composition generally found to follow the initiation of cortisone therapy in human subjects(9), *i.e.*, the excretion of sodium into the allantoic fluid increased while the output of potassium decreased. These findings suggest that the chick embryo allantois is influenced by cortisone, directly or indirectly, but responds in a manner opposite to that characteristic of the human kidney. The increased concentration of chloride and of reducing substances in the allantoic fluid, on the other hand, is directionally similar to the changes induced by cortisone in humans.

It may be that exogenous cortisone interferes with the formation or function of the adrenal gland and thereby ultimately induces adrenal insufficiency. In such an event the observed cation and chloride changes would resemble those seen in human adrenal insufficiency(10). Since the unhatched chick lives and grows in a closed system, any increased output of sodium or decreased elimination of potassium must inevitably be accompanied by depletion of the former element from the body and excessive retention of the latter. Our data do not indicate whether the chemical changes mediate or merely accompany the retardation of growth, developmental anomalies, and decreased survival rates observed in cortisone-treated chick embryos.

Summary. 1. The observed rise in sodium and the decrease in potassium in the allantoic fluid of chick embryos treated with cortisone are the reverse of the reported changes in the urine of human subjects receiving this steroid, and resemble those seen in adrenal insufficiency. 2. The increased chloride and sugar levels in the fluid of the allantois following therapy with the higher dosages of cortisone resemble directionally the renal effects of cortisone in man.

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Inhibition of the Growth of Egg Cultivated Tumor Tissue by Extracts of *Cooperia pedunculata* Herb. (18943)

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During a survey of the effect on tumor tissue of various extracts of plants known to be toxic when ingested by animals, certain extracts of *Cooperia pedunculata** Herb. (Rain-lily) have proved to be inhibitory of tumor growth.

Acetone and acid aqueous extracts of the bulb of this plant when introduced into eggs bearing yolk sac implantations of mouse mammary carcinomas inhibited the growth of the tumor tissue almost entirely for the period of the test at dosage levels which did not appear to affect adversely the supporting chick embryos.

The plant *Zephyranthes atamasco* Herb. is known to be poisonous to live stock(1). The Rain-lily used in this study is a closely related species and probably has the same toxic properties.

No reports were found in the literature of the use of Rain-lily extracts in cancer chemotherapy.

Included in this report are results obtained when 4-aminopteroylglutamic acid (Aminopterin) was tested in the same way as the plant extracts. This compound is well known for its inhibitory effect on the growth of cancer and other tissues and the fact that this is readily demonstrated by injection into tumor

* Our appreciation is extended to Dr. W. V. Brown and Dr. G. S. Rabideau of the Department of Botany, University of Texas, for confirming our identification of this plant.

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bearing eggs is evidence of the validity of the approach.

Experimental. Rain-lily bulbs were collected in April. All of the procedures were carried out at as low a temperature as practical. The extracts were kept chilled or frozen until introduction into the test egg. Special care was taken to insure sterility in the solutions tested. The effective extracts were made as follows:

An *acetone extract* was obtained by immersing coarsely comminuted portions of fresh Rain-lily bulb in acetone in the ratio of 1 to 10 for a period of 24 hours. The acetone was then sterilized by passage through an ultrafine filter and evaporated at low temperature under reduced pressure. The resulting powder, weighing 282.4 mg per 10 ml of acetone was dissolved in sterile cottonseed oil.

An *acid (HCl) aqueous extract* (pH 6.6) was made by immersing in this acid solution 1 part of coarsely comminuted Rain-lily bulb to 10 parts liquid and allowing the mixture to stand 24 hours. At the end of this period the solution was filtered and sterilized in the same manner as the acetone extract. In a similar way *aqueous and alcoholic extracts* were prepared. One extract was made by pressing out the liquid from the plant tissue with a hydraulic press.

Aminopterin was dissolved in 1% Na_2CO_3 for injection. All the materials tested were introduced into the tumor-bearing eggs in the form of an emulsion consisting of 2 parts cottonseed oil and 1 part H_2O. Control eggs received the suspending fluid.

Tumor-bearing eggs were obtained by inoculating the yolk sacs of embryonated eggs on the 4th day of incubation with C_3H mouse mammary carcinoma tissue suspension. The details of the method have been previously described(2-4). The materials being tested were introduced into the tumor embryo system on the 12th day of incubation by injec-

TABLE I. Effect of Extracts of Rain-Lily Bulbs and Aminopterin on Growth of Tumor and Embryo of Tumor-Bearing Eggs. 24 hr test period.

Material tested	No. of eggs	No. of exp	Dosage	Survival control =100	Avg initial wt, g		Avg tumor wt end of test period, g		Avg embryo wt end of test period, g		Growth inhibition, %	
					Tumor	Embryo	Exp	Control	Exp	Control	Tumor	Embryo
Rain-lily acid-aqueous	112	4	.07 ml	100	.25	3.64	.29 ± .05	.45 ± .06	4.75 ± .13	4.73 ± .09	81	0
Rain-lily acetone	80	3	.5 mg	100	.27	3.62	.28 ± .01	.46 ± .03	4.80 ± .13	4.72 ± .12	94	-8*
Aminopterin	128	5	.1 mg	86	.24	3.30	.27 ± .03	.47 ± .04	4.30 ± .08	4.54 ± .09	87	19

* Indicates % growth acceleration.

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tion over the blood vessels of the chorioallantoic membrane and area vasculosa as described elsewhere(5-7). A test period of 24 hours was used during which time the yolk sac tumors nearly doubled in size. The effect on growth was evaluated on the basis of the increased size of embryo and tumor which occurred in the control eggs during the period of the experiment. A total of 320 tumor-bearing eggs involving 12 separate experiments was used in these tests.

Results. Table I records the results with 2 Rain-lily extracts and aminopterin. Aqueous and alcohol extracts of the plant were ineffective. Negative results were also obtained with a solution of liquid pressed from the plant bulbs at high pressure.

It will be noted in the table that the Rain-lily extracts gave about the same order of inhibition of tumor growth as did aminopterin but without the inhibition of the embryo growth which characterized the action of the latter compound.

Discussion. The chemical nature of the effective agent in these Rain-lily extracts will be explored. It is known that an alkaloid with fungicidal action is present in plants of this group. To obtain this material, dry powdered bulbs are extracted with 95% ethanol (8). In the present work ethanol extracts of fresh bulbs were ineffective in the tests on cancer growth. There is apparently a seasonal factor involved since extracts of bulbs collected in the Austin area in the late Spring after the plant was advanced in growth were ineffective.

Summary. Extracts of Rain-lily bulbs have been tested for their effect on the growth of tumor and embryo of tumor-bearing eggs. The results obtained with aminopterin in the same tests are included for comparison. Acid aqueous and acetone extracts of the plant bulb inhibited tumor growth 81% and 94%, respectively, without affecting the embryo. Aminopterin inhibited tumor growth 87% and embryo growth 19%.

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Electronmicrographs of Thin Sections of Molluscum Contagiosum.* (18944)

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The morphology of *Molluscum contagiosum* has been extensively studied under the light microscope. The usual description consists of cells of the epidermis which are altered by the presence of cytoplasmic inclusion bodies (the Henderson-Patterson molluscum body) appearing first in the Malpighian layer and reaching maturity in the lower stratum corneum. Van Rooyen(1) has demonstrated by microdissection that the mature globular inclusion body is filled with elementary bodies lying in a gelatinous matrix. Rake and Blank (2), in tracing the development of the inclusion body, maintained that there is first a

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