lieu de faire remarquer, c'est que les actions dans les deux sens, masculinisante et féminisante, sont plus fortes dans le cas de la transplantation que dans celui du free-martinisme. Mais cela se comprend, puisque le transplant est logé dans la cavité abdominale même de l'hôte, alors que les embryons jumeaux n'entrent en rapport que par l'intermédiaire de leur allantoïde et seulement à partir du 7e jour.

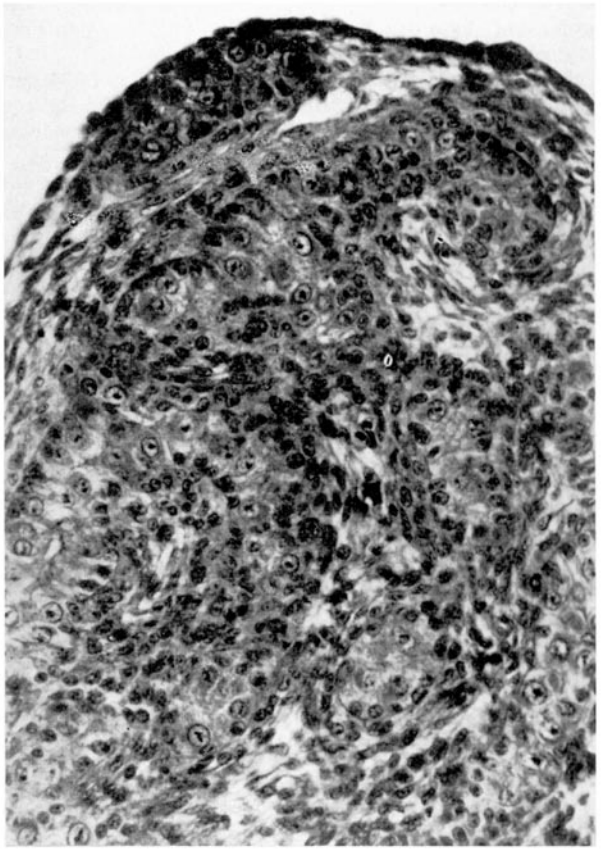

Fig. 3. Moitié antérieure de la même ébauche différenciée en un testicule normal au sein d'un hôte mâle. × 360.

Au sein du couple hôte mâle-transplant ovarien, celui-ci exerce son effet féminisant sur l'hôte, mais échappe à toute action de sa part. En fait, jamais encore, dans aucune condition expérimentale, le développement de l'ovaire ne s'est trouvé modifié (WOLFF[7], WENIGER[8]).

Comparons maintenant nos résultats à ceux obtenus par WOLFF[4] en 1946. WOLFF avait greffé des fragments de gonades mâles et femelles d'embryon de Poulet de 6 à 11 jours dans la somatopleure d'embryons hôtes de 48 à 52 h et avait constaté, chez les hôtes mâles porteurs d'un transplant ovarien, la transformation du testicule gauche en un ovotestis, accompagnée, dans 1 cas au moins, de la persistance d'un segment proximal du canal de Müller gauche, chez les hôtes femelles porteurs d'un transplant testiculaire, la disparition complète des deux canaux de Müller.

A l'aide de transplants de 2 jours plus jeunes que les plus jeunes des transplants de WOLFF, nous aboutissons aux mêmes résultats, sauf que nous n'avons jamais observé la persistance d'un tronçon de canal de Müller. En revanche, nous avons obtenu la féminisation partielle du transplant testiculaire, selon ce qu'avait prévu WOLFF: «Il est vraisemblable», avait-il écrit, «que si l'on utilisait comme transplants des ébauches gonadiques contemporaines de l'hôte, elles subiraient l'action des hormones de l'hôte» (WOLFF[4], p. 88).

*Zusammenfassung.* Wie WOLFF vorausgesagt hat, entwickelt sich eine 4 Tage alte Hodenanlage, auf einen zweieinhalbtägigen Hühnerembryo weiblichen Geschlechts überpflanzt, zu einem Ovotestis, bewirkt aber beim Wirt die völlige Zurückbildung der Müllerschen Gänge. Bei der Überpflanzung einer Ovarialanlage auf einen männlichen Wirt wird dessen linker Hoden feminisiert, das verpflanzte Ovarium hingegen entwickelt sich normal weiter.

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## N,N'-di(piperidino-methyl)-3,3'-diindolylmethane (DIM), a Diindolylmethane Derivative of Neuroplegic Action

In the past years, several synthetic chemical trials have been performed to prepare serotonin-antagonists by substitution on the indole nucleus. Most of these compounds possess no central effects whatever, although some of them antagonized serotonin almost as potently as LSD[1–6]. Other compounds, however, showed a marked central depressant activity[7,8]. The latter results indicated that by

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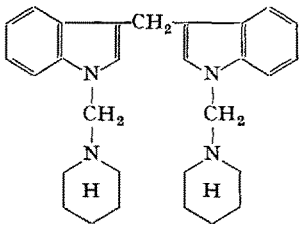
changes in the indole structure, effective central depressants might be prepared. In the following paper, we give an account of our work in this direction, begun in 1961, in which we found N,N'-di(piperidino-methyl)-3,3'-diindolylmethane (DIM)[9] to be one of the most potent among the several compounds synthesized. Compounds of similar structure have already been dealt with, but no pharmacological results have yet been published[10]. Our detailed chemical and pharmacological results will be reported on at a later date[11].



base m.p. 132 °C

The compound is a white, crystalline substance. It is not soluble in water, but absolutely pure 1–2% aqueous solution can be prepared by the use of Tween 80.

Toxicity in mice is (reading the results at 48 h in an environment of 25°C) $LD_{50}$ = 400 mg/kg s.c., or $LD^{100}$ = 600 mg/kg s.c.; in cats (72-h result) it is $LD_{100}$ = 25–30 mg/kg i.p.

The most remarkable property of DIM has been found to be that even when administered in low doses (3–5 mg/kg i.p.) it causes catalepsy, hypothermia and a reduction of metabolic rate in rats, mice, rabbits, cats and dogs. The effect develops slowly and lasts 24–36 h. The cause of the lowering of the body temperature is a paralysis of the thermoregulatory mechanism; namely on exposure to cold, the metabolic rate of the DIM-treated rats does not increase; on the contrary, it decreases. However, the hypothalamus remains directly stimulable chemically with Amphetamine.

As injected intravenously in a dose of 0.3 mg/kg into cats anaesthetized with chloralose-urethane, DIM reduces respiratory rate and volume and causes a lasting vasodepression. It inhibits the carotid pressor reflex, but the vasomotor centre remains responsive to $CO_2$. DIM possesses no atropine, antihistaminic or anti-adrenaline effects. It does not paralyse the autonomic ganglia. It blocks the polysynaptic spinal crossed extensor reflex, but has no influence on the homolateral flexor and patella reflexes.

DIM is a potent analgesic agent. Its effect is 35% stronger and more durable than that of morphine. It potentiates ether and Evipan anaesthesia. There is a very marked synergism of potentiating nature between Chlorpromazine and DIM. When administered together, a full effect is produced by 15% of the original effective doses of the two compounds. Animals treated with DIM + Chlorpromazine alone can be subjected to painful operations without any other drug treatment.

As determined in waking cats and rabbits, DIM synchronizes cerebral electrical activity and inhibits the cortical and subcortical desynchronization in response to painful stimulation[12].

*Zusammenfassung.* Ein neues Diindolyl-methan-derivat, das N, N'-di(piperidino-methyl)-3, 3'-diindolyl-methan, wurde synthetisiert; es verursacht im Tierversuch schon in Dosen von 3–5 mg/kg einen langanhaltenden zentralen Depressoreffekt.

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## Specific Gravity of Epididymal and Ejaculated Bull Spermatozoa and of their Parts

Specific gravity in ejaculated bull spermatozoa was studied by LINDAHL and KIHLSTRÖM[1] by centrifugation in umbradil-methylglucamine-salt solutions of different specific gravity. They arrived at the general conclusion that the process of physiologic ripening of the sperms implies a rise in gravity. Later on KIHLSTRÖM[2], using the same method, demonstrated that free heads of ejaculated spermatozoa obtained by shaking sperms with glass beads show a much higher specific gravity than the corresponding fragments consisting of mid-pieces with tails and protoplasmic drops.

In the course of a chemical study on bull spermatozoa it appeared desirable to obtain isolated heads and midpieces with tails in fairly pure suspensions and in sufficient amounts. Sonic treatment followed by centrifugation in specific weight gradients gave fairly good results. Preliminary experiments aiming at the exploration of suitable conditions for this procedure produced some data of general interest on the specific gravity of bull sperms. These will be described in the present communication.

*Material and methods.* Epididymal and ejaculated spermatozoa were obtained from bulls of Swedish Red and White cattle. The former were prepared according to HENLE[3] from the testes of slaughtered bulls within 1 h after death. The suspension was stored at room temperature. Ejaculated spermatozoa were obtained from semen collected at the Artificial Insemination Centre at Enköping by means of an artificial vagina, cooled immediately in the general way to 5°C and transported undiluted at this temperature to this laboratory. The mate-

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