pressure which returned promptly to baseline levels after treatment. Glycosuria appeared throughout the period of steroid administration. On cessation of the injections, there was some water diuresis, a marked urinary loss of sodium, and a rather striking additional loss of nitrogen in the urine.

The final patient, a 55-year-old housewife with hypertensive vascular disease, Addison's disease, diabetes mellitus and rheumatoid arthritis (Fig. 4), received 12.5 mg of Cpd. F daily for 11 days shortly after the gradual dose reduction and discontinuation of cortisone. On the same diet and supplemental sodium chloride as that employed in a previous cortisone study on the same patient(6), Cpd. F administration was associated with a progressive decline in serum sodium, a rise in serum potassium, a negative water and sodium balance, weight loss, some evidence of hemoconcentration, and a slow and inadequate arthritic response. The rise in the 24-hour excretion of 17-ketosteroids during Cpd. F therapy had also been noted previously in this patient after cortisone. On the conclusion of this experiment, a shift to cortisone in the same dosage resulted in weight gain, salt and water retention, restoration of normal serum values, and greater amelioration of the arthritis. Both agents were associated with an increased hyperglycemia and glycosuria.

Discussion. These preliminary studies, representing short-term observations on a small group of patients treated with Cpd. F, suggest again that this steroid exhibits similar effects to those recorded after cortisone(7). However, the comparative data would indicate that Cpd. F is somewhat less active, particularly in the realm of salt and water metabolism. It is of interest that the patient with hypoadrenalism, arthritis and other disorders again showed an anti-arthritic response to small doses, that electrolyte equilibrium could not be maintained on Cpd. F; whereas cortisone restored the balance of electrolytes and seemed to be somewhat more effective as an anti-arthritic agent. The rise in 17-ketosteroid excretion values in this Addisonian subject after Cpd. F and cortisone(6) raises the possibility that certain 11-oxy-steroids, at least in the absence of normal adrenal cortical tissue, are capable of conversion to this end-product. Finally, attention should be called to the divergence of radioactive iodine uptake and the serum level of protein-bound iodine as indices of the effect of Cpd. F on thyroid activity. This aspect is being further investigated (S.C.W.).

Summary. The clinical and metabolic effects of parenterally-administered Cpd. F were investigated and compared with those of cortisone. Preliminary observations suggest similar responses but with Cpd. F appearing to be somewhat less active.

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Electrocardiogram of the Beagle Dog. (18769)

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Information concerning the electrocardiogram of the normal dog(1-4), is scanty, scattered, conflicting and based on relatively few observations in various, usually mixed, breeds. This report describes, in terms of standard

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indices, the electrocardiographic patterns observed in 50 tracings taken on 32 normal beagles, ranging in age from 5 to 28.5 months (average 17.5 months) and in weight from 6.0 to 12.5 kg (average 9.5 kg).

Method. Because of the variability of results obtained in the lateral position(1,2), the supine position, which gave reasonably reproducible tracings, was used exclusively. The dogs, unanesthetized and untrained, were tied to a trough-shaped operating table. Plate electrodes with ample jelly were applied without shaving since preliminary trials had shown that tracings made with and without shaving were identical. A direct-writing machine was employed.

Results. The data are presented in Table IA. The heart rate of the beagle is about twice as rapid as that of man, and the duration of the various components of the cardiac cycle commonly measured is correspondingly shortened. Sinus arhythmia, which was the rule, was the only arhythmia noted. The axis of the QRS complex, measured by the Triaxial Reference System(5) lies farther to the right than in man. Fig. 1, depicting typical tracings in 2 dogs, indicates that the electrocardiogram in the supine position generally resembles that of man in the same position. It sometimes differs, however, in that elevation and depression of the S-T segment up to 1 mm are noted frequently, chiefly in Leads II and III and in aVF. T-I was usually found to be isoelectric; T-II and T-III were always upright. T was always upright in aVF, and usually inverted in aVR and aVL. Marked notching of the T wave was noted in one animal.

The electrocardiographic position of the heart was found to be vertical or semi-vertical, according to the convention of Wilson(6). Two rather distinct patterns were noted; a large group, in which a small or no S wave was present in aVF, associated with QS complexes

TABLE I. Index of Electrocardiographic Standards for the Beagle Dog.

A	Age, mo.	Wt, kg	Rate, min.	P-R, sec.	QRS sec.	QT, sec.	Axis of QRS	Magnitude of deflections in mm*																			
								I				II				III				aVR				aVL				aVF			
								Q	R	S	T	P	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
Mean	17.5	9.5	138	.106	.046	.19	72°	0	3.5	0	0	3	0	18	2.5	3	1	15	4	3	12	1	0	−2	6.5	2.5	0	−1.5	0	17	3	3
Max	28.5	12.5	180	.12	.06	.24	86°	2	7	0	1	4	2	27	10	8	2	25	14	10	21	5	0	−5	15	7	0	−6	2	25	11	8
Min.	5	6	90	.08	.04	.14	30°	0	1.5	0	−1	1	0	10	0	.5	1	9	0	1	7	0	0	0	2	0	0	0	0	11	0	1
% occurrence of deflection								12	100	0	32	100	10	100	68	100	6	100	84	100	100	60	0	95	100	71	0	95	9	100	62	100
B Mean variation of serial tracings		27	0	0	.02	4°		0	1	0	.5	.5	0	2	.5	1.5	0	2	.5	1	3.5	1.5	0	1	3	1.5	0	.5	0	2	.5	1
Max variation of serial tracings		65	.02	.01	.04	8°		2	1.5	0	1	1	0	6	2	3	1	3	2	2.5	7	3	0	2	9	3	0	2.5	.5	4	4	3

* Standardization: 1 mv = 1 mm.

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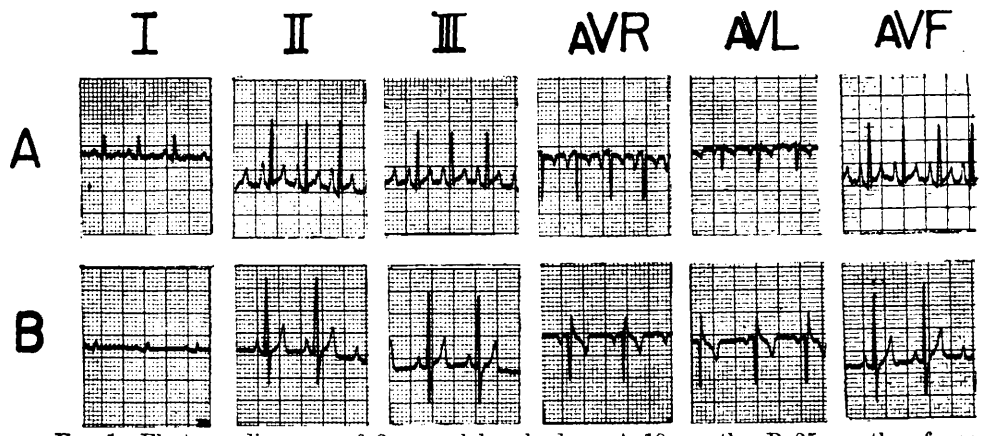

FIG. 1. Electrocardiograms of 2 normal beagle dogs, A 18 months, B 25 months of age representative of the 2 electrocardiographic patterns encountered. QRS complexes retouched.

and inverted T waves in aVR and aVL (Fig. 1A), and a smaller number in which a prominent S wave in aVF was associated with QR complexes and inverted T waves (Fig. 1B) in aVR and aVL.†

Tracings were repeated in the same animal once in 4 instances, twice in 5, and 4 times in one instance. The greatest variation in the serial tracings of any one animal, and the average of these variations, are included in Table IB. The variations encountered are comparable to those described by Mainzer (3) for the sitting position and are much less marked than those previously described for the lateral position. In no instance did the electrocardiographic position or pattern of the heart change in a given animal. In one case notching of the T wave was absent in the first tracing, and present in the subsequent two tracings.

One electrocardiogram was made of a female, unspayed cocker spaniel, aged 6½ months; the findings were in every way comparable with those of the beagles.

Comment. Electrocardiography of the untrained, unanesthetized dog proved to be a simple and practical procedure. There was a varying degree of distortion due to muscular activity but only rarely was it impossible to obtain a satisfactory tracing. The variations in serial tracings were more marked than in man, but not so great as to preclude comparison with one another. In no instance did a positive T wave in Leads II, III and aVF become negative.

It is probable that for the young beagle dog, and possibly for comparable breeds, the data given in Table IA represent a range of values which may be considered as normal, and that findings differing markedly from these may well be indicative of abnormality. Such have been reported by others(8), and have also been encountered by us in studies of chronically diabetic dogs. Further studies as to the influence of breed, size, age and various disease states on the electrocardiogram of the dog would be of value.

Summary. 1. The taking of the electrocardiogram of the untrained, unanesthetized dog is a practical procedure. 2. In the supine position, the variations in serial tracings are small enough to render the results useful. 3. The electrocardiogram of the normal, young beagle dog is described and a table of normal values is presented.

The authors are indebted to Dr. Richard J. Jones for criticism and suggestions.

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† These two groups are of theoretical interest since, according to the convention of Goldberger(7) the first represents forward rotation of apex, and the second backward rotation.

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