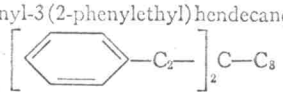
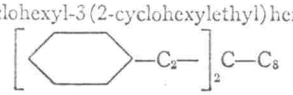
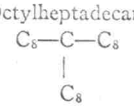
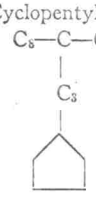
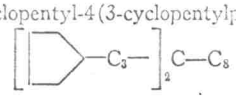
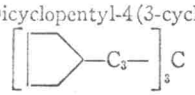
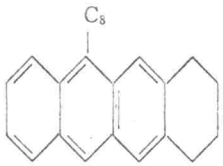
TABLE I. Structures and some pertinent properties of the seven pure hydrocarbons.

PSU No.	Structure[a] and name	Density[b] g/cc	$(1/\eta)(\partial\eta/\partial T)_p$[b] per °C	Melting point °C	Boiling point at 1 mm °C
18	1-Phenyl-3(2-phenylethyl)hendecane 	0.9094	0.0362	Below −60	197.0
19	1-Cyclohexyl-3(2-cyclohexylethyl)hendecane 	0.8548	0.0482	Glass −40	194.5
25	9-*n*-Octylheptadecane 	0.7905	0.0306	−13.8	184.0
110	9(3-Cyclopentylpropyl)heptadecane 	0.8178	0.0324	−20.6	188.0
111	1-Cyclopentyl-4(3-cyclopentylpropyl)dodecane 	0.8469	0.0358	Approx. −40	193.0
113	1,7-Dicyclopentyl-4(3-cyclopentylpropyl)heptane 	0.8774	0.0432	−23.7	198.0
179	9-*n*-Octyl(1,2,3,4-tetrahydro)naphthacene 	1.0122	0.1048	...	245.0

[a] Skeletal structures in which notation such as C_8 refers to straight chain of eight carbon atoms containing all appropriate hydrogens.
[b] η is the absolute viscosity. The densities and also the slopes of the η *vs* T curves were determined at 37.8°C (100°F).

varies linearly with pressure.[9] The particular coil used in this work had a resistance of about 125 ohms at atmospheric pressure. The slope of the pressure resistance curve for this gauge, about 3.2×10^{-4} ohm/bar, was determined using a deadweight gauge. Pressure changes could be measured to ±1 bar.

The viscometer was calibrated at 37.78°C and atmospheric pressure by filling with fourteen liquids of known viscosity and density and measuring the corresponding roll times. The calibration extended from 1.5 to 990 cp and above 10 cp was in accordance with the linear equation

$$\eta = k(d_s - d_l)t + c, \qquad (1)$$

where η is the absolute viscosity, k and c constants depending on the dimensions of the apparatus, d_s and d_l the densities of sphere and liquids, respectively, and t the roll time. Below 10 cp the viscosity was determined by reading directly from a calibration curve.

III. EXPERIMENTAL RESULTS

A study of the pressure-viscosity relation has been made on seven of the PSU hydrocarbons and three

[9] P. W. Bridgman, *The Physics of High Pressure* (G. Bell and Sons, London, 1949), Chaps. 9, 12.

TABLE II.[a] A

PSU No.	Temp.[d] (°C)
18	37.8 60 98.9
19	37.8 60 98.9
25	37.8 60 98.9
110	37.8 60 98.9 135
111	37.8 60 98.9
113	37.8 60 98.9 135
179[a]	37.8 60 98.9 135

[a] The viscosity valu
fore not as pure as 99
at 37.8°C 134.1 at 60°
work reported herein
the atmospheric valu
[b] Based on atmosph
[c] The pressure valu
[d] The centigrade te

binary mixtures o
liquids and some p
compounds are sh
carbons are close
179 was included
the effect of a ra
ame molecular w
were made at 37.
PSU 19, PSU 25, a
and the mixtures
to the above temp
viscometer calibra
at the pressure in
tion of the viscosi
98.9°C, and PSU
and 98.9°C the
determined over th
measurements.[10]

‡ The temperatures
and 275°F, respectively
[10] Cutler, McMickle
29, 727 (1958).