(0.45 μ pore size) by filtration under partial vacuum. These filters were attached to aluminum planchets, dried and counted with a thin-window gas flow counter and corrected for background activity.

The stimulation of hemin synthesis in cultured Ehrlich ascites tumor cells by the total RNA extract of mouse livers, as well as by RNA fractions isolated from the nuclear, ribosomal and soluble fractions is given in the Table. The greatest stimulation resulted from addition of the soluble RNA fraction. Stimulation of hemin synthesis of minced frog embryos by adding RNA isolated from frog livers has been described[8]. Mouse liver RNA did not stimulate hemin synthesis of frog embryos and, in the present study, bovine liver soluble RNA did not affect the rates of hemin synthesis of Ehrlich ascites tumor cells (Table). The levels of hemin synthesis were stimulated by a mixture of the four ribonucleosides, but not as much as by the RNA preparations. An RNA-core diffusate (Worthington), which contained dialyzable mono-, di-, tri- and tetranucleotides did not stimulate the incorporation of δ-aminolevulinic acid C^{14} into hemin.

These experiments indicate that the addition of liver RNA to intact ascites cells can stimulate hemin synthesis. This is not an induction of a new biosynthetic pathway but probably is the esculation of synthesis of enzymes of an established pathway[9].

The stimulation of hemin synthesis of Ehrlich ascites tumor cells by mouse liver RNA isolated from the residue from a 15,000 *g* centrifugation (nuclear fraction), the residue from ultracentrifugation for 2 h at 105,000 *g* (ribosomal fraction), the ultracentrifugal supernatant (soluble fraction) and the RNA of entire livers (total RNA)

Incubation	Isotopic activity of hemin-C.P.M. (average)
Control	2695 ± 325
Total RNA, 1 mg/ml	3385 ± 5
2 mg/ml	4630 ± 260
Nuclear fraction, 1 mg/ml	3045 ± 45
2 mg/ml	3955 ± 205
Ribosomal fraction, 1 mg/ml	3230 ± 160
2 mg/ml	4005 ± 315
Soluble fraction, 1 mg/ml	3965 ± 185
2 mg/ml	5193 ± 127
Four ribonucleosides (each at 0.001 *M*)	3490 ± 430
Ribonucleic acid core diffusate, 1 mg/ml	2420 ± 60
(Worthington Biochemical Corp.) 2 mg/ml	2335 ± 25
Bovine liver soluble RNA, 1 mg/ml	2215 ± 95
(Nutritional Biochemical Corp.) 2 mg/ml	1731 ± 87

Résumé. Les cellules ascites de la tumeur Ehrlich couvaient in vitro avec le précurseur radioactif de l'hémine δ-aminolévulinic acid-4-C^{14}. Les préparations de ARN du foie de la souris stimulaient le niveau de synthèse de l'hémine.

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The Responses of Units in the Superior Colliculus of the Cat to a Moving Visual Stimulus[1]

Experiments were conducted in 28 cats which had been subjected to complete transection of the brain-stem at a midpontine level under deep ether anaesthesia[2]. To prevent ocular movements, the cats were curarized and artificially respired. The pupils were dilated with atropine. The visual stimulation was produced by manually sliding a white object (7 · 2 cm) along a rail 1 m in length. The rail could be rotated around its centre in a vertical plane and its position could be fixed in any selected meridial plane. The axis of rotation of the system was made to coincide with the visual axis of the eye by means of optical collimation (the visual axis intersects the retina in the centre of the area centralis, e.g. *visual pole* of Bishop et al.[3]. The minimal distance between the plane of rotation and the eye for which no accommodation was required was 1 m[4]. This distance was kept constant throughout the experiment. The distance over which shifting the object excited collicular units could be read in cm directly from the rail, and then converted to angular values. Whenever the effective trajectory of the object did not coincide with the meridial plane, a rectangular screen of matt plastic replaced the system described above, and was centred in a similar fashion. A small light spot (the actual visual object) of 50 Lux over a background of 10 Lux was focused on the screen from the reverse side. The position of the trace of the light spot, moved manually and effective in eliciting responses from collicular units, was then marked on the screen and its amplitude measured. Activity from superior collicular units was recorded by using stainless steel microelectrodes with a tip diameter of 3–5 μ and a resistance of 100 K Ohm measured on an A.C. bridge.

Two groups of units were found which could be activated by a moving stimulus. The first group (23 units) was activated by angular movements of 6–12°, while 30–45° were required by the second group (18 units)

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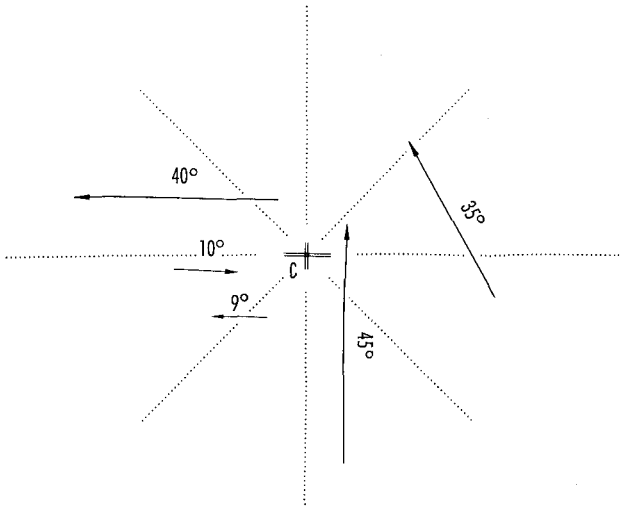

Fig. 1. Samples of long and short range trajectories effective in exciting collicular units, as related to the centre of the visual field (C).

(Figure 1). Finally a few units were found which responded only to the presence or the absence of light and not to movement. Three parameters were considered for the units responding to movement; namely speed, direction and position of the line along which the object was moved. These parameters were different for each unit studied. All units were found to be particularly sensitive to the position of the line along which the object was moved. In fact, when the line was raised or lowered from 10 to 20 cm on a plane normal to the visual axis, the response of the unit was lost. Speed and direction of movement were important but not so critical for the firing of the unit as was position of plane (Figure 2). However, the brightness of the object appeared to be very important. At relatively low levels of intensity of illumination the discharge of the unit and its specificity to movement and plane were unaltered by gradually increasing the intensity of illumination (light intensity of the object from 50 to 200 Lux, on a background of 10 Lux). However, with very bright objects (from 200 Lux on) the response to movement was greatly reduced. This latter phenomenon is illustrated in Figure 3. The great

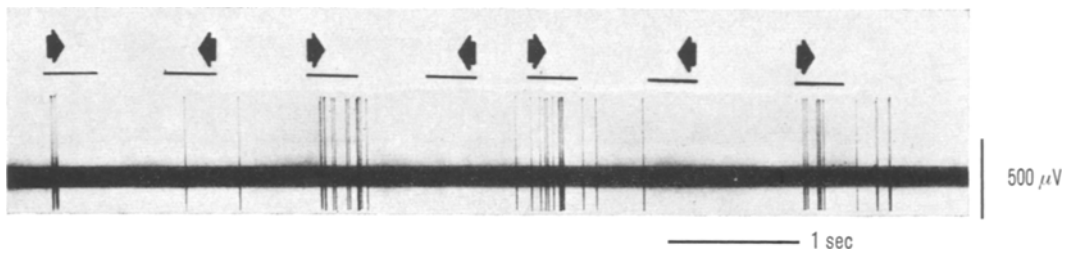

Fig. 2. Selective activation of a collicular unit by moving object. Opposite direction of movement (from right to left) is almost ineffective.

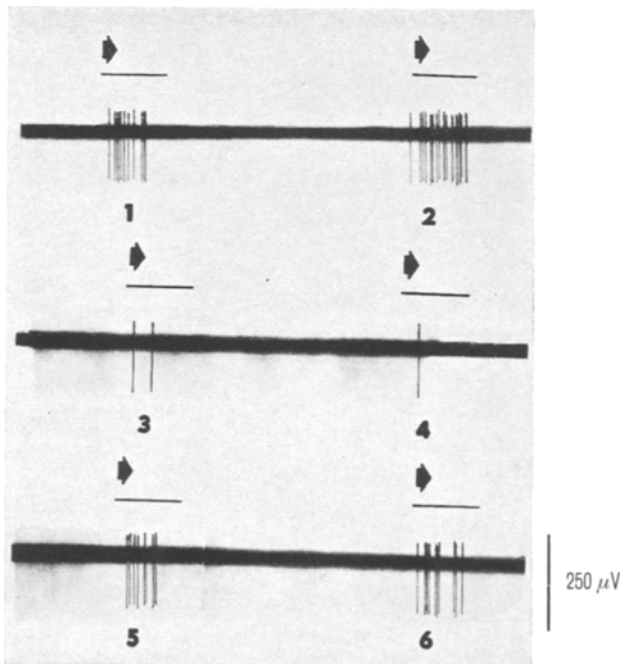

Fig. 3. Great reduction of collicular response to a movement produced by increasing brightness of object. 1, 2, 5, 6 controls at 40 Lux. During 3 and 4 the brightness of the object was strongly increased up to 250 Lux.

majority of these units were stimulated by the visual input through the contralateral eye.

The two groups of units behaved similarly with respect to the moving stimulus except for the amplitude of the angular movement effective in firing the units.

Complete acute ablation of the neocortex did not modify the number of units responding to the moving stimulus, nor their responses. However, ablation of the two lateral geniculate bodies, performed without damaging the direct retino-collicular pathway (as shown by the presence of the photic reflex), resulted in total abolition of the responses to *large* angular movements, while firing to the *small* movements remained unmodified.

These results suggest that the collicular units responding to angular movements may be driven by impulses bypassing the lateral geniculate body of the same side, when short angular movements are used. The lateral geniculate is required when longer movements are used. The visual cortex is not essential for either type of response.

The existence within the superior colliculus of units firing in response to an angular movement as great as 45° indicates a high degree of convergence upon these cells. Effects of this kind have never been observed for cells in other structures of the visual pathway[5–8]. Since the pres-

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ence of the lateral geniculate body is necessary for the appearance of this type of response, the hypothesis may be made that this effect is produced by convergence of several geniculate cells on a single unit of the superior colliculus.

Riassunto. Alcune unità del collicolo superiore nel gatto pretrigeminale vengono attivate da un oggetto in movimento lungo un arco di 6–12° oppure di 30–45°. La velocità, direzione, verso e piano di spostamento sono differenti per ogni unità. La decorticazione completa non modifica le risposte unitarie, mentre la distruzione dei due nuclei genicolati laterali abolisce le risposte ai movimenti di massima ampiezza.

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Interruption of Pregnancy by 5-Azacytidine

5-Azacytidine[1], a synthetic analogue of cytidine, markedly inhibits the development of the transplanted leukaemia of AKR mice[2], as well as the synthesis of nucleic acids by cells of monkey kidney in tissue culture[3] and by isolated nuclei of calf thymus[4]. In the course of a study of its biological effects, we were interested to learn whether it causes an interruption of pregnancy, as do several other antimetabolites[5–7].

Non-inbred albino mice of the Konárovice strain, kept under constant conditions, were used in our experiments. The day of mating was determined from vaginal smears. 5-Azacytidine was administered intraperitoneally in daily doses of 2.5 mg/kg (in 0.25 ml of saline solution). The drug was administered on the following days, respectively, after mating: 1 through 6, 1 through 3, 4 through 6, 6 through 12, 12 through 18. Control animals were given the same volume of saline. On the 19th day the mice were sacrificed by cervical dislocation, the uteri excised, and the numbers of living and resorbed embryos estimated.

5-Azacytidine interrupts pregnancy during the first week, while during the last 10 days of pregnancy it has no discernible effects. Its activity increases during the first days of pregnancy, and the optimum is reached between the 4th and the 6th day. The effects of the compound with respect to time are very similar to those of 6-azauridine and 6-azacytidine[8], in spite of the fact that the two types of aza-analogues have different mechanisms of action at the molecular level. Similarly, the relation of the effective dose to the lethal dose is in both cases almost the same. Thus, effective doses of 6-azacytidine, with an LD_{50} of over 10g/kg, vary between 100 and 400 mg/kg, while in the case of 5-azacytidine, with an LD_{50} of 68 mg/kg, the dose needed was only 2.5 mg/kg.

It may be emphasized that the dose used in our experiments caused no manifestations of toxicity in pregnant females.

Interruption of pregnancy by 5-azacytidine

Administered	Days of treatment after mating	Total no. of animals	No. of uteri with resorptions	Total no. of embryos	No. of resorbed embryos	% of resorbed embryos (total no. of embryos = 100%)
0.25 ml of saline	1– 6	10	2	67	6	9.0
	1– 3	5	2	43	5	11.6
	4– 6	5	1	45	4	8.9
	6–12	10	2	56	3	5.4
	12–18	10	1	63	1	1.6
50 µg of 5-azacytidine in 0.25 ml of saline	1– 6	10	9	62	52	84.0
	1– 3	5	4	25	15	60.0
	4– 6	5	5	52	52	100.0
	6–12	10	6	57	12	21.0
	12–18	10	2	64	2	3.1

Zusammenfassung. Bei Mäusen unterbricht 5-Azacytidin die Schwangerschaft, und ist maximal wirksam zwischen 4.–6. Graviditätstag.

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