extracts, or following the partial removal of the gland. These observations throw some light on why a low iodine intake may not lead to thyroid hyperplasia if the production of cyanide is below the effective concentration or if the mechanism for detoxicating cyanides is sufficient, and why a high iodine intake may not protect against thyroid hyperplasia if there is an excessive cyanide intake or formation within the body.

If cyanides prove to be an essential factor in the causation of goiter, both the exogenous and the endogenous sources of cyanide must be investigated, since it is obvious that in most cases the cyanide must be of endogenous origin. This must exist in the organism in an effective concentration either because of insufficient detoxification or through some modification of metabolism whereby cyanide is formed in excess of its physiological needs or of the organism's capacity to handle it.

The fact that the thyroids of a small percentage of rabbits of the same weight, age and breed did not undergo hyperplasia following injection of cyanides is of biological interest, since it suggests, among other things, that some rabbits have a more efficient physiological mechanism for detoxicating cyanides.

The effect on the thyroid of feeding plants known to contain large amounts of HCN *(Sorghum vulgare, Sorghum sudanense)* has not been studied.

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Cortical Response to Stimulation of the Optic Nerve.

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In the cortex of the rabbit a small area can occasionally be found that is supplied by one artery and one vein. Such a region can thus be isolated by incisions except for the tongue of tissue where the vessels enter, without serious interference with the blood supply. A metal plate slipped under this tissue and connected to ground serves as an indifferent electrode, and the end of a fine wire resting on the cortical surface serves as a test electrode. When the region so isolated is not active no record is picked up from activity in the rest

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of the cortex. In 2 cases such a preparation has shown activity, and its pathway could be traced via the tongue of intact tissue. The activity consisted of a succession of wavelike action potentials, about 3 per second, lower than those of the adjacent intact cortex and much less complex. The rotating interrupter of the oscillograph apparatus was adjusted to a speed almost synchronous with these waves, but slightly slower, so that successive waves appeared to progress slowly across the screen. If a stimulus is sent in to the tissue at each revolution of the interrupter, it will fall later and later in successive waves. When stimulated during the negative phase or immediately afterward, no response is elicited, the response becoming larger the later the stimulus falls in the cycle. The response consists of a wave but little shorter than the spontaneous wave, and inhibits the following wave, in which case there is a compensatory pause, but it does not otherwise alter the rhythm which is imposed from without the circumscribed region. The response to stimulation is too protracted to be assignable to nerve fibers directly stimulated, and is presumably due to nerve cells.

Upon direct electrical stimulation of the optic nerve, a similar phenomenon can be recorded from the intact optic cortex. The normal activity here is so complex that no simple rhythm can be detected. However, upon repeated stimulation of the nerve at a frequency of one per second, in certain regions of the cortex weak stimuli to the nerve (few fibers responding) give only occasional responses, stronger stimuli permit only occasional failure of response, and still stronger stimuli give a response whose amplitude rises and falls periodically with a slow rhythm. Presumably at some point along the pathway the stimuli coming up from the nerve reach a region undergoing rhythmical activity, and find this region refractory part of the time.

That this critical region is in the cortex itself is indicated by the fact that other points on the optic cortex do not show this rise and fall of response, each stimulus being equally effective.

The response consists of 2 or more discrete waves about 40 sigma in duration and ½ mv. in amplitude or less, depending in part on the stimulus. The first 2 waves in the response are small and are not always seen, on account of the distortion of the record by the stimulus. The succeeding one is much larger and always exists when the system responds to the stimulus, while the following waves vary. The present evidence tends to show that with increase in the strength of stimulus these larger waves come earlier. The response is present over a considerable area of the occipital cortex on

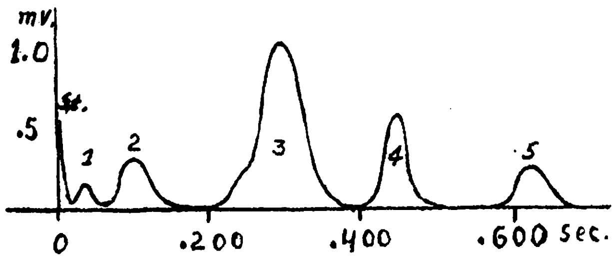

FIG. 1.
Composite analysis of series of records with different strengths of stimulus, showing 5 successive potentials in response to 1 stimulus to optic nerve.

either side and is higher on the crossed side, but is not present in other regions of the cortex. These latter regions are among the places where the spontaneous activity in the cortex is at its highest.

The normal record is presumably too complex to permit detection of the particular rhythmic function responsible for the refractoriness of the optic pathway, even if the proper region were precisely located. We believe, however, that this experiment corresponds in the intact cortex to the previous experiment in an isolated region where the phenomenon could be directly observed. The inference may be drawn from these and other experiments that certain groups of cells in the cortex are rhythmically active, probably spontaneously and automatically; that these foci originate impulses that spread over complex pathways to other regions, several pathways being represented at any one locus where a point electrode leads off a complex record; and that afferent impulses to the cortex may both modify the activity of cells that are already rhythmically active and set quiescent cells into activity.

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Note on the Determinations of Blood Fat.

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The technique of Stewart and White[1] for the determination of "blood fat" and its modifications by Himwich, Friedman and Spiers[2] has yielded higher figures than have the methods developed

[1] Stewart and White, *Biochem. J.*, 1925, **19**, 840.
[2] Himwich, Friedman and Spiers, *Biochem. J.*, 1931, **25**, 1839.