problème des facteurs chimiques, telle que la tension de O_2 et de CO_2 est résolue par une ventilation adéquate dans les appareils employés.

Les autres variables dépendent des animaux et sont d'ordre génétique ou alimentaire principalement. La forme des œufs, leur poids, leur poids spécifique, l'épaisseur de la coquille sont autant d'autres données susceptibles de modifier le taux d'éclosion. Ces facteurs ont été étudiés séparément par de nombreux auteurs cités dans la monographie de LANDAUER. Ainsi, cet auteur a montré qu'il existait, chez la race Leghorn, des lignées produisant des œufs à taux élevé d'éclosion, tandis que d'autres lignées ont un taux d'éclosion plus faible. C'est pour cette raison que nous pensons que la Figure rapporté ci-dessus représente une sorte de courbe standard que l'on devrait établir chaque fois que l'on travaille avec du matériel embryonnaire de poulet.

En ce qui concerne les malformations, nous avons obtenu, avec notre matériel (incubateur et race de poulets employés), 20 embryons malformés sur 503 œufs de contrôle, ce qui représente un peu moins de 4%. STOLL[5] cite un taux de malformation de 5% dans les élevages industriels. Il s'agit, dans notre expérience de malformations déjà connues et décrites dans la littérature, et touchant principalement la tête et le système nerveux central. Les facteurs tératogènes sont multiples et se superposent aux facteurs influençant la mortalité des embryons, mis à part, bien entendu, les facteurs tératogènes d'ordre génétique. A ce propos, LANDAUER pense que le taux des embryons malformés est une indication de la qualité des conditions de l'incubation artificielle. Il nous semble donc à nouveau nécessaire de préciser le taux d'embryons malformés apparaissant spontanément dans un certain matériel, avant d'entreprendre une étude expérimentale quelconque sur ce matériel.

En résumé, on peut dire que, lors de l'incubation artificielle, l'embryon de poulet est sujet à un taux de mortalité qui se situe aux environs de 30% avec le matériel employé ici, et à un taux de malformations qui est d'environ 4%. Il n'est pas possible de déterminer avec précision tous les facteurs étiologiques spécifiques de ces phénomènes, mais ces valeurs constituent une base qu'il est nécessaire de connaître avant d'entreprendre une étude expérimentale. Ces valeurs varient avec la couveuse et les races d'animaux employées. Les chercheurs qui travaillent expérimentalement sur l'embryon de poulet sont nombreux, et les faits rapportés ci-dessus nous semblent donc présenter un intérêt pour de nombreux laboratoires.

Summary. During artificial incubation the chick embryos show a 30% mortality with the above mentioned material (incubator and breed of chicken). The 2 critical periods for the embryos are the first 5 days of incubation and the 2 days of hatching. In the same experience, the author found 4% of malformed embryos. All the values are calculated on the total of 503 fertile eggs. The author believes that the above mentioned figure represents a standard curve for a definite material.

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Adrenergic Innervation of the Intestinal Smooth Musculature

Several hypotheses about neurone pathways innervating the intestinal wall were presented and discussed many years ago[1-3]. Recently, K.-A. NORBERG[4] presented a schematic representation of the gastro-intestinal innervation, according to which 'the sympathetic inhibition of intestinal motility thus seems to involve three neurons in a chain': one preganglionic cholinergic neuron in the spinal cord, one postganglionic adrenergic neuron in a prevertebral ganglion and finally a postganglionic parasympathetic neuron in the intestinal wall, terminating in the smooth muscle layers.

Investigations carried out by us[5,6], by means of the FALCK and HILLARP histochemical technique[7], on the adrenergic innervation of the alimentary canal in the guinea-pig, rabbit and rat are not in disagreement with NORBERG's interpretation, but new data have been obtained which complement it. In fact, mono-amine containing fibres occur in the ganglia and in the meshes of the 2 fundamental plexuses (viz. myenteric and submucous), in which they are particularly evident in flat preparations obtained by stripping (Figure 1). They exhibit characteristic fluorescent varicosities, which leads us to believe that they form synaptic contacts with the ganglion elements proper. However, in addition to these fibres, other adrenergic fibres are constantly encountered which are located within the muscle layers, and are intermingled among small bundles of smooth muscle cells. Intramuscular adrenergic fibres were evidenced in the circular muscle layer, showing a maximal density in the duodenum but occurring in all segments of the alimentary canal from stomach to rectum. They occur in large numbers in the taeniae of the caecum, in which they were recently demonstrated also by ABERG and ERÄNKÖ[8] and by BENNETT and ROGERS[9], whereas they seem to be absent from the longitudinal muscle layer of both the small and large intestine. They are present in the muscularis muccosae throughout the subdiaphragmatic segments of the alimentary canal[10]; finally, they build an extremely dense network in all the smooth muscle layers at the level of both the cardia (Figure 2) and anal canal[11]. The extrinsic nature of the intramus-

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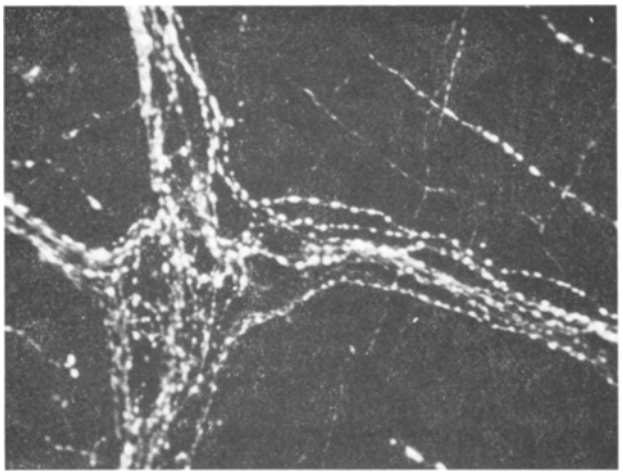

Fig. 1. Rabbit small intestine. Strip preparation of the Auerbach's plexus. A large ganglion and several meshes richly supplied with adrenergic fibres are apparent. × 220.

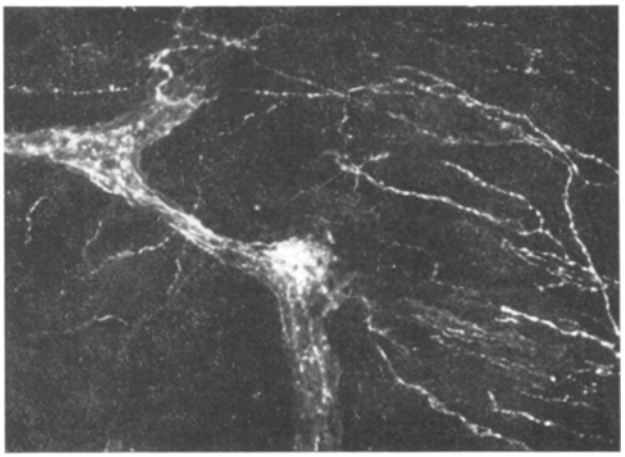

Fig. 2. Guinea-pig cardia. Section through the muscle layers. Many adrenergic fibres are observed in the Auerbach's plexus ganglia, and in the outer (left) and inner (right) muscle layers. × 150.

cular adrenergic fibres, besides being indicated by the lack of adrenergic cells within the intestinal wall, is further borne out by their complete disappearance after experimental denervation of the intestinal loops (experiments of denervation by means of criocautery of the mesenteric nerves at the intestinal hilum[12]). Lastly, the existence of adrenergic fibres pertaining to the muscle layers has been substantiated by electron microscope studies in the rat[13]. In the circular muscle layer of the small intestine, in fact, intermingled with smooth muscle cells, nerve fibres are observable which exhibit varicosities rich in vesicles ranging from 300–700 Å in diameter and containing a highly osmiophilic granule. These vesicles are regarded as specific of adrenergic terminals (RICHARDSON[14]).

In our opinion, there is therefore reason to believe that the presence of extrinsic adrenergic fibres in very close proximity to muscle effectors demonstrates the existence of an alternative pathway to the neuron chain envisaged by NORBERG.

In summary, adrenergic varicose nerve fibres are observed both around intramural nerve cells and in mienteric and submucous plexuses, and in close proximity to muscle and glandular effectors. The possibility thus exists of a direct action of adrenergic fibres on the effectors and an indirect one through the intramural nerve cells[15].

Riassunto. Le ricerche istochimiche effettuate sull'innervazione adrenergica dell'intestino hanno dimostrato che fibre adrenergiche sono presenti non solo attorno ai neuroni e nelle maglie dei plessi mienterico e sottomucoso, ma anche nello spessore stesso dello strato muscolare interno e in intimo rapporto con elementi ghiandolari della tonaca mucosa. Vi è quindi la possibilità che sugli effettori ghiandolari e muscolari le fibre adrenergiche esercitino sia un'azione diretta sia un'azione indiretta attraverso i neuroni intramurali.

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Structure of Nuclear Membranes Isolated from Brain Cells

Despite of the increasing number of studies dealing with the mechanisms of the nucleocytoplasmic interaction, our present knowledge of the structural basis of these processes is still insufficient. Particularly, the question of the structure of the nuclear pore complexes, which are thought of as the most important pathways for the controlled nucleocytoplasmic exchange of macromolecules, remained unsolved (references to this problem e.g. in [1] and [2]). Since a generally applicable method for isolating nuclear membranes opens the possibility for comparing the structure of nuclear envelopes of various cells[3], one of the main intentions in our laboratory is to collect the structural data of the nuclear membranes of different plant and animal tissues[3,4] as well as those of the same cell type in different physiological and cytological states[5,6]. The present study is concerned with the structural details of the isolated nuclear envelopes of neuronal and glial nuclei from the rat brain.

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