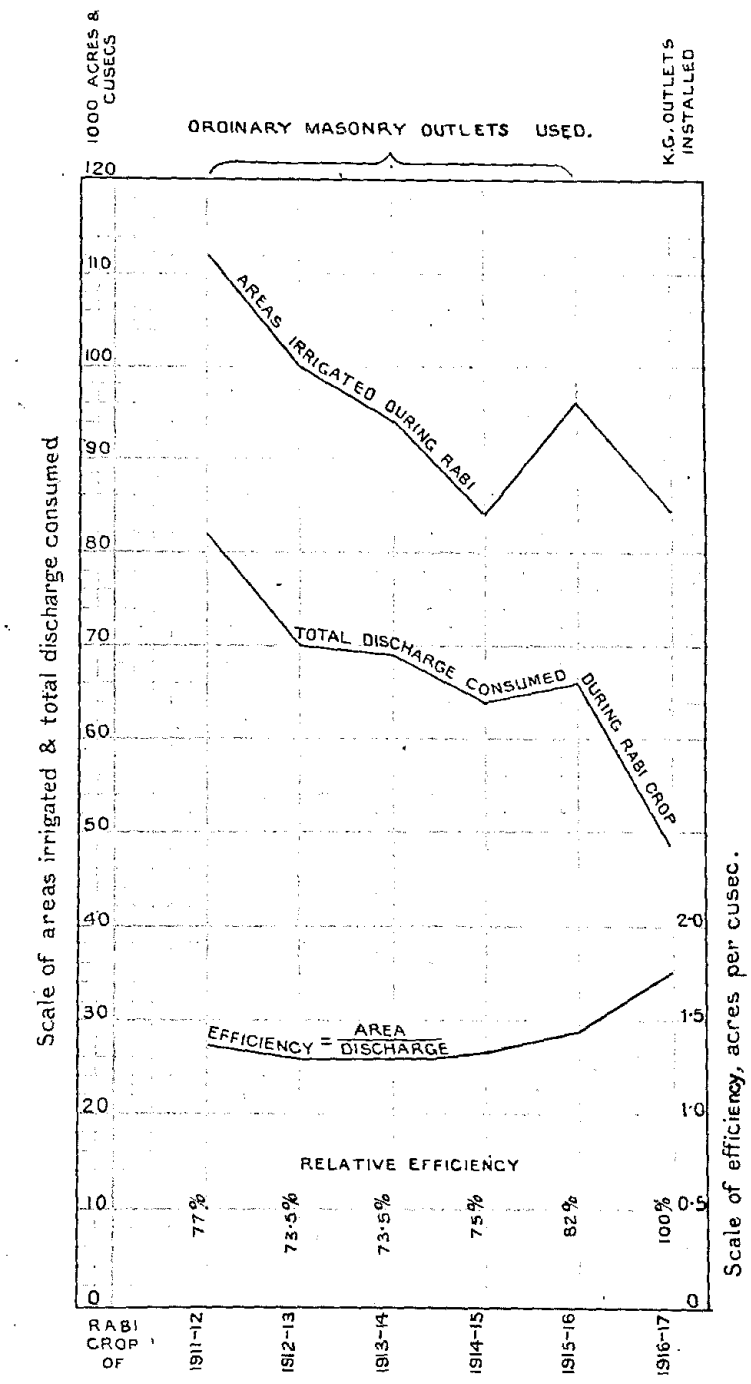
Photo. Zinco, February, 1920. No.6080-38 1500

No. 41. Annexure II to oral evidence of Mr. C. G. May, Executive Engineer, Project Division, Lower Chenab Canal, Punjab.

LOWER CHENAB CANAL

HAFIZABAD DIVISION

Diagram illustrating efficiency attained by using kennedy gauge outlets.



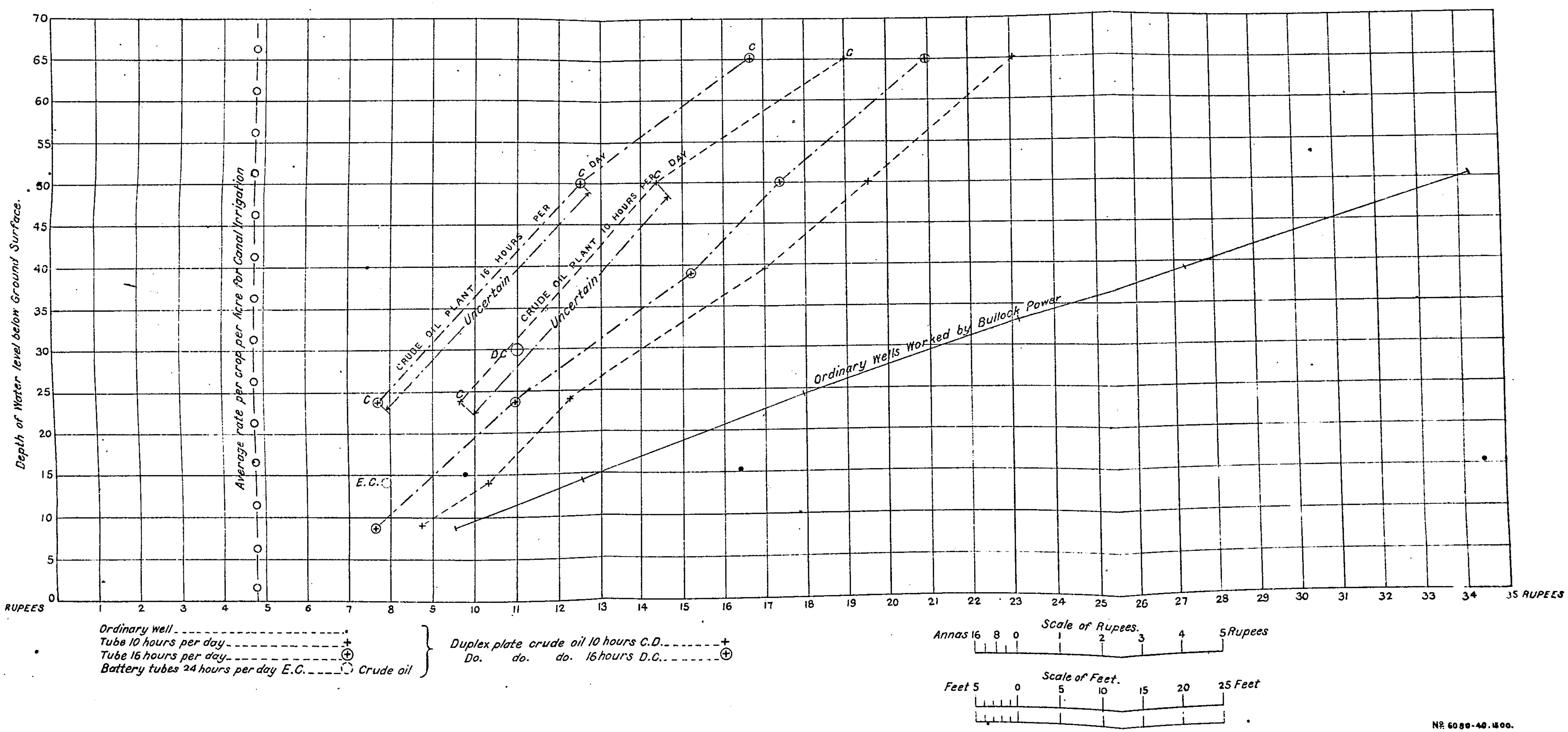
C. R. MAY,
Executive Engineer,
Project Division Lower Chenab Canal.
3rd January, 1918.

Photo. Zinco., March. 1920.—No. 6080-34-1500

No. 42. Annexure I to evidence of Mr. T. A. Miller Brownlie, Agricultural Engineer, Punjab.

DIAGRAM SHOWING

COMPARATIVE COSTS PER ACRE PER CROP FOR IRRIGATION BY ORDINARY WELLS AND BY TUBE WELLS, THE LATTER WHEN WORKED BY REFINED OIL AND ALSO BY CRUDE OIL UNDER VARIOUS HEADS.



No. 6080-40.1500.

No. 43. Annexure I to evidence of Mr. A. B. Timms, Executive Engineer, Jamrao Canals, Northern District, Sind.

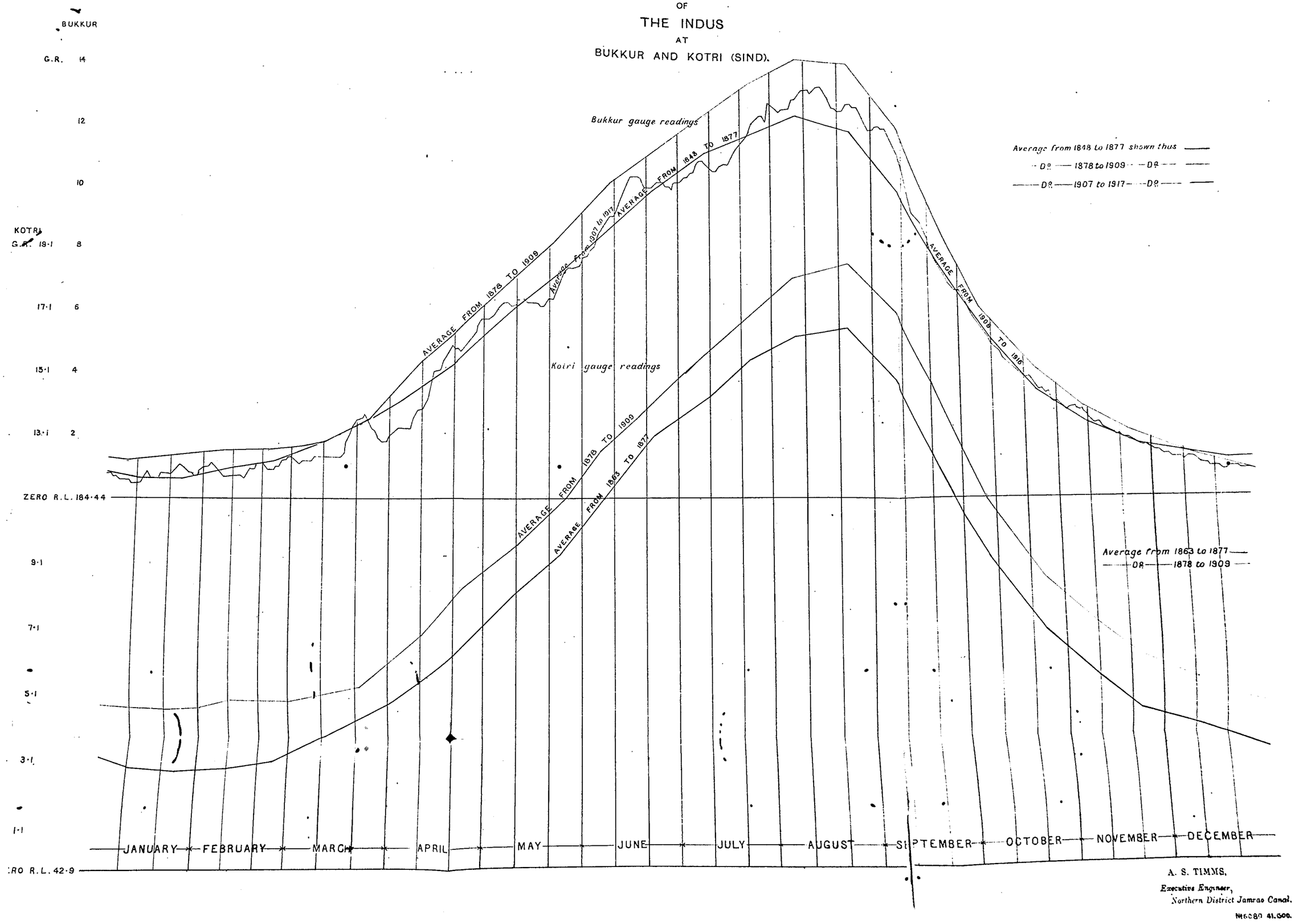
HYDROGRAPHS

OF

THE INDUS

AT

BUKKUR AND KOTRI (SIND).



A. S. TIMMS,
Executive Engineer,
Northern District Jamrao Canal.

M6080 41.000.