colorless crystals, mp 215–216°. *Anal.* ($C_{11}H_{12}ClN_5$) C, H, N. A mixture of the 2-amino-4-phenethylamino-6-chloro-*s*-triazine (3.7 g, 0.015 mole) and 2-piperazinone[17] (3.0 g, 0.03 mole) in H_2O (160 ml) was stirred under reflux for 2 hr. After cooling, the precipitate was collected by filtration, washed with H_2O, and recrystd from DMF–H_2O to give **83** as white crystals: nmr (in CF_3COOH) τ 1.39 (b s, 2 H, HNCO), 2.66 (b s, 7 H, C_6H_5, NH_2), 5.25 (s, 2 H, CH_2CO), 5.81–6.72 (m, 6 H), and 6.98 (t, 2 H, $C_6H_5CH_2$).

2-Amino-4-phenethylamino-6-pyrrolidino-*s*-triazine Maleate (81).—To a suspension of 2-amino-4-phenethylamino-6-chloro-*s*-triazine (6.2 g, 0.025 mole) in H_2O (120 ml) was added dropwise pyrrolidine (3.6 g, 0.05 mole) with stirring below 5°. The mixture was refluxed for 2 hr, cooled to room temperature, and extracted with $CHCl_3$. The extract was concentrated *in vacuo* leaving a syrup. The maleate was prepared by adding maleic acid (2.0 g, 0.017 mole) in MeOH (10 ml) to the syrup (7.0 g). A solid was obtained, which was recrystd from MeCN to give **81** as colorless needles.

Method B. 2-*n*-Butyl-4,6-bis(cyclohexylamino)-*s*-triazine (16).—Cyclohexylamine (8.0 g, 0.08 mole) was added to a soln of 2-*n*-butyl-4,6-dichloro-*s*-triazine (4.2 g, 0.02 mole) in H_2O (100 ml) under cooling with ice–water. The mixture was refluxed for 2 hr and then cooled to room temperature. The precipitate was collected and recrystd from hexane to give **16** as white crystals.

2-Methyl-4,6-bis(phenethylamino)-*s*-triazine (60).—A soln of phenethylamine (4.8 g, 0.04 mole) in $CHCl_3$ (20 ml) was added to a soln of 2-methyl-4,6-dichloro-*s*-triazine (3.2 g, 0.02 mole) in $CHCl_3$ (80 ml) and then a soln of K_2CO_3 (8.2 g, 0.06 mole) in H_2O (10 ml) was added. The soln was stirred at room temp for 2 hr. The reaction mixture was washed (H_2O), dried (Na_2SO_4), and concentrated *in vacuo* to give an oily residue which was recrystd from EtOH to give **60** as white crystals.

Method C. 2-Chloro-4,6-bis(3-oxopiperazin-1-yl)-*s*-triazine (93).—A soln of 2-piperazinone (4.0 g, 0.04 mole) in H_2O (40 ml) was added to a suspension of 2,4,6-trichloro-*s*-triazine (I, 3.7 g, 0.02 mole) and Na_2CO_3 (4.2 g, 0.04 mole) in $CHCl_3$ (50 ml) with stirring at 50° for 1 hr. After cooling, the precipitates were collected, washed with hot Me_2CO, and then recrystd from DMF with activated charcoal to give **93** as white granules.

2-Piperidino-4,6-bis(ethoxycarbonylmethylamino)-*s*-triazine (156).—To a soln of $NaHCO_3$ (8.4 g, 0.1 mole) in H_2O (240 ml) was added a soln of 2,4,6-trichloro-*s*-triazine (I, 18.4 g, 0.1 mole) in Me_2CO (160 ml) at 0° and then a soln of ethyl glycinate·HCl (13.9 g, 0.1 mole) and $NaHCO_3$ (8.4 g, 0.1 mole) in H_2O (100 ml). The mixture was stirred at 45° for 2 hr. The precipitate was collected and recrystd from EtOH to give **90**. To a soln of **90** (12.6 g, 0.04 mole) in $CHCl_3$ (350 ml) was added a soln of piperidine (3.4 g, 0.04 mole) in $CHCl_3$ (40 ml) and a soln of K_2CO_3 (5.6 g, 0.04 mole) in H_2O (40 ml). The mixture was stirred at room temp for 2 hr. The $CHCl_3$ layer was sepd, dried (Na_2SO_4), and concd *in vacuo*. The residue was recrystd from *i*-PrOH to give **156**.

Method D. 2-Amino-4-phenethylamino-6-*n*-butyl-*s*-triazine (67).—Phenethylbiguanide·HCl (24.2 g, 0.1 mole) was added to a NaOMe soln prepared from Na (2.3 g) and MeOH (80 ml) and the pptd NaCl was filtered off. Ethyl valerate (17.0 g, 0.1 mole) was added to the filtrate at −40°. The reaction mixture was diluted with H_2O (800 ml) and kept in an ice box overnight. The ppt was collected by filtration and recrystd from *i*-PrOH to give **67** as colorless crystals.

Other Method. 2-Methyl-4-pyrrolidino-6-*n*-butylamino-*s*-triazine (98).—A mixture of **94** (6.4 g, 0.036 mole) with *n*-BuBr (4.9 g, 0.036 mole) was heated in a sealed tube at 190–200° for 2 hr. After cooling, the reaction mixture was dissolved in H_2O (50 ml) and then filtered. The filtrate was treated with satd $NaHCO_3$ soln to yield a ppt. This was recrystd from *i*-PrOH–H_2O to give **98** as white needles.

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Synthesis and Pharmacological Evaluation of α,α-Disubstituted Naphthylacetaldehydes

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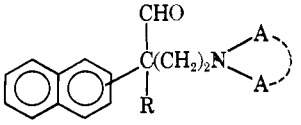
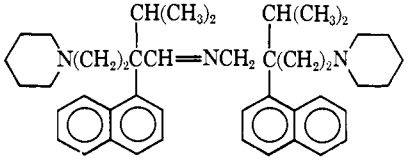
Thirty-eight α,α-disubstituted naphthylacetaldehydes were prepared for extensive pharmacological screening. Some of the compounds displayed marked antipyretic, analgetic, and antiinflammatory activity. None of the other actions investigated revealed anything of particular interest.

As part of our program in the field of naphthalene compounds, we have prepared for pharmacological screening 38 naphthylacetaldehydes of the general structures I and II, in which R was an alkyl or aminoalkyl group and NAA was a tertiary amino group.



I: substituted at position 1
II: substituted at position 2

Reduction of the appropriate nitriles with LAH or lithium mono- and diethoxyaluminohydrides afforded the desired naphthylacetaldehydes together with variable amounts of the related naphthylalkylamines,[1] which were removed from the reaction mixture by fractional precipitation before distilling. Reducing agent and reaction conditions were dependent on the steric hindrance of the nitriles. When the amines were not separated, subsequent distillation gave low yields of the aldehydes, due to formation of the related Schiff bases. In one case (**24**), the Schiff base (III) was isolated and



III

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TABLE I
α,α-DISUBSTITUTED NAPHTHYLACETALDEHYDES

Compd	R	NAA'	Structure	Method	Reaction conditions: Time, hr	Temp, °C	Hydride:nitrile, mole ratio	Yield, %[a]	Mp or bp, °C (mm)	Formula
1	n-C_3H_7	$N(CH_3)_2$	I	C	2	25	1	54	148–150 (0.2)	$C_{19}H_{29}NO$
2	i-C_3H_7	$N(CH_3)_2$	I	A	3	c	1	66	150–155 (0.2)	$C_{19}H_{29}NO$
3	n-C_4H_9	$N(CH_3)_2$	I	C	3	0	1	73.4	164–165 (0.2)	$C_{20}H_{27}NO$
4	i-C_4H_9	$N(CH_3)_2$	I	C	3	c	1	66.5	148–150 (0.1)	$C_{20}H_{27}NO$
5	sec-C_4H_9	$N(CH_3)_2$	I	B	3	c	1	60.7	150–152 (0.15)	$C_{20}H_{27}NO$
6	$(CH_3)_2N(CH_2)_2$	$N(CH_3)_2$	I	C	2	25	1	56.4	156–160 (0.05)	$C_{20}H_{28}N_2O$
7	i-C_3H_7	$N(CH_3)(C_2H_5)$	I	B	8	c	1.2	33.7	157–160 (0.5)	$C_{20}H_{27}NO$
8	sec-C_4H_9	$N(CH_3)(C_2H_5)$	I	B	10	c	1.2	43	164–166 (0.1)	$C_{21}H_{29}NO$
9	$CH_3(C_2H_5)N(CH_2)_2$	$N(CH_3)(C_2H_5)$	I	C	3	c	1	44.6	163–165 (0.1)[f]	$C_{22}H_{32}N_2O$
10	i-C_3H_7	$N(C_2H_5)_2$	I	B	36	c	1.3	31.7	162–163 (0.3)	$C_{21}H_{29}NO$
11	sec-C_4H_9	$N(C_2H_5)_2$	I	B	38	c	1.3	28	154–156 (0.1)	$C_{22}H_{31}NO$
12	$(C_2H_5)_2N(CH_2)_2$	$N(C_2H_5)_2$	I	C	3	c	1.3	34	184–185 (0.4)	$C_{24}H_{38}N_2O$
13	i-C_3H_7	$N(CH_3)(CH_2C_6H_5)$	I	B	35	c	1.3	11.4	227–229 (0.4)	$C_{25}H_{29}NO$
14	i-C_3H_7	$N(i\text{-}C_3H_7)_2$	I	B	93	c	1.1	14.7	153–155 (0.2)	$C_{23}H_{33}NO$
15	sec-C_4H_9	$N(i\text{-}C_3H_7)_2$	I	B	90	c	1.3	26	158–160 (0.2)	$C_{24}H_{35}NO$
16	$(i\text{-}C_3H_7)_2N(CH_2)_2$	$N(i\text{-}C_3H_7)_2$	I	B	3	c	1	46.3	182–184 (0.1)	$C_{24}H_{44}N_2O$
17	n-C_3H_7	1-Pyrrolidinyl	I	C	3	c	1	53.4	178–180 (0.15)	$C_{23}H_{27}NO$
18	i-C_3H_7	1-Pyrrolidinyl	I	A	2.5	c	2	59	205–206 (0.3)	$C_{23}H_{27}NO$
19	n-C_4H_9	1-Pyrrolidinyl	I	C	4	25	1	62	188–192 (0.1)	$C_{24}H_{29}NO$
20	i-C_4H_9	1-Pyrrolidinyl	I	C	4	25	1	46.7	168–170 (0.2)	$C_{24}H_{29}NO$
21	sec-C_4H_9	1-Pyrrolidinyl	I	B	22	c	1.1	43	178–180 (0.1)	$C_{24}H_{29}NO$
22	d	1-Pyrrolidinyl	I	C	2	25	1	59.4	76–78	$C_{24}H_{32}N_2O$
23	n-C_3H_7	Piperidino	I	C	3	c	1.1	44.4	170–172 (0.1)	$C_{24}H_{31}NO$
24	i-C_3H_7	Piperidino	I	A	1	25	1	43	175–177 (0.15)	$C_{24}H_{31}NO$
25	n-C_4H_9	Piperidino	I	C	3	c	1	47	180–181 (0.1)	$C_{25}H_{33}NO$
26	i-C_4H_9	Piperidino	I	C	12	c	1.5	37	176–178 (0.1)	$C_{25}H_{33}NO$
27	sec-C_4H_9	Piperidino	I	A	40	25	1	34	173–177 (0.2)	$C_{25}H_{33}NO$
28	e	Piperidino	I	C	4	25	1.2	38.8	80–82	$C_{26}H_{38}N_2O$
29	n-C_3H_7	Morpholino	I	C	3	c	1.2	57.3	179–180 (0.1)	$C_{23}H_{27}NO_2$
30	i-C_3H_7	Morpholino	I	B	60	c	1.2	29	179–180 (0.1)	$C_{23}H_{27}NO_2$
31	n-C_4H_9	Morpholino	I	C	3	25	1	58.4	196–198 (0.2)	$C_{24}H_{29}NO_2$
32	i-C_4H_9	Morpholino	I	C	11	c	1.5	16.2	183–185 (0.1)	$C_{24}H_{29}NO_2$
33	sec-C_4H_9	Morpholino	I	B	35	c	1.2	33	184–186 (0.1)	$C_{24}H_{29}NO_2$
34	f	Morpholino	I	C	4	25	1.2	63.5	102–104	$C_{24}H_{32}N_2O_3$
35	i-C_3H_7	$N(CH_3)_2$	II	C	5	25	1	33.5	146–149 (0.2)	$C_{13}H_{25}NO$
36	sec-C_4H_9	$N(CH_3)_2$	II	B	3	25	1	27.5	157–159 (0.2)	$C_{20}H_{27}NO$
37	i-C_3H_7	Morpholino	II	A	50	25	0.75	19	173–175 (0.1)	$C_{21}H_{27}NO_2$
38	sec-C_4H_9	Morpholino	II	A	36	25	0.75	33.7	193–197 (0.2)	$C_{22}H_{29}NO_2$

[a] Distilled or crystallized product. [b] All compounds were analyzed for C, H, N and the analytical values were within ±0.4% of the theoretical values. [c] Reflux. [d] 2-(1-Pyrrolidinyl)ethyl. [e] 2-Piperidinoethyl. [f] 2-Morpholinoethyl.

its structure was determined on the basis of analytical and spectral evidence. The identity of III was then confirmed by the direct synthesis from the appropriate aldehyde and amine.

Pharmacological screening included studies of acute toxicity, behavioral effects, action on CNS, and analgetic, antiinflammatory, antipyretic, hypothermic, uricosuric, diuretic, hypoglycemic, antibacterial, antifungal, and antiparasitic actions.

Experimental Section[2]

The intermediate nitriles were prepared as previously described.[3,4] Naphthylacetaldehydes are listed in Table I, and their preparation is illustrated by the following methods.

Method A. 2-(α-Naphthyl)-2-(2-piperidinoethyl)-3-methylbutanal (24).—A suspension of LAH (5.92 g, 0.156 mole) in Et_2O (500 ml) was dropped at room temperature for 5 hr into a stirred solution of α-isopropyl-α-(2-piperidinoethyl)-1-naphthylacetonitrile (50 g, 0.156 mole) in Et_2O (250 ml). The mixture was stirred for an additional 1 hr and cautiously decomposed with 5 *N* HCl (270 ml). After 15 hr stirring at room temperature, the aq layer was separated and first brought to pH 6.9–7.3 with 10% NaOH. The oil which separated was extracted (Et_2O), washed (H_2O), and dried ($MgSO_4$), the solvent was evaporated, and the residue was distilled to give 21.7 g of **24** as a colorless oil, bp 175–177° (0.15 mm). Subsequent basification to pH 8–11 of the original aq layer afforded 10.8 g of *N*-[3-aminomethyl-3-(α-naphthyl)-4-methylpentyl]piperidine.[4] When this compound was not separated the same reaction gave 10.9 g of **24** and, on distillation at 250–260° (0.1 mm), 21.2 g of *N*-[2-(α-naphthyl)-2-(2-piperidinoethyl)-3-methylbutyl]-2-(α-naphthyl)-2-(2-piperidinoethyl)-3-methylbutylideneimine as a pale yellow solid, mp 87–89°. The same product was obtained in 76% yield by a 24-hr heating at 155–165° of an equimolar mixture of **24** and its related amine, followed by distillation of the reaction product under reduced pressure. The ir and nmr spectra were consistent with the proposed structure. *Anal.* ($C_{44}H_{59}N_3$) C, H, N.

Method B. 2-(α-Naphthyl)-2-(2-dimethylaminoethyl)-3-methylpentanal (5).—EtOH (7.82 g, 0.17 mole) was dropped at 5° for 20 min into a stirred suspension of LAH (6.45 g, 0.17 mole) in Et_2O (550 ml). After an additional 30-min stirring, a solution of α-*sec*-butyl-α-(2-dimethylaminoethyl)-1-naphthylacetonitrile (50 g, 0.17 mole) in Et_2O (50 ml) was added to the mixture during 1 hr. The mixture was then refluxed for 3 hr with stirring, cooled, and cautiously decomposed with 5 *N* HCl (270 ml). After 15 hr stirring at room temperature, the aq layer was separated and

(2) Boiling points are uncorrected. Melting points are corrected and were taken on a Büchi capillary melting point apparatus.

(3) S. Casadio, G. Pala, E. Crescenzi, T. Bruzzese, E. Marazzi-Uberti, and G. Coppi, *J. Med. Chem.*, **8**, 589 (1965).

(4) G. Pala, S. Casadio, T. Bruzzese, E. Crescenzi, and E. Marazzi-Uberti, *ibid.*, **8**, 698 (1965).

Table II

Pharmacological Screening Results

Compd	Approx LD_{50} (mouse), mg/kg ip	Hypothermic act (mouse)[a]	mg/kg os	Antipyretic act (mouse)[a]	mg/kg os	Anti-inflammatory act (rat) Inhib of edema, %[b]	mg/kg os	Analgetic act (rat)[a]	mg/kg os	Uricosuric act (rat) increase, %[c]	Diuretic act (rat) test vol[d] / control vol	Hypoglycemic act (rat) blood sugar decrease, %[e]
1	48	Inact	25	Inact	25	13.8	25	Inact	25	36.9	2.30	Inact
2	66	+12.38	50	+18.56	50	Inact	50	Inact	50	Inact	Inact	Inact
3	36	Inact	25	+5.26	25	Inact	25	Inact	25	Inact	1.37	15.6
4	36	Inact	25	+8.62	25	26.8	25	Inact	25	31.6	2.02	Inact
5	45	Inact	25	Inact	25	Inact	25	Inact	25	25.4	2.24	Inact
6	140	Inact	100	Inact	100	Inact	100	+57.14	100	14.9	1.27	13.2
7	50	Inact	50	+5.38	50	14.4	50	+68.88	50	10.3	1.30	14.8
8	48	Inact	25	+4.92	25	Inact	25	Inact	25	16.4	1.61	12.8
9	140	Inact	200	+6.04	200	Inact	200	Inact	200	Inact	1.47	Inact
10	51	Inact	50	+14.20	50	Inact	50	+38.60	50	Inact	1.24	10.0
11	38	Inact	50	+18.16	50	Inact	50	Inact	50	18.6	2.15	14.7
12	140	Inact	200	+11.20	200	17.2	200	+41.10	200	Inact	Inact	Inact
13	203	+8.58	100	+12.52	100	Inact	100	+59.46	100	Inact	Inact	14.2
14	44	Inact	25	Inact	25	Inact	25	Inact	25	Inact	1.80	Inact
15	36	Inact	50	+8.50	50	24.9	50	Inact	50	38.7	1.94	15.1
16	100	Inact	100	+16.38	100	Inact	100	Inact	100	Inact	Inact	12.5
17	50	Inact	25	Inact	25	Inact	25	Inact	25	11.7	Inact	26.6
18	95	Inact	25	Inact	25	Inact	25	+29.24	25	34.2	1.56	17.6
19	52	Inact	25	Inact	25	Inact	25	Inact	25	Inact	Inact	Inact
20	50	Inact	25	Inact	25	15.2	25	Inact	25	Inact	1.69	13.7
21	82	Inact	25	Inact	25	Inact	25	Inact	25	19.9	1.77	Inact
22	71	Inact	100	Inact	100	26.0	100	Inact	100	50.0	Inact	Inact
23	140	Inact	50	Inact	50	Inact	50	Inact	50	Inact	1.23	Inact
24	140	Inact	50	Inact	50	Inact	50	Inact	50	Inact	Inact	13.5
25	140	Inact	100	+4.52	100	Inact	100	Inact	100	Inact	Inact	9.9
26	103	Inact	100	+9.24	100	Inact	100	Inact	100	Inact	Inact	Inact
27	140	+8.40	100	+14.34	100	Inact	100	Inact	100	Inact	Inact	Inact
28	100	Inact	100	+7.98	100	25.8	100	+48.40	100	30.9	1.35	Inact
29	580	Inact	200	+7.64	200	Inact	200	Inact	200	Inact	Inact	16.9
30	420	Inact	100	Inact	100	Inact	100	Inact	100	17.5	Inact	Inact
31	400	+5.98	200	+8.66	200	24.7	200	Inact	200	Inact	Inact	Inact
32	410	Inact	100	+5.64	100	Inact	100	Inact	100	Inact	Inact	10.9
33	440	Inact	200	+13.12	200	Inact	200	Inact	200	Inact	Inact	Inact
34	270	+18.22	200	+21.56	200	20.0	200	Inact	200	11.9	1.24	Inact
35	52	Inact	50	+10.36	50	Inact	50	+32.16	50	Inact	Inact	Inact
36	58	+6.22	50	+5.42	50	Inact	50	+44.44	50	Inact	Inact	Inact
37	450	+23.40	400	+19.66	400	Inact	400	Inact	400	Inact	Inact	Inact
38	560	+32.28	400	+40.58	400	Inact	400	Inact	400	Inact	Inact	Inact
Phenylbutazone		Inact	100	+8.96	100	17.9	25	+67.31	25	82.5		
Dihydrochlorothiazide											1.57	
Chlorpropamide												32.0

[a] The results are expressed in arbitrary units (higher the value, higher the effect). [b] Carrageenin-induced edema. [c] The compounds were tested orally at 100 mg/kg, the standard phenylbutazone at 50 mg/kg. [d] The compounds were tested orally at 100 mg/kg, the standard dihydrochlorothiazide at 10 mg/kg. [e] The compounds were tested orally at 100 mg/kg, the standard chlorpropamide at 50 mg/kg.

basified with 10% NaOH. The product which separated at pH 8–8.5 was extracted (Et_2O) and worked up as described in method A to give 30.7 g of **5** as a colorless oil, bp 150–152° (0.15 mm). 1-Dimethylamino-3-aminomethyl-3-(α-naphthyl)-4-methylhexane[1] (7.1 g) precipitated at pH 11.

Method C. 2-(α-Naphthyl)-2-(2-morpholinoethyl)pentanal (29).—EtOH (15.4 g, 0.334 mole) was dropped at 5° for 20 min into a stirred suspension of LAH (6.36 g, 0.167 mole) in Et_2O (500 ml). After an additional 30-min stirring, a solution of α-propyl-α-(2-morpholinoethyl)-1-naphthylacetonitrile (45 g, 0.139 mole) in Et_2O (200 ml) was added to the mixture during 1 hr. The mixture was then refluxed for 3 hr with stirring, cooled, and cautiously decomposed with 5 *N* HCl (270 ml). After 15 hr stirring at room temperature, the aq layer was separated and basified with 10% NaOH. The product which separated at pH 5.1–6.5 was extracted (Et_2O) and worked up as described in method A to give 25.9 g of **29** as a colorless oil, bp 179–180° (0.1 mm). *N*-[3-Aminomethyl-3-(α-naphthyl)hexyl]morpholine[1] (2.4 g) precipitated at pH 11.

Results and Discussion

The most interesting results of the pharmacological screening are given in Table II. Test procedures and

reference standards were identical with those reported previously.[5-9]

Some of the substances exerted a general CNS depression, this effect having however only slight pharmacological significance. A number of the compounds displayed a marked antipyretic activity not accompanied by hypothermic action, the activity of **10** and **11** being also superior to that of phenylbutazone. Compounds **6**, **7**, and **13** markedly increased the pain threshold of rats, even though less than phenylbutazone. In anti-inflammatory action, a number of the substances inhibited the carrageenin-induced edema, and the effect of **4** was also superior to that of phenylbutazone. Some of the compounds displayed a noteworthy uricosuric activity, even though inferior to that of phenylbutazone. The diuretic action of **1**, **4**, **5**, and **11** was significant but clearly inferior to that of dihydrochlorothiazide. A number of the substances displayed hypoglycemic action, but in this case, too, the potency was inferior to that of the standard (chlorpropamide). None of the compounds showed significant antibacterial, antifungal, and antiparasitic activities.

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Synthesis and Pharmacological Properties of N-Derivatives of 5,7,12,13-Tetrahydro-6*H*-dibenz[*c*,*g*]azonine

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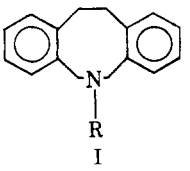
Twenty N-substituted 5,7,12,13-tetrahydro-6*H*-dibenz[*c*,*g*]azonines were prepared for pharmacological screening. Some of the substances displayed considerable antitussive activity, and of these 5,7,12,13-tetrahydro-6-(2-pyrrolidinoethyl)dibenz[*c*,*g*]azonine (**15**) was found to be the most promising.

We have recently reported on the pharmacological properties of N-substituted 5,6-dihydro-7*H*,12*H*-dibenz[*c*,*f*]azocines.[1] This paper deals with the preparation and pharmacological screening of the corresponding derivatives of the homolog, 5,7,12,13-tetrahydro-6*H*-dibenz[*c*,*g*]azonine (I).



I

Alkyl, hydroxyalkyl, and two aminoalkyl derivatives (**12** and **13**) were prepared by reaction of 2,2′-bis(bromomethyl)diphenylethane with the proper amines. Chloroalkyl derivatives were obtained by reaction of $SOCl_2$ with corresponding hydroxyalkyl compounds, while the other aminoalkyl derivatives were synthesized by treating the chloroalkyl compounds with the proper amines.

Pharmacological screening included studies of acute toxicity, behavioral effects, action on CNS and on arterial pressure, and analgetic, antiinflammatory, diuretic, antitussive, hypoglycemic, antispasmodic, local anesthetic, peripheral vasodilator, anthelmintic, antibacterial, and antifungal actions.

Experimental Section[2]

The intermediate amines, were prepared as previously described.[1] **N-Substituted 5,7,12,13-tetrahydro-6*H*-dibenz[*c*,*g*]azonines** are listed in Table I, and their preparation is illustrated by the following methods.

Method A. 5,7,12,13-Tetrahydro-6-(2-hydroxyethyl)dibenz[*c*,*g*]azonine (6).—A solution of 1-amino-2-hydroxyethane (10.6 g, 0.17 mole) in MeCN (10 ml) was dropped during 30 min into a boiling solution of 2,2′-bis(bromomethyl)diphenylethane[3] (20 g, 0.054 mole) in MeCN (450 ml). The mixture was refluxed for 2 hr with stirring, the solvent was evapd, and the residue was poured into H_2O. The solid which sepd was filtered, dried, and recrystallized from dil EtOH to give colorless crystals, mp 137–138°.

Method B. 5,7,12,13-Tetrahydro-6-(2-chloroethyl)dibenz[*c*,*g*]azonine (9).—$SOCl_2$ (20.7 g, 0.174 mole) was dropped during 30 min into a boiling solution of **6** (13 g, 0.048 mole) in dry C_6H_6 (350 ml). The suspension was refluxed for 1 hr and then the solvent and excess $SOCl_2$ were distd off. The residue was taken up with EtOH, filtered, suspended in H_2O, and made alkaline with 10% NaOH. The product was then extracted with $CHCl_3$ and the extract was washed (H_2O) and dried (Na_2SO_4). Evaporation of the solvent yielded a solid which, on recrystn from petroleum ether (bp 40–70°), gave colorless crystals, mp 116–117°.

Method C. 5,7,12,13-Tetrahydro-6-(1-methyl-3-piperidylmethyl)dibenz[*c*,*g*]azonine·HCl (12).—A solution of 1-methyl-3-aminomethylpiperidine (26.75 g, 0.208 mole) and 2,2′-bis(bromomethyl)diphenylethane (24 g, 0.065 mole) in 1-hexanol (300 ml) was refluxed for 15 hr. The solvent was evapd and the residue was dissolved in dil HCl. The acid solution was filtered with charcoal and made neutral with 10% NaOH. Upon standing

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