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This Week's Citation Classic™

Sawyer C H, Everett J W & Green J D. The rabbit diencephalon in stereotaxic coordinates. *J. Comp. Neurol.* **101**:801-24, 1954.
[Dept. Anatomy, Univ. California, Los Angeles, CA; Dept. Anatomy, Duke Univ. Med. Sch., Durham, NC: and Investigative Med. Service, Veterans Admin. Hosp., Long Beach, CA]

A rabbit head-holder was designed to fit a standard Horsley-Clarke stereotaxic instrument carriage Stereotaxic atlas drawings at 1 mm intervals of this histologically sectioned diencephalon of a 3 5 kg New Zealand rabbit were prepared and the coordinates corrected from findings on several experimental animals. [The SCI® indicates that this paper has been cited in over 650 publications since 1955]

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"The female rabbit has long been recognized as a 'reflex ovulator' requiring the neural stimulation associated with coitus to induce an ovulatory surge of pituitary gonadotropin. At Duke University in the 1940s, we had shown that this neuroendocrine reflex involved an adrenergic mechanism probably localized in the brain.[1] As a result, we became interested in studying the hypothalamic sites and mechanisms of pituitary activation, an investigation involving localized electrical stimulation and the precise placement of cannulae and lesioning and recording electrodes. The program required a stereotaxic atlas, or map, of the brain, and since none was available for the rabbit, Everett and I set out in the summer of 1952, while he was a visiting professor at the University of California, Los Angeles, to produce our own brain atlas. The work was done at the Long Beach Veterans Administration Hospital, the temporary research space for the future UCLA Brain Research Institute.

"We built a primitive head-holder to fit into the cat-monkey stereotaxic frame, and with advice from H.W. Magoun implanted steel needle markers at precisely measured intervals into the brains of deeply anesthetized New Zealand rabbits. Microprojection of histological sections of the perfusion-fixed brains permitted the localization of nuclei and fiber tracts in transverse sections of the diencephalon and the graph-paper reconstruction of the midsagittal plane. John Green, who with Geoffrey Harris had done so much to establish the neurovascular concept of pituitary control, joined us at the end of the summer. He immediately designed a head-holder so much better than our original model that we adopted it and made him a coauthor of the atlas publication. (An improved version of the head-holder is available from TrentWells Inc., 8120 Otis Street, Southgate, CA 90280.)

"We have used the rabbit atlas in many brain lesion, stimulation, recording, implantation, and infusion studies such as those described or reviewed in the references below.[2-5] These include investigations of the feedback actions on the brain exerted by pituitary peptide hormones and gonadal and adrenal steroids, as well as the actions of brain amines and pharmacological agents which affect hypothalamo-pituitary function. Obviously, others have found the atlas useful in rabbit brain research and have cited it frequently.

"Green's brilliant career was cut short by his untimely death in 1964. He used the rabbit brain and its atlas in many electrophysiological experiments described in his posthumous review.[4] These include the first unit-recording studies on single neurons of the hypothalamus. His co-worker Barry Cross later used the rabbit brain in developing the technique of antidromic identification of hypothalamic neurons.[5]

"Everett was already a leading authority on the neuroendocrinology of reproduction before we published the atlas, and he has remained at the forefront of the field during more than 50 years of research. In 1977, the British Society of Endocrinology awarded him its prestigious Dale Medal for his research on the control of ovulation, corpus luteum function, and prolactin secretion.[6] In the 1970s, we each received the Hartman Award of the Society for the Study of Reproduction, and, in 1973, shared the Koch Award of the Endocrine Society."

1. **Market J E, Everett J W & Sawyer C H.** The relationship of the nervous system to the release of gonadotrophin and the regulation of the sex cycle. *Recent Prog. Hormone Res.* **7**:139-63. 1952. (Cited 95 times since 1955.)
2. **Sawyer C H, Kawakami M, Markee J E & Everett J W.** Physiological studies on some interactions between the brain and the pituitary-gonad axis in the rabbit. *Endocrinology* **65**:61-4-68. 1959. (Cited 125 times since 1959.)
3. **Sawyer C H, Kawakami M & Kanematsu S**. Neuroendocrine aspects of reproduction. *Res. Publ. Assoc. Res. Nerv. Ment.* **43**.59-85. 1966. (Cited 20 times.)
4. **Green J D.** Neural pathways to the hypophysis: anatomical and functional. (Haymaker W, Anderson E & Nauta W J H. eds.) *The hypothalamus.* Springfield. IL: Thomas. 1969. p. 276-310.
5. **Sawyer C H.** Some recent developments in brain-pituitary-ovarian physiology. *Neuroendocrinology* **17**:97-124. 1975. (Cited 135 times.)
6. **Everett J W.** The timing of ovulation. *J. Endocrinology* **75**:IP-13P**.** 1977.