TABLE I

Salts from	Method	Reaction time	Yield, %	M.p., °C.	Empirical formula	Ionic halogen, % Calcd.	Found
Methyl sulfide and							
p-Fluorophenacyl chloride	1	1 day	65[a]	139	$C_{10}H_{12}ClFOS$	15.11	14.94, 15.20
Methyl ethyl sulfide and							
p-Fluorophenacyl chloride	1	1 day	67[a]	130	$C_{11}H_{14}ClFOS$	14.25	14.22, 13.90
p-Fluorophenacyl bromide	1	10 min.	57[b]	127	$C_{11}H_{14}BrFOS$	27.26	26.93, 27.25
Ethyl sulfide and							
β-Naphthacyl bromide	II	5 min.	58[b]	127.5	$C_{16}H_{19}BrOS$	23.55	23.57
Bis-(2-hydroxyethyl) sulfide and							
p-Fluorophenacyl chloride	1[c]	2 days	99[a]	115	$C_{12}H_{16}ClFO_3S$	12.03	12.18, 12.05
β-Naphthacyl bromide	II	5 min.	99[a]	121-121.5	$C_{16}H_{19}BrO_3S$	21.52	21.65, 21.58
p-Phenylphenacyl bromide	II	20 min.		122.5-123	$C_{18}H_{21}BrO_3S$	20.11	20.03, 20.21
Ethyl selenide and							
p-Fluorophenacyl bromide	1	5 min.	85[a]	96.5-99	$C_{12}H_{16}BrFOSe$	22.57	22.67, 22.74
β-Naphthacyl bromide	II	5 min.	58[a]	106.5	$C_{16}H_{19}BrOSe$	20.70	20.86, 20.59

[a] Crude yield. [b] Yield purified product. [c] Reacted at 40°.

addition of isopropyl ether (m.p. 139°). (Repeated recrystallization lowered the melting point, possibly as a result of reaction of the salt with the solvent.)

Method II.—A solution of 2.49 g. of β-naphthacyl bromide (0.01 mole) and 1.37 g. of ethyl selenide (0.01 mole) in 35 ml. of methanol was refluxed five minutes after all the solid β-naphthacyl bromide had dissolved. The β-naphthacyl diethyl selenonium bromide was precipitated by addition of isopropyl ether and recrystallized twice from methanol by addition of isopropyl ether; yield 2.2 g. (58%), m.p. 110-110.5°.

We wish to express our thanks to Mrs. Lydia Moore Rives and Miss Dorothy Marie Ellis for carrying out halogen analyses on these compounds.

CARL T. BAHNER
CARSON-NEWMAN COLLEGE PETER P. NEBLETT, JR.
JEFFERSON CITY, TENNESSEE HENRY A. RUTTER, JR.

RECEIVED FEBRUARY 1, 1952

8-Hydroxyquinolinium Salts[1]

1-(*p*-Chlorophenacyl)-8-hydroxyquinolinium Bromide.—A mixture of 4.67 g. of *p*-chlorophenacyl bromide (0.02 mole) and 2.90 g. of 8-hydroxyquinoline (0.02 mole) was heated 30 min. at 100°. The resulting brown mass was dissolved in hot 95% ethanol and ethyl acetate was added to throw out 3.9 g. (52%) of crude quaternary salt. After recrystallization from warm ethanol by addition of ethyl ether the white crystals decomposed at 235-236°; solubility in water about 0.6% at 50°.

Anal. Calcd. for $C_{17}H_{13}BrClNO_2$: Br, 21.10. Found: Br, 21.08, 21.28.

1-Allyl-8-hydroxyquinolinium Bromide.—A solution of 4.35 g. (0.03 mole) of 8-hydroxyquinoline in 4.84 g. (0.04 mole) of allyl bromide was heated 6.5 hr. at 70° and the resulting yellow solid was recrystallized from hot absolute ethanol by addition of ethyl ether; crude yield 6.5 g. (81%). Repeated recrystallization yielded deep yellow crystals, decomposing at 148°; solubility in water about 10% at 26°.

Anal. Calcd. for $C_{12}H_{12}BrNO$: Br, 30.04. Found: Br, 30.26, 30.04.

When tested by the standard screening test of the Prevention of Deterioration Center these salts produced 18% and 11% growth inhibition, respectively, at a concentration of 250 p.p.m., whereas 8-hydroxyquinoline has been reported[2] to cause 100% inhibition at 1.5 p.p.m. These results were not unexpected in view of the work of Zentmeyer, Albert and others.[3]

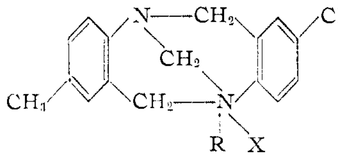
We wish to express our thanks to C. J. Wessel and H. G. Shirk of the National Research Council Prevention of Deterioration Center for the screening tests carried out under Contract N7onr-291, Task Order 27, under sponsorship of the Departments of Air Force, Army and Navy and to Miss Dorothy M. Ellis for analyses.

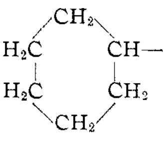
CARSON-NEWMAN COLLEGE CARL TABB BAHNER
JEFFERSON CITY, TENNESSEE BILLY LEE STUMP

RECEIVED FEBRUARY 21, 1952

Derivatives of Troger's Base

We have prepared the two quaternary salts of Troger's base listed below by the action of the appropriate halide on the crude base in ethanol. Purification was achieved by crystallization from ethanol-ether. The two compounds listed had no activity against Sarcoma 180 in mice.



R	X	M.p., °C. (uncor.)	Analyses,[a] % Calcd.	Found
$C_6H_5C_6H_4COCH_2$—	Br	249.5-250	Br 15.21	15.03
	Cl	240 dec.	Cl 9.61	9.40

[a] Mohr analyses.

Acknowledgment.—Grateful acknowledgment is made to Dr. C. Chester Stock of the Sloan-Kettering Institute for Cancer Research, for arranging the tests on these compounds.

DEPARTMENT OF CHEMISTRY
GEORGETOWN UNIVERSITY
WASHINGTON, D. C. HENRY A. RUTTER, JR.

RECEIVED FEBRUARY 11, 1952

---

[1] This investigation was supported in part by a research grant from the National Cancer Institute, National Institutes of Health, Public Health Service, and in part by a grant from the Damon Runyon Memorial Fund for Cancer Research.

[2] R. E. Vicklund and M. Manowitz, *Technical Data Digest*, **15**, [5], 18 (1950).

[3] G. A. Zentmeyer, *Science*, **100**, 294 (1944); G. A. Zentmeyer, *Phytopathology*, **33**, 1121 (1943); A. Albert, *Med. J. Aust.*, **i**, 245 (1944); A. Albert, *et al.*, *Brit. J. of Exp. Path.*, **28**, 69 (1947).