the time the rabbit reached the peak of the diuresis. It seemed, therefore, of interest to investigate the relationship between GFR and urine volume, when the urine output was falling after full diuretic values had been reached.

TABLE 1

Increasing rates of urine flow				Decreasing rates of urine flow			
Urine flow (ml/100 g/min)		GFR (ml/100 g/min)		Urine flow (ml/100 g/min)		GFR (ml/100 g/min)	
From	To	From	To	From	To	From	To
0.0226	0.0510	0.52	0.60	0.0510	0.0029	**0.52**	**0.04**
.0143	.0502	.41	1.08	.0474	.0200	0.29	.18
.0057	.0389	.18	0.54	.1040	.0100	1.25	.23
.0093	.0316	.18	0.35	.0316	.0017	0.35	.19
.0009	.0811	.10	1.03	.0100	.0015	0.23	.08
.0423	.0687	.37	1.08	.0420	.0095	0.52	.10
.0420	.0965	.42	1.28	.0818	.0020	1.03	.12
.0220	.1060	.37	1.63	.0222	.0023	0.37	.15
.0365	.1080	.30	1.72	.0605	.0200	0.93	.43
.0180	.0960	.10	0.99	.0100	.0055	0.20	.05
.0220	.0570	.18	0.78	.1050	.0320	1.37	.56
.0140	.0552	.25	0.61	.0547	.0183	0.63	.31
.0457	.0920	.32	0.89	.0286	.0077	0.35	.06
.0085	.0990	.05	1.09	.0816	.0316	0.83	.45
.0057	.0389	.18	0.54	.0316	.0275	0.40	.33
0.0075	0.0275	0.05	0.35	0.0547	0.0115	**0.60**	**0.15**

On looking through the experimental results on which our report on renal function in the rabbit was based (*7*), it was found that 16 pairs of GFR estimations had been done at decreasing rates of urine flow. It will be seen from Table 1 that much the same relation between GFR and urine flow obtains at falling, as at rising, rates of diuresis. This may be exemplified by the results on an animal in which three consecutive clearance estimations had been performed: when urine output increased from 0.0093 to 0.0316 ml/100 g/min, GFR rose from 0.18 to 0.35 ml/100 g/min; when, in the same animal, urine flow decreased from 0.0316 to 0.0017 ml/100 g/min, GFR fell from 0.35 to 0.19 ml/100 g/min. On the other hand, no significant changes were observed in those animals whose rate of urine excretion happened to remain steady over an extended period (*A*, Table 2), though it will be noted that in these animals, also, the level of glomerular filtration corresponded to that of the urine flow. In two animals, correlation between GFR and urine flow was found to be lacking (*B*, Table 2).

TABLE 2

Rates of urine flow (ml/100 g/min)	Corresponding rates of GFR (ml/100 g/min)
A	
0.0501—0.0532—0.0510—0.0541	0.49—0.50—0.54—0.48
.0907— .0888—0.0932	.99—1.08—0.97
0.0055—0.0055	0.08—0.09
B	
0.0350—0.0212—0.0283	0.39—0.28—0.47
0.0300—0.0105—0.0054	0.31—0.33—0.30

It would seem from these findings that the regulation of urine volume in most adult rabbits is of a twofold nature, comprising (*a*) a tubular regulatory factor, in common with all other mammalian species, and (*b*) a glomerular component, which perhaps comes into play when the body-water load is substantially raised. The observation that GFR rises with increased, and falls with decreased, urine flow inclines us to think that these variations are a physiological rather than a pathological response. The fact that glomerular filtration rate and urine volume are similarly related in the newborn of other mammalian species supports this conclusion.

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Electrometric Correlates of the Hypnotic State

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Because of repeated failure to detect electrometric correlations with EEG from trance states (*1, 4, 6–8*), no completely objective criteria of hypnosis have yet been formulated beyond empiric observation. Using a Burr-Lane-Nims microvoltmeter (*2, 3, 5*), 60 standing potential records of 20 subjects were taken. Although results of spot determinations were sometimes equivocal, continuous emf tracings, using the combined microvoltmeter and General Electric photoelectric recorder (*5*) at a speed of 1 in./min, with one electrode on the forehead and the other on the palm of either hand, seem to provide a reliable quantitative index of trance depth. During hypnosis, the emf tracing becomes more regular, and potential difference either gradually increases or decreases in magnitude. At trance termination, there is usually a dramatic voltage shift, and the tracing eventually returns to that of the normal waking state (Fig. 1).

Whenever possible, induction was linked up with motor

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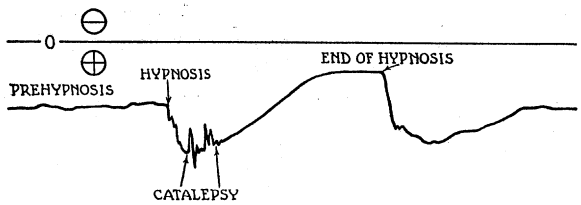

FIG. 1. Schematic d-c record of hypnosis.

behavior, utilizing the technique developed by Milton H. Erickson; e.g., as his hand rose, a subject would become sleepier until, finally, when it touched his face, he would close his eyes and sleep, signifying he was ready by returning the hand to his lap. Catalepsy, when used to induce hypnosis, sometimes produced marked emf changes (Fig. 1). When this occurred during the trance, or when the subject voluntarily raised an arm, minimal changes were recorded.

Depth of hypnosis, as measured electrometrically, does not seem to be correlated with ability to develop amnesia or other phenomena often necessary for a good therapeutic trance. Any disturbance of the hypnotic state could be detected immediately by changes in voltage and in configuration of the tracing. It is thus possible to measure objectively changes in depth of hypnosis.

A complete report of methodology and results will be published elsewhere.

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Comments and Commuications

Are Nonflying Wings Functionless?

In a recent able review of evidence that the so-called ratite birds had flying ancestors, Steiner (*Rev. Suisse de Zool.*, 1949, **56**, 364) concluded with the remark (in German) that "the wing, made useless by the transition to a cursorial habitus, was reduced as a direct result of its high specialization, because it was no longer capable of taking on a new function (in *Rhea* and *Struthio* at most still used for display of the decorative wing feathers!)."

There is nothing new in the observation, but it is worth while to point out that even so highly specialized a structure as the bird wing is quite capable of taking on functions distinct from, although usually related to, that of aerial flight. The penguin wing is certainly a highly functional organ. Loss of ancestral power of flight in this case clearly involved change, not loss, of wing function (Simpson, G. G. *Bull. Amer. Mus. Nat. Hist.*, 1946, **87**, 1). The same is probably true of some or all of the distinctly cursorial flightless birds.

The rhea is among such truly cursorial birds, a running herbivore (and occasional insectivore) adapted to treeless plains where large predatory carnivores are present, and this also applies to the African ostriches. Long personal observation of wild Patagonian rheas in their natural habitat did not disclose any definite display of the wing feathers, although this may occur. Repeated observations did confirm the fact that the wings are not wholly passive and that they probably do serve a useful function. When running, the rheas keep the wings spread and seem definitely to balance themselves in this way, especially in the rather awkward maneuver of turning rapidly.

This true function for the reduced wings may well explain the rule that the wings are usually merely reduced and not lost altogether in cursorial birds. It is true that the wings were completely functionless and were lost externally in the moas of New Zealand and in *Aepyornis* and its allies in Madagascar. These birds, however, were probably not truly cursorial types, as suggested by their heavy, evidently slow proportions, their herbivorous habits, and their practical immunity from predation except by man, whose persecution was too late and too brief to induce cursorial adaptation. Among other extinct birds, the phororhacoids in South America, *Diatryma* in North America, and *Gastornis* in Europe all had cursorial proportions. All were associated with mammalian predators, and they were themselves probably running predators. All retained reduced but probably functional wings more or less as in the rheas.

It is a habit of thought to consider that changes associated with reduction in size and loss of a function, as in nonflying wings, are *ipso facto* degenerative. The modifications of the penguin wing can, however, be viewed as progressive specializations for their new function. May this not also be true of the rhea wing and analogous cases?

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The *Systema Naturae* of the Twentieth Century

If the International Zoological Congress, to meet in Copenhagen in 1953, decides to allow another interval of five years before its next meeting, the latter will fall in 1958. It will be 200 years after the issue of Linnaeus' tenth edition of his *Systema Naturae*, an anniversary which must not pass without a serious attempt being made to bring the ideas of this great naturalist a new step forward.