



Fig. 1.—Marksman about to fire dart syringe at rump of elephant bull at rest.



Fig. 2.—Characteristic stance of elephant affected by mixture of M-99 and Acetylprromazine.



Fig. 3.—Animal second from the left affected by drug mixture (note dart in left hip) being assisted by two companions.



Fig. 4.—Elephant immediately after going down. Note dart in left rump.



Fig. 5.—Severe dyspnoea with inhalation through mouth in elephant lying on its brisket.  
Note position of left hind leg.

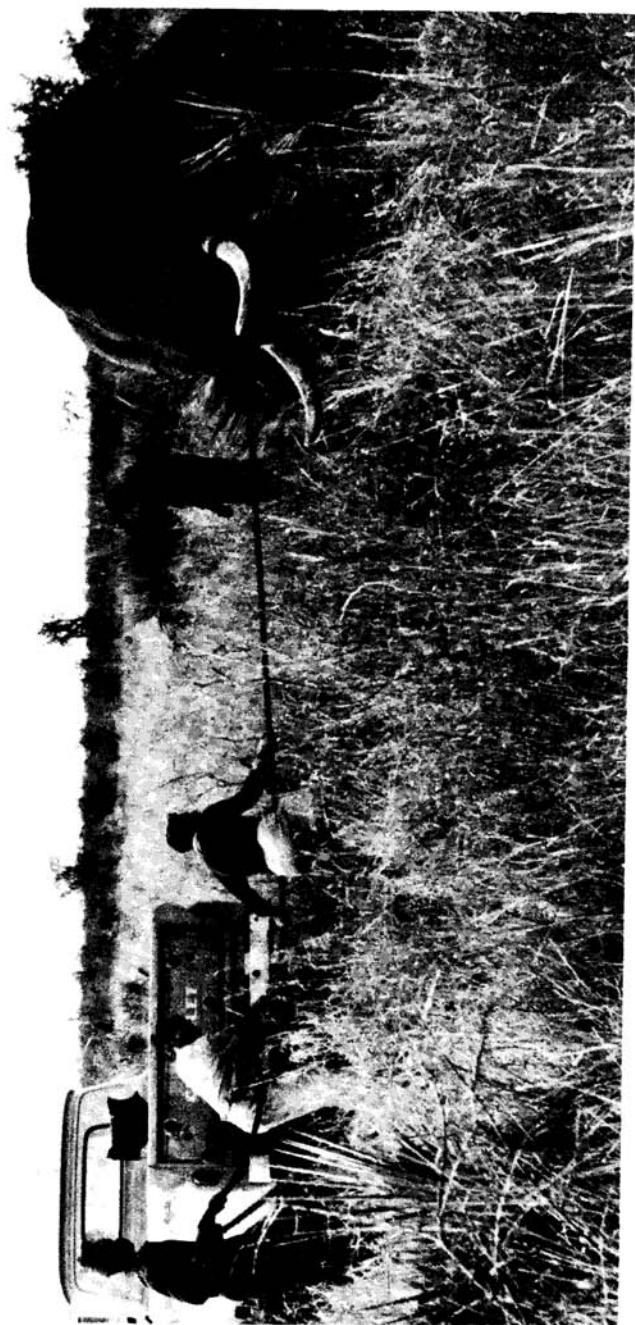


Fig. 6.—Elephant being assisted into a state of lateral recumbency by means of rope and truck.



Fig. 7.—Laterally recumbent elephant completely anaesthetized. Note eye is closed.



Fig. 8.—Marking of laterally recumbent elephant.



Fig. 9.—Number being painted on hip of elephant under influence of Acetyl|promazine and Scopolamine depression. Animal collapsed soon afterwards.



Fig. 10.—Antidote (M-285) is administered intravenously into ear vein.

Fig. 11.—Eye of elephant opens some 4-5 minutes after intravenous injection of antidote.





Fig. 12.—Elephant in the process of rising after administration of antidote. 1st Stage.



Fig. 13.—Elephant in the process of rising. 2nd Stage.

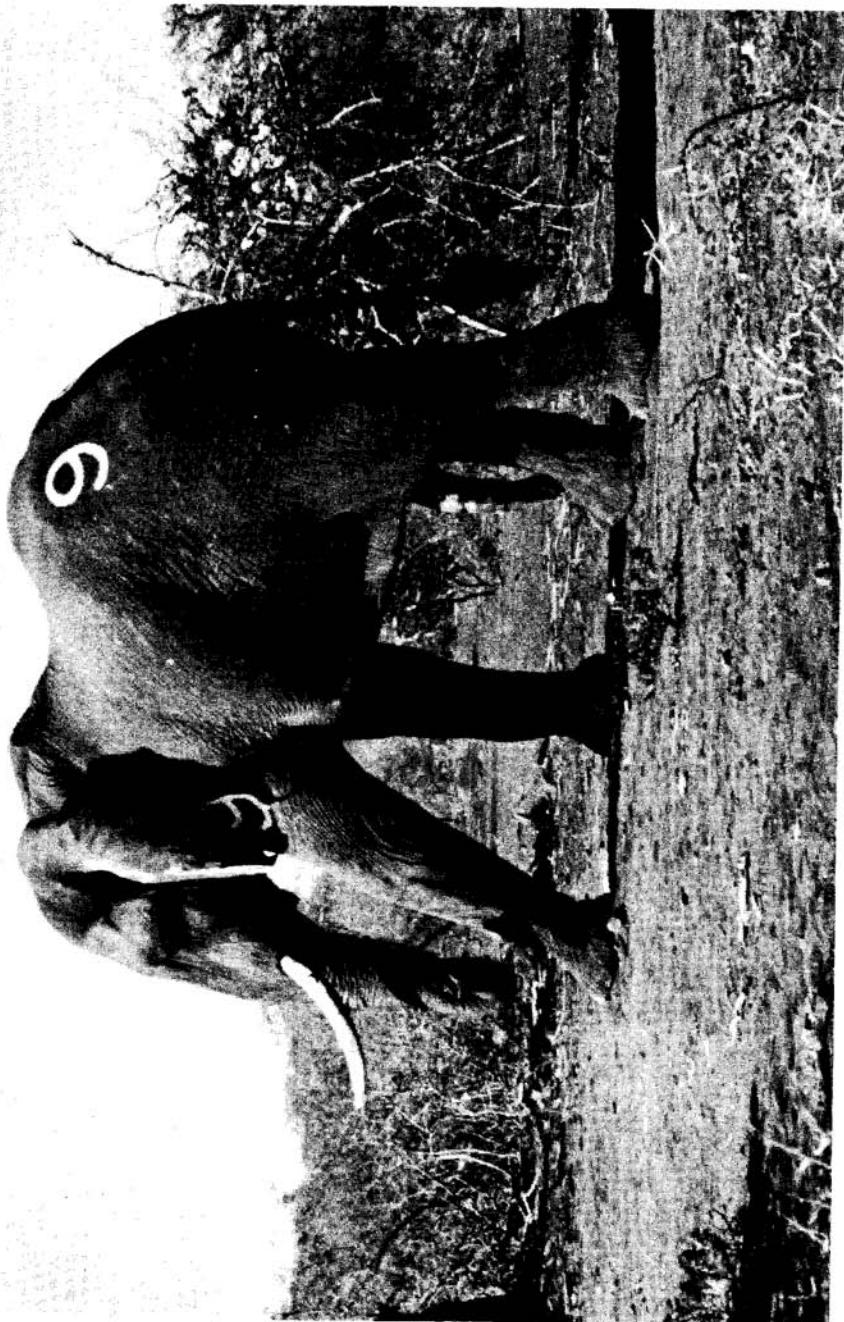


Fig. 14.—Elephant in the process of rising having regained its feet.



Fig. 15.—Fully recovered, marked elephant walking away. Note plastic streamer in left ear.



Fig. 16.—Marked elephant after rejoining the herd.

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TABLE 1

RESULTS OF DRUG-IMMOBILIZATION  
WITH M99-NARCOTIC MIXTURES  
ON 31 WILD AFRICAN ELEPHANTS

## PHYSIOLOGICAL DATA

Age 2	Sex Q	S.E. 25	S.E. 25	Air temperature 85°	Body temperature		Heart rate When first handled	Prior to antidote	Respiration rate When first handled	Character of Respiration		Salivation
					When first handled	Prior to antidote				When first handled	Prior to antidote	
Original Series: A 9.12.63	Young Adult	♂	♂	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Fairly strong	Fairly strong	Not excessive
B 16.12.63	Adult	♂	♂	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Fairly strong	Fairly strong	Some salivation
C 17.12.63	Sub-Adult	♂	♂	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Progressively stronger after 1st dose anti- dote	Irregular and weak	Not completely arrested
D 18.12.63	Young Adult	♂	♂	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded	Depressed	Dyspnoea	Not completely arrested
14 11. 7.65	Adult	♂	♂	80°F	82°F	82°F	84 per min.	84 per min.	8 per min.	Deep and regular with some rattling	Same	Marked salivation
13 11. 7.65	Adult	♂	♂	97°F	97°F	97.8°F	45 per min.	54 per min.	6 per min.	Strong and regular	No Dyspnoea	Little salivation
27 16. 7.65	Adult	♂	♂	80°F	70°F	96.5°F	68 per min.	76 per min.	5 per min.	Strong and regular (when lying on side)	Strong and regular	Some salivation
3 10. 6.65	Adult	♂	♂	82°F	82°F	98.3°F	68 per min.	88 per min.	8 per min.	Regular and strong	Regular, strong	Marked salivation
26 16. 7.65	Adult	♂	♂	82°F	82°F	98.5°F	68 per min.	64 per min.	7 per min.	Regular and strong	Regular, strong	Excessive salivation
6 11. 6.65	Adult	♂	♂	78°F	78°F	99.5°F	80 per min.	80 per min.	8 per min.	Regular and strong	Regular, strong	Some salivation
5 11. 6.65	Adult	♂	♂	80°F	80°F	99.0°F	60 per min.	60 per min.	9 per min.	Regular and strong	Regular, strong	Some salivation
2 9. 6.65	Adult	♂	♂	75°F	75°F	97.0°F	40 per min.	52 per min.	6 per min.	Regular but forced	Regular and forced	Marked salivation
4 10. 6.65	Adult	♂	♂	78°F	97.0°F	100.0°F	80 per min.	84 per min.	8 per min.	Regular and strong with roaring in throat	Regular and strong with roaring in throat	Increased salivation
7 12. 6.65	Adult	♂	♂	75°F	97.5°F	96.4°F	44 per min.	40 per min.	6 per min.	Regular and strong with whistling	As before	Increased salivation
15 11. 7.65	Adult	♂	♂	78°F	98.0°F	98.0°F	80 per min.	78 per min.	8 per min.	Regular and fairly strong	Regular and somewhat depressed	Marked salivation
24 15. 7.65	Adult	♂	♂	72°F	97.0°F	97.9°F	52 per min.	64 per min.	6 per min.	Gurgling & laboured (animal on brisket)	Regular and strong (animal on side)	Some salivation
21 14. 7.65	Adult	♂	♂	82°F	98.0°F	Not recorded	52 per min.	60 per min.	5 per min.	Regular and strong (when on side)	Regular and strong (when on side)	Little salivation
12 16. 6.65	Adult	♂	♂	90°F	97.0°F	Rose to 101.4°F then down to 100.4°F	52 per min.	76 per min. (weak)	6 per min.	Somewhat depressed and exhaling partially through mouth	Regular but forced increasingly through mouth	Increased salivation
23 15. 7.65	Adult	♂	♂	69°F	95.6°F	96.5°F	44 per min.	44 per min.	5 per min.	Regular but somewhat forced	Regular but somewhat forced	Marked salivation
18 13. 7.65	Adult	♂	♂	82°F	96.2°F	Not recorded	64 per min.	Not recorded	6 per min.	As before	As before	Slight salivation
11 15. 6.65	Adult	♂	♂	65°F	96.0°F	Not recorded	Not recorded	Not recorded	8 per min.	Regurgitation, increasing shallow and gasping, ending in apnoea	Regular and fairly strong	Little salivation
17A 13. 7.65	Adult	♂	♂	74°F	96.0°F	96.5°F	44 per min.	44 per min.	5 per min.	Regurgitation, increasing shallow and gasping, ending in apnoea	Regurgitation, increasing shallow and gasping, ending in apnoea	Increased salivation
8 15. 6.65	Young Adult	♂	♂	79.5°F	97.0°F	98.0°F	42 per min.	Not recorded	60 per min.	As before	As before	Little salivation
20 14. 7.65	Adult	♂	♂	66°F	Not recorded	97.0°F	Not recorded	Not recorded	6 per min.	Irregular and progressively weaker	Irregular, progressive- ly more shallow, ending in apnoea	Increased salivation
19 13. 7.65	Young Adult	♂	♂	81°F	98.0°F	98.0°F	72 per min.	Not recorded	48 per min.	Regular, strong Slightly forced	Dyspnoea. Weak ending in apnoea	No salivation
22 14. 7.65	Adult	♂	♂	72°F	97.1°F	97.5°F	Not recorded	Not recorded	6 per min.	Irregular and progressively weaker	Irregular, progressive- ly more shallow, ending in apnoea	Slight salivation
10 15. 6.65	Adult	♂	♂	86°F	97.0°F	98.0°F	52 per min.	68 per min.	8 per min.	More depressed	More depressed	Increased salivation
9 15. 6.65	Adult	♂	♂	84.7°F	98.0°F	97.5°F	62 per min.	66 per min.	6 per min.	Roaring in throat, more depressed	Roaring in throat, more depressed	Increased salivation
17 12. 7.65	Adult	♂	♂	84°F	100.0°F	Not recorded	72 per min.	Not recorded	6 per min.	Regular at first, fairly strong but dyspnoea developing	Severe dyspnoea Ending in apnoea	No salivation
25 15. 6.65	Adult	♂	♂	74°F	After going down 2nd time 98.5°F	Not recorded	Not recorded	Not recorded	8 per min.	Depressed and started gasping through mouth	Depressed and started gasping through mouth	Little salivation
					After going down 2nd time not recorded				After going down 2nd time 14 per min.	After going down 2nd time: Shallow & more regular Through trunk	Some salivation noticed	

## VITAL STATISTICS AND GENERAL DATA

VITAL STATISTICS AND GENERAL DATA				REACTION TO NARCOTIC MIXTURES		DOSAGES OF NARCOTIC MIXTURES		CRIOPAVINE HYDROCHLORIDE (MA99).	
		Date	Estimated body-weight in lbs.	Site of injection	Route of infection	Reaction of Animal to darting	Total dose in mgs.	Acetylprromazine dissolved in water	Scopolomane (Hydrochloride) dose in I.U.
Original Series	A	Sept. 12, '63	35 lbs. ± 7,000 lbs.	Right shoulder	Intramuscular	Walked about 400 yards.	3.5 mgs.	3.5 mgs.	1500 I.U.
B	16. 12. 63	Adult	4' 13,000 lbs.	Rump and also shoulder	Intramuscular	Walked about $\frac{1}{2}$ mile.	4 + $\frac{1}{2}$ mgs.	4 mgs.	1500 I.U.
C	17. 12. 63	Sub-adult	4' 4,000 lbs.	Rump	Intramuscular	Walker about 200 yards.	3.5 mgs.	3 mgs.	1500 I.U.
D	18. 12. 63	Young Adult	4' 6,000 lbs.	Thigh	Intramuscular	Ran and walked ± 1 miles.	2 mgs.	No	1500 I.U.
14	11. 7. 65	Adult	5' ± 10 lbs.	Low down on right thigh	Intramuscular	Low down on right thigh	1st dart 8 mgs. 2nd dart 1 mgm. 9 mgs.	Not observed	1500 I.U.
13	11. 7. 65	Adult	5' 4' 10"	Base of tail	Intramuscular	Low down on right thigh	1st dart 8 mgs. 2nd dart 0 mgs.	Not observed	1500 I.U.
27	16. 7. 65	Adult	5' Not measured	Inner side of left thigh	Intramuscular	Low down on right thigh	1st dart 7 mgs. 2nd dart 3 mgs.	Not observed	1500 I.U.
3	10. 6. 65	Adult	5' 4' 9"	Rump	Intramuscular	Obvious to impact. Walked about 100 yards.	1st dart 6 mgs. 2nd dart 2 mgs. 8 mgs.	Not observed	1500 I.U.
26	16. 7. 65	Adult	5' 4' 10"	Left thigh	Intramuscular	Not started. Walked only few yards.	1st dart 6 mgs. 2nd dart 2 mgs.	Not observed	1500 I.U.
6	11. 6. 65	Adult	5' 4' 5"	Rump	Intramuscular	Ran and walked ± 1 mile.	22 minutes	21 minutes	1500 I.U.
5	11. 6. 65	Adult	5' 4' 4"	Rump	Intramuscular	Walker about 200 yards.	61 minutes	57 minutes	1500 I.U.
2	9. 6. 65	Adult	5' Not measured	Rump	Intramuscular	Walker about 500 yards.	83 minutes	79 minutes	1500 I.U.
4	10. 6. 65	Adult	5' Not measured	Rump	Intramuscular	Not started. Walked only few yards.	25 minutes	24 minutes	1500 I.U.
7	12. 6. 65	Adult	5' 4' 8 1/2"	Rump	Intramuscular	Walker about 200 yards.	66 minutes	65 minutes	1500 I.U.
15	11. 7. 65	Adult	5' 4' 8 1/2"	Rump	Intramuscular	Walker about 500 yards.	30 minutes	29 minutes	1500 I.U.
24	15. 7. 65	Adult	5' 4' 11 1/2"	Just behind left flank	Intramuscular	Walker about 150 yards.	57 minutes	56 minutes	1500 I.U.
21	14. 7. 65	Adult	5' 4"	Right thigh	Intramuscular	Probably subcutaneous	38 minutes	37 minutes	1500 I.U.
12	16. 6. 65	Adult	5' 4' 7 1/2"	Left rump	Intramuscular	Walked only about 50 yards.	15 min.	14 min.	1500 I.U.
23	15. 7. 65	Adult	5' 4' 8 1/2"	Near base of tail	Intramuscular	Walked about 100 yards.	23 minutes	22 minutes	1500 I.U.
18	13. 7. 65	Adult	5' 4' 9"	12,500 lbs. +	Intramuscular	Walked about 250 yards.	17 minutes	16 minutes	1500 I.U.
11	15. 6. 65	Adult	5' 4' 8 1/2"	12,500 lbs. +	Intramuscular	Probably intravenous	13 min.	12 min.	1500 I.U.
17A	13. 7. 65	Adult	5' 4' 7 1/2"	12,500 lbs. +	Intramuscular	Walked only about 50 yards.	26 minutes	25 minutes	1500 I.U.
8	15. 6. 65	Young Adult	5' 4' 1 1/2"	Right rump	Intramuscular	Walked about 150 yards.	18 min.	17 min.	1500 I.U.
20	14. 7. 65	Adult	5' 4' 10"	Rump	Intramuscular	Walked only about 70 yards.	21 minutes	20 minutes	1500 I.U.
19	13. 7. 65	Young Adult	5' 4' 9 1/2"	Left rump	Intramuscular	Ran and walked for more than 1 mile.	19 minutes	18 minutes	1500 I.U.
22	14. 7. 65	Adult	5' 4' 5 1/2"	Rump	Intramuscular	Walked about 300 yards.	36 minutes	35 minutes	1500 I.U.
10	15. 6. 65	Adult	5' 4' 5 1/2"	Right thigh	Intramuscular	Walked only about 70 yards.	32 minutes	31 minutes	1500 I.U.
9	15. 6. 65	Adult	5' 4' 3 1/2"	Right thigh	Intramuscular	Walked about 400 yards.	26 minutes	25 minutes	1500 I.U.
17	12. 7. 65	Adult	5' 4' 6"	Perineal	Intramuscular	Ran and walked about $\frac{1}{2}$ mile. Then wandered aimlessly for long time.	75 minutes	72 minutes	1500 I.U.
16	12. 7. 65	Adult	5' 4' 8"	Left rump	Intramuscular	Walked for about 500 yards. Stopped. Walked again for some 400 yards.	70 minutes	68 minutes	1500 I.U.
25	15. 6. 65	Adult	5' 4' 2 1/2"	Left thigh	Intramuscular	Walked only about 10 yards. Remained with 4 other bulls drinking at windmill.	23 minutes	21 minutes	1500 I.U.

\* Dimethyl-sulphoxide. + Second dart delivered 76 minutes after 1st dart

\*\* 80 mgs. Acetylprromazine was deliberately injected intravenously with the antidote to ascertain its effect on the animal's ability to rise during its recovery from MA-99 narcosis.