

Telephone No. ....

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Ref. No.

2/32/11

RHODESIA



NYASALAND

DEPARTMENT OF TSETSE AND TRYPANOSOMIASIS  
CONTROL AND RECLAMATION,

P.O. BOX 8100, CAUSEWAY,

SALISBURY,

SOUTHERN RHODESIA.

23rd April, 1958.

Entomologist-in-Charge, Sebungwe Area, P.O. Dett.  
Entomologist-in-Charge, Sabi Area, Box 397C, Umtali.  
Entomologist-in-Charge, Urungwe Area, Box 121, Karoi.  
Entomologist-in-Charge, Mtoko Area, Chazarini Camp, Mtoko.

Pupal Periods.

I have asked Miss Leggate to prepare the attached memorandum since the data it contains may be of use in thinking out the problem of when to apply insecticide and/or cut down bush. One should note that Jackson's formula was devised for use with G.morsitan morsitas whereas here we are concerned with G.morsitas orientalis. Also, Jackson used to say that for the purposes of reproduction etc., the tsetse could be assumed to live at "screen temperature." This seemed to me to be a doubtful proposition. Possibly when Mr. Lovemore gets his pupa supply organised, we may be able to investigate these points.

DIRECTOR.

JF/CE.

TEMPERATURE IN THE ZAMBEZI VALLEY RELATED TO PUPAL  
PERIOD OF GLOSSINA MORSITANS

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Of all climatic factors the Tsetse fly is most dependent upon temperature for its rate of development. Humidity, apparently, has very little effect.

It is possible to calculate the duration of the pupal instar from the mean temperature by using the following formula :-

If the temperature (t) is measured in °C, the ♀ pupal period =

$$\frac{1}{0.0323 + 0.0028 (t - 24)}$$

Similarly the number of days required by a freshly emerged ♀ to produce her first larva is

$$\frac{1}{0.0441 + 0.0035 (t - 24)}$$

Unfortunately there are not a great number of meteorological records available for places in the Zambezi Valley, but the figures in the following tables may act as a guide to conditions in the area. The figures represent mean monthly screen temperatures and therefore do not give any indication of daily maxima and minima except in the case of Chirundu for which more detailed information is presented.

MEAN MONTHLY SCREEN TEMPS °F.

	FEIRA (N.R.)	CHIRUNDU	KARIBA	CHIBOBOMA (N.R.)	BINGA	KANCHINDU (N.R.)	KARYANGWE	GOKWE	MIAMI
Jan.	80.1	80.8	78.7	80.4		79.2	76.5	71.9	69.1
Feb.	79.8	80.6	78.1	80.5	75.3	79.2	74.4	71.7	68.9
Mar.	79.1	80.1	78.9	79.5	79.2	78.9		71.3	68.4
April	77.6	78.9	77.5	78.1		75.9		69.6	66.3
May	72.7	73.8	75.1	72.1		72.9		55.4	62.0
June	67.1	67.9	71.8	66.0		67.4		60.9	57.9
July	66.5	68.1	72.8	64.3		66.5	65.8	60.7	58.4
Aug.	71.6	72.5	77.3	70.2		69.7	69.1	64.5	60.9
Sept.	78.5	80.2	83.5	78.8		78.3	74.3	71.0	67.8
Oct.	85.5	86.8	88.5	86.2		86.8	82.3	76.2	72.6
Nov.	85.3	84.8	84.0	84.0		83.4	82.0	74.7	71.7
Dec.	80.2	81.7	79.2	81.2		80.5	77.1	72.6	69.9

## MEAN MONTHLY SCREEN TEMPS. °C.

	FEIRA (N.R.)	CHIRUNDU	KARIBA	CHIBOBOMA (N.R.)	BINGA	KANCHINDU (N.R.)	KARYANGWE	GOKWE	MIAMI
Jan.	26.7	27.1	25.9	26.9		26.2	24.7	22.2	20.6
Feb.	26.5	27.0	25.7	26.9	24.0	26.2	23.6	22.0	20.5
Mar.	26.1	26.7	26.0	26.3	26.2	26.0		21.8	20.2
April	25.3	26.0	25.3	25.6		24.4		20.9	19.0
May	22.6	23.2	23.9	22.3		22.7		13.0	16.7
June	19.5	19.9	22.1	18.9		19.7		16.0	14.4
July	19.2	20.0	22.7	17.9		19.2	18.8	15.9	14.7
Aug.	22.0	22.5	25.2	21.2		20.9	20.6	18.0	16.0
Sept.	25.8	26.8	28.6	26.0		25.7	23.5	21.7	19.9
Oct.	29.7	30.4	31.4	30.1		30.4	27.9	24.5	22.6
Nov.	29.6	29.3	28.9	28.9		28.6	27.8	23.7	22.0
Dec.	26.7	27.6	26.2	27.3		26.9	25.0	22.5	21.0

## CHIRUNDU.

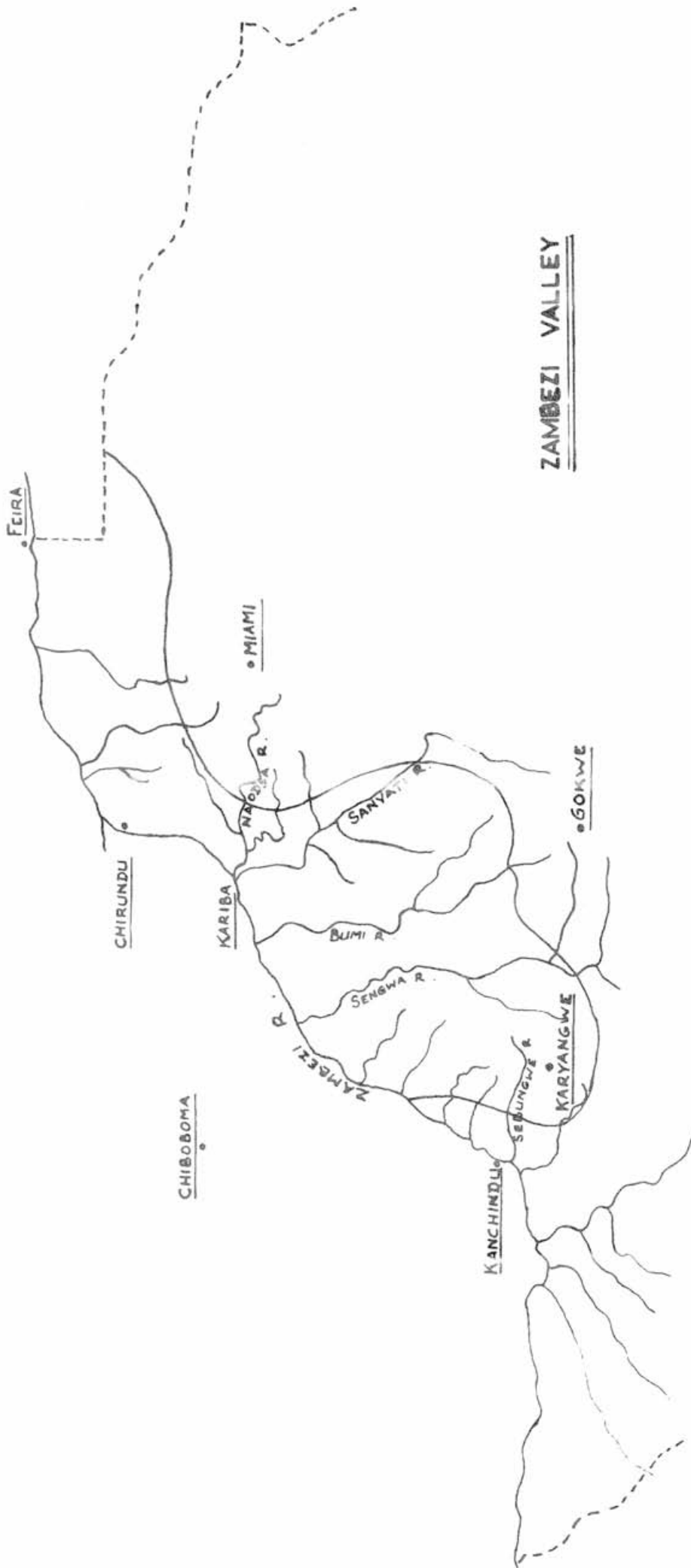
	Absolute Highest	mean highest	mean	mean lowest	absolute lowest	mean max. & mean min 2	absolute highest	mean highest	mean	mean lowest	absolute lowest	TEMPS. °F.
Jan.	106	98	89.8	78	71	80.8	80	75	71.8	68	66	
Feb.	102	97	89.8	80	74	80.6	78	75	71.5	67	63	
Mar.	101	97	90.1	81	75	80.1	77	74	70.2	65	61	
Apr.	102	98	91.0	82	70	78.9	79	73	66.9	61	59	
May	99	94	87.0	78	75	73.8	73	63	60.5	53	52	
June	94	89	82.6	76	72	67.9	69	62	53.2	47	40	
July	97	91	83.5	76	70	68.1	69	64	52.8	45	37	
Aug.	102	95	87.7	79	77	72.5	73	69	56.5	49	45	
Sept.	106	103	94.3	84	77	80.2	80	77	66.2	57	51	
Oct.	111	107	99.1	86	76	86.8	85	82	73.7	65	60	
Nov.	110	106	95.8	79	74	84.8	85	82	73.8	67	61	
Dec.	107	102	91.5	79	73	81.7	81	77	71.8	67	64	
		maximum						minimum				

CALCULATED RATES OF DEVELOPMENT.

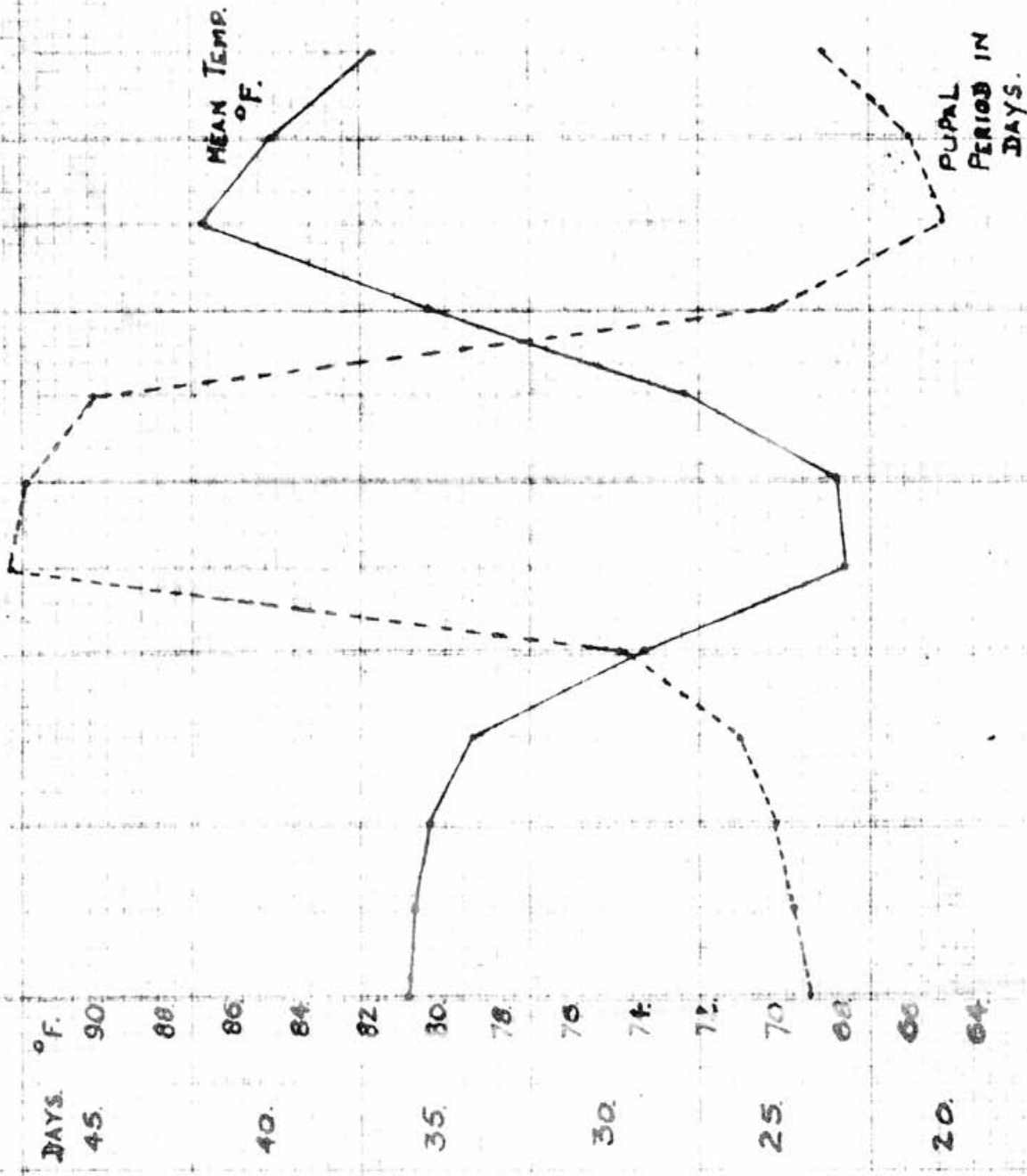
	<sup>o</sup> F	93.2	89.6	86.0	82.4	78.8	75.2	71.6	68.0	64.4	60.8	57.2
	<sup>o</sup> C	34	32	30	28	26	24	22	20	18	16	14
days												
time for newly emerged ♀ to produce 1st larva		13	13.8	15	17	19	21	27	33	43	62	110
♀ pupal period		17	18	20	23	26	28	37	47	64	101	233
total days to flies of next generation		30	31.8	35	40	45	49	64	80	107	163	343

BL/CE.

ZAMBEZI VALLEY



# CHIRUNDI



JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC.