Table 2. Retentions of Cr^{51} from Cr^{+3} solution and on greasy glass from cleaning solution.

Instrument	Set	Treatment	Fused quartz	Pyrex	Plate
Geiger counter	III	Cr^{+3}	4	5	5
	IV	Grease and $Cr_2O_7^{-2}$		124	
Scint. spect. (Photo-peak)	III	Cr^{+3}	84	85	126
	IV	Grease and $Cr_2O_7^{-2}$		3590	

much more readily on the surface of the grease or that partial oxidation of the grease film by $Cr_2O_7^{-2}$ causes the Cr^{+3} produced in the oxidation to be strongly affixed to the remaining film.

According to a standard assay that checked the specific activity reported by the Oak Ridge National Laboratory for the original solution, each count per minute by the scintillation spectrometer corresponds to 3×10^{-12} mole of chromium atoms. If a figure of 200 counts/min for Pyrex is taken from Table 1, the coverage is 2×10^{-10} mole/cm^2 of chromium atoms. If the area per atom is assumed to be 10^{-15} cm^2 and if the actual area is taken as twice the geometric area, the coverage is estimated as 3 percent of a monolayer.

It appears that a negligible amount, 0.03 monolayer or less, of chromium is retained by fused silica, Pyrex, or soda-lime glass following treatment by ordinary dichromate cleaning solution. On the other hand, if the cleaning is incomplete and the grease layer is not completely removed, as much as 0.5 monolayer of chromium may be retained.

References and Notes

1. E. P. Laug, *Ind. Eng. Chem., Anal. Ed.* **6**, 111 (1934).
2. W. F. Libby, *Radiocarbon Dating* (University of Chicago Press, Chicago, 1952).
3. J. R. Arnold, *Phys. Rev.* **93**, 743 (1954).
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5. Since our low-level scintillation spectrometer was under construction at the time this work was done, we are indebted to James R. Arnold of the Institute for Nuclear Studies, University of Chicago, who kindly let us use his scintillation spectrometer.

10 May 1954.

Action of Dimethylkynurenamine on Blood Pressure

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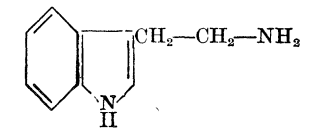
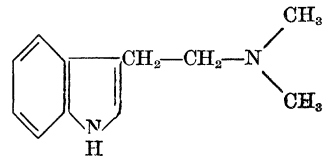
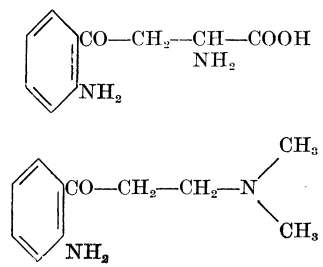
Bufotenine isolated from toad venom and serotonin from beef serum or mammalian gastrointestinal mucosa have remarkable pressor activity and vasoconstricting effect when injected intravenously into animals. Tryptamine (I) and dimethyltryptamine (II) also seem to have such an action, although it is weaker than serotonin itself.



(I)



(II)



(III)

Recently dimethylkynurenamine (III) hydrochloride (mp 158° to 160°C, yellow needle or globe; monopicrate, mp 165°C, $C_{17}H_{19}O_8N_5$: calculated C, 48.45, H, 4.51, N, 16.63; found C, 48.65, H, 4.50, N, 16.05 percent), which was presumed to be derived from dimethyltryptamine or kynurenine, was prepared, in the presence of palladium charcoal, by hydrogenation of dimethyl o-nitrobenzoylethylamine hydrochloride (mp 165° to 167°C; picrate, mp 143°C, $C_{17}H_{17}O_{10}N_5$: calculated C, 45.23, H, 3.76, N, 15.52; found C, 45.62, H, 3.42, N, 15.32 percent).

This dimethylkynurenamine hydrochloride had a faint jasmin-like odor and was easily soluble in water, giving a yellow color. On paperchromatogram it was recognized as a blue fluorescent spot and showed with Dragendorff reagent a reddish-orange color, with p-dimethylaminobenzaldehyde in hydrochloric acid an orange color, and with diazotized sulfanilic acid a yellow color. Its Rf value developed with the supernatant of the mixture of acetic acid, butanol, and water in ratio 1 : 4 : 5 was 0.66, with 70 percent isopropanol 0.62. Its ultraviolet absorption spectrum has: λ_{max_1}, 256 mμ; λ_{max_2}, 358 mμ; λ_{min_1}, 246 mμ; λ_{min_2}, 280 mμ (*p*H 4.8).

Pharmacological study revealed that dimethylkynurenamine has a strong blood pressure-lowering activity in contrast to the pressor activity of tryptamine. When 100 μg of dimethylkynurenamine hydrochloride (per kilogram) was injected intravenously into the urethane-anesthetized rabbits (five rabbits, 1.5 to 2 kg), a lowering of blood pressure of 15 mm-Hg was recorded manometrically in the common carotid artery.

More remarkable action was seen with larger doses, as is indicated in Table 1.

Table 1. Blood pressure lowering activity of dimethylkynurenamine hydrochloride.

Doses (μg/kg)	Lowering of blood pressure (mm-Hg)	Approx. duration (min)
100	15	0.8 ∽ 1
200	28	1 ∽ 1.5
500	30	1.5 ∽ 2
1000	35	3.5 ∽ 4
3330	52	6 ∽ 7

Although the action lowering the blood pressure of this amine hydrochloride was a little weaker than that of adenosine, a notable blood pressure-lowering substance, its inhibiting action on the epinephrine hypertension was somewhat stronger than that of the latter.

In our laboratory, we are now synthesizing 5-hydroxykynurenamine, which is supposed to have more remarkable action than kynurenamine and probably to be an antagonist of serotonin.

We wish to express our thanks to the Takeda Research Laboratory for making elementary analysis, and to A. Tashima, Pharmacological Department of Kumamoto University Medical School for helping with our pharmacological experiment. This work was aided by a grant from the Ministry of Education of Japan.

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Natural Parthenogenesis in Turkey Eggs

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Research at the Agricultural Research Center, Beltsville, during the past three breeding seasons has shown that some eggs laid by nonmated and virgin Beltsville Small White turkeys may undergo a certain degree of embryonic development upon being incubated. This observation was first made during 1952 when it was found that 16.7 percent of 934 eggs laid by 29 nonmated turkeys showed some cellular proliferation when broken and examined after 7 days of incubation (*1*). These eggs were laid 42 to 224 days after the 29 females had been confined to a pen without males.

In 1953, 23 virgin Beltsville Small White turkey hens were placed on test. These hens had been segregated from their immature male pen mates at an early age, some at 4 wk and others at 12 wk. The first eggs were laid during January 1953, approximately 7 and 9 mo, respectively, after segregation from the immature males. During the ensuing 5-mo period, 1463 eggs were laid by the 23 virgin turkeys. In 14.1 percent of these, a delayed and abnormal type of development was found when the eggs were broken and examined after 7 to 9 days of incubation (*2*). In every instance development was not visible before a candling lamp until the fourth day of incubation. In contrast, normal embryos can be detected after 18 to 24 hr of incubation. A parthenogenetic embryo, when encountered at 9 days of incubation, had therefore attained the approximate size of a normal 5-day embryo.

During 1954, 79 virgin Beltsville White turkey hens were placed on test. These females were segregated from their immature male pen mates before 6 wk of age. At maturity they were placed in three pens, and all were given the same all-mash diet. Artificial lights were used in addition to normal daylight, the lights being turned on at 6 A.M. and off at 8 P.M. each day. The first eggs were laid during January 1954, approximately 8 mo after the birds had been isolated as young poults from their immature pen mates.

During the 8-wk period covered in this report (6 March–10 May 1954), the senior author was solely responsible for the care of the birds as well as for the gathering and incubation of the eggs. Since mated flocks of turkeys were being maintained in the same general area, special measures were taken to insure against mistaken identity of the eggs.

The procedure followed throughout the course of these studies was as follows. Each evening, all eggs laid by the virgin turkeys were placed in the incubator at a temperature of 99.5°F and at a relative humidity of 57 percent. Since earlier studies had shown that parthenogenetic development was not initiated before about 4 days of incubation (*1*), the eggs were candled for the first time on the ninth day. The eggs that on candling showed evidence of development were replaced in the incubator for an additional period of incubation. All eggs in which no development was visible on candling were removed and broken, and the disk of each was examined macroscopically for evidence of development. During the 8-wk period, 2537 eggs were laid by the 79 hens on test. Of this number, 568, or 22.4 percent, showed parthenogenetic development. In 492 of these 568 eggs, the development consisted solely of growth of the extraembryonic membranes. Even in the absence of an embryo, however, it was not unusual to find eggs in which a sheet of embryonic cells had covered almost the entire surface of the yolk. In 49 of the 568 eggs, differentiation proceeded to the extent that blood islands or blood vessels were clearly visible by candling or on macroscopic examination. In the remaining 27 of the 568 eggs, embryos as well as blood were identifiable on gross examination. These embryos attained various stages of development and are listed here in terms of equivalent development of the normal turkey embryo:

2 to 3 days : 8 embryos
4 to 6 days : 11 embryos
9 to 10 days : 3 embryos
14 to 18 days : 2 embryos
26 to 27 days : 3 embryos

With the exception of one individual, all embryos that had developed to or beyond the size of a normal