C. REACTOR EFFLUENT

In Figures IV and V, pages 11 and 12, the hydrogen, carbon monoxide, carbon dioxide, water, and methane concentrations have been plotted as mol per cent appearing in the effluent compared with contraction. Some of the data were very erratic, particularly in the case of carbon monoxide, but there were enough consistent points to obtain fairly reliable plots. The ratios of hydrogen to water and of carbon dioxide to carbon mon-

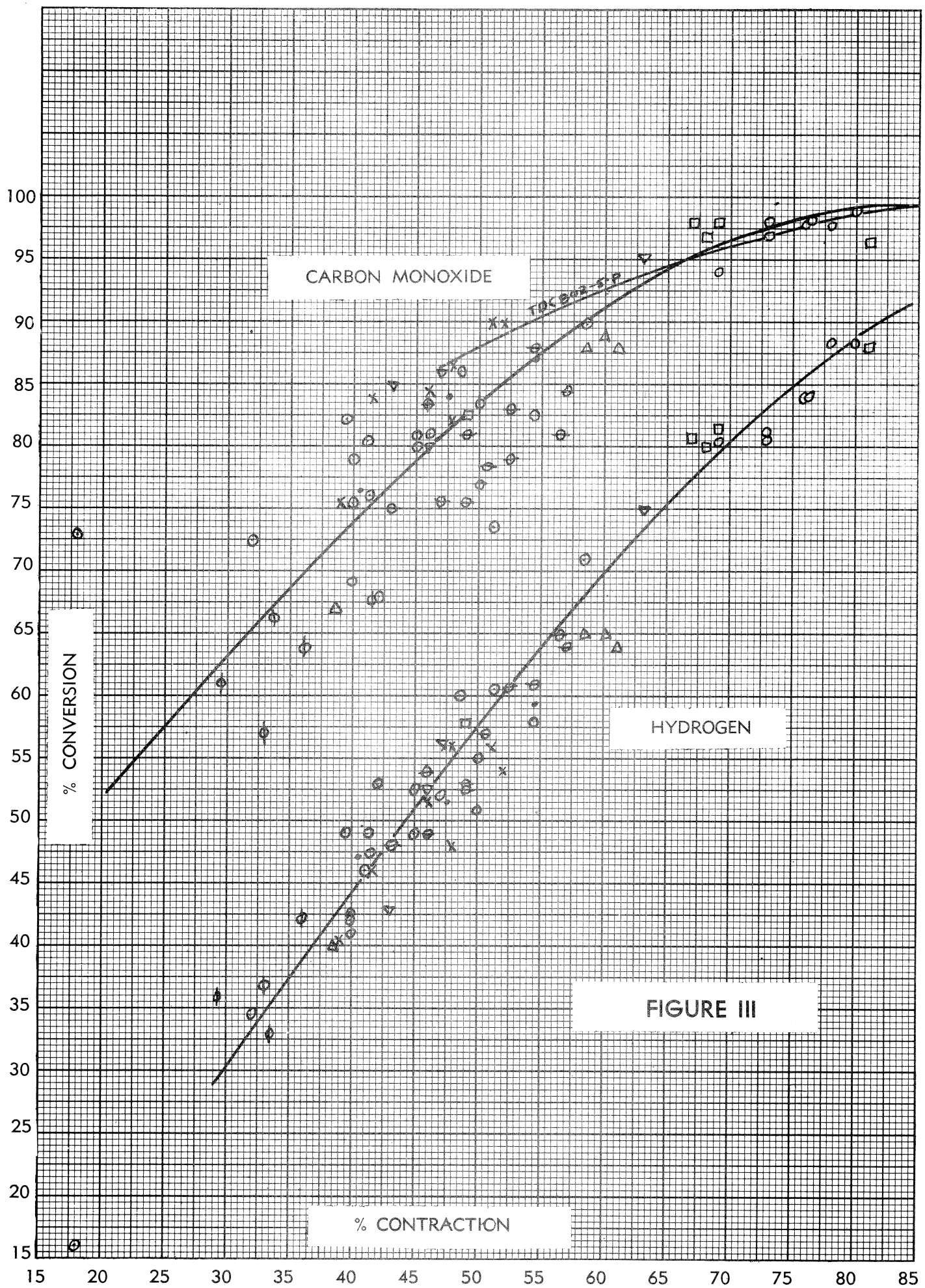
CARBON MONOXIDE
HYDROGEN
% CONVERSION
% CONTRACTION
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85

FIGURE III

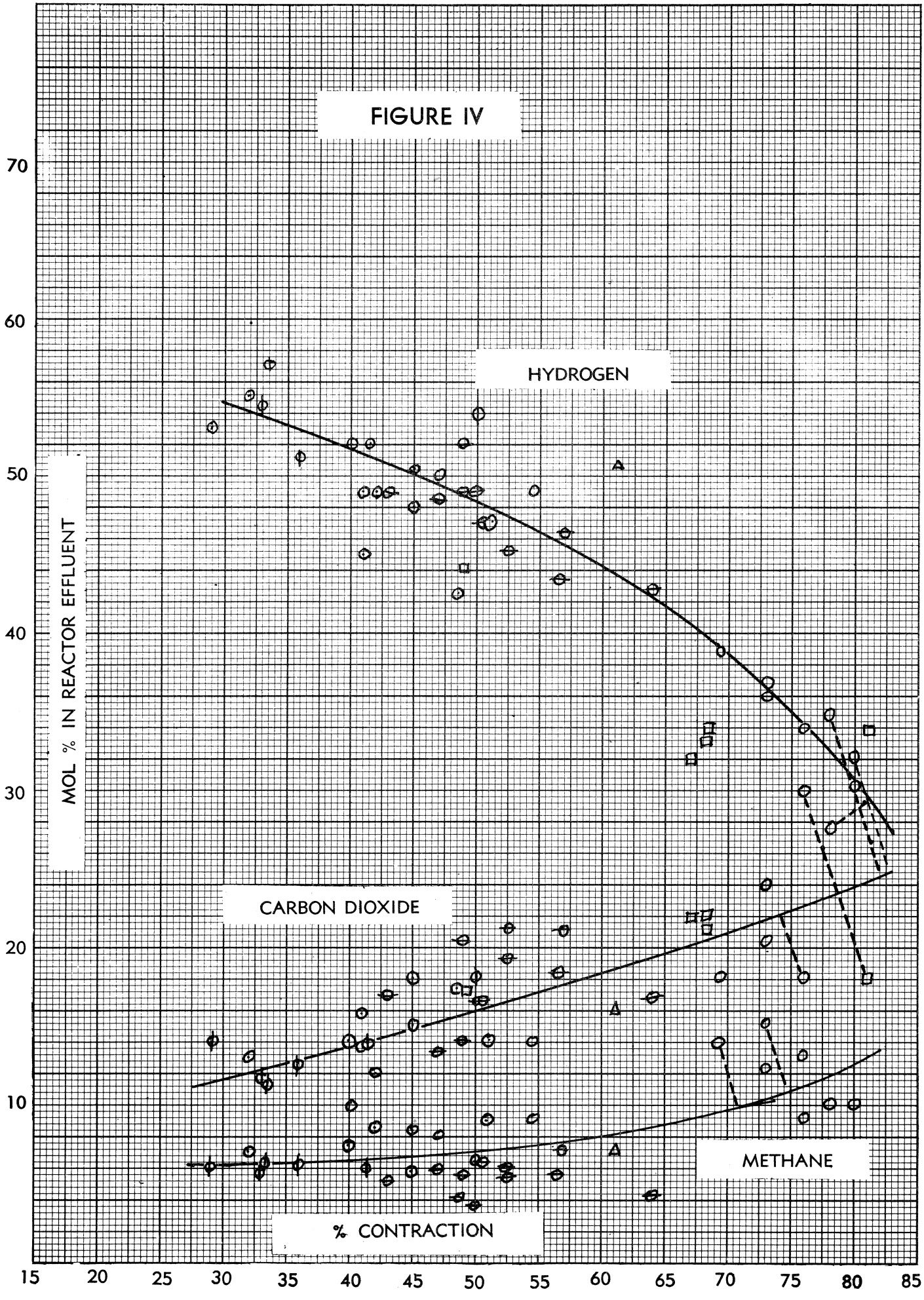
FIGURE IV
HYDROGEN
CARBON DIOXIDE
METHANE
MOL % IN REACTOR EFFLUENT
% CONTRACTION
70
60
50
40
30
20
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85

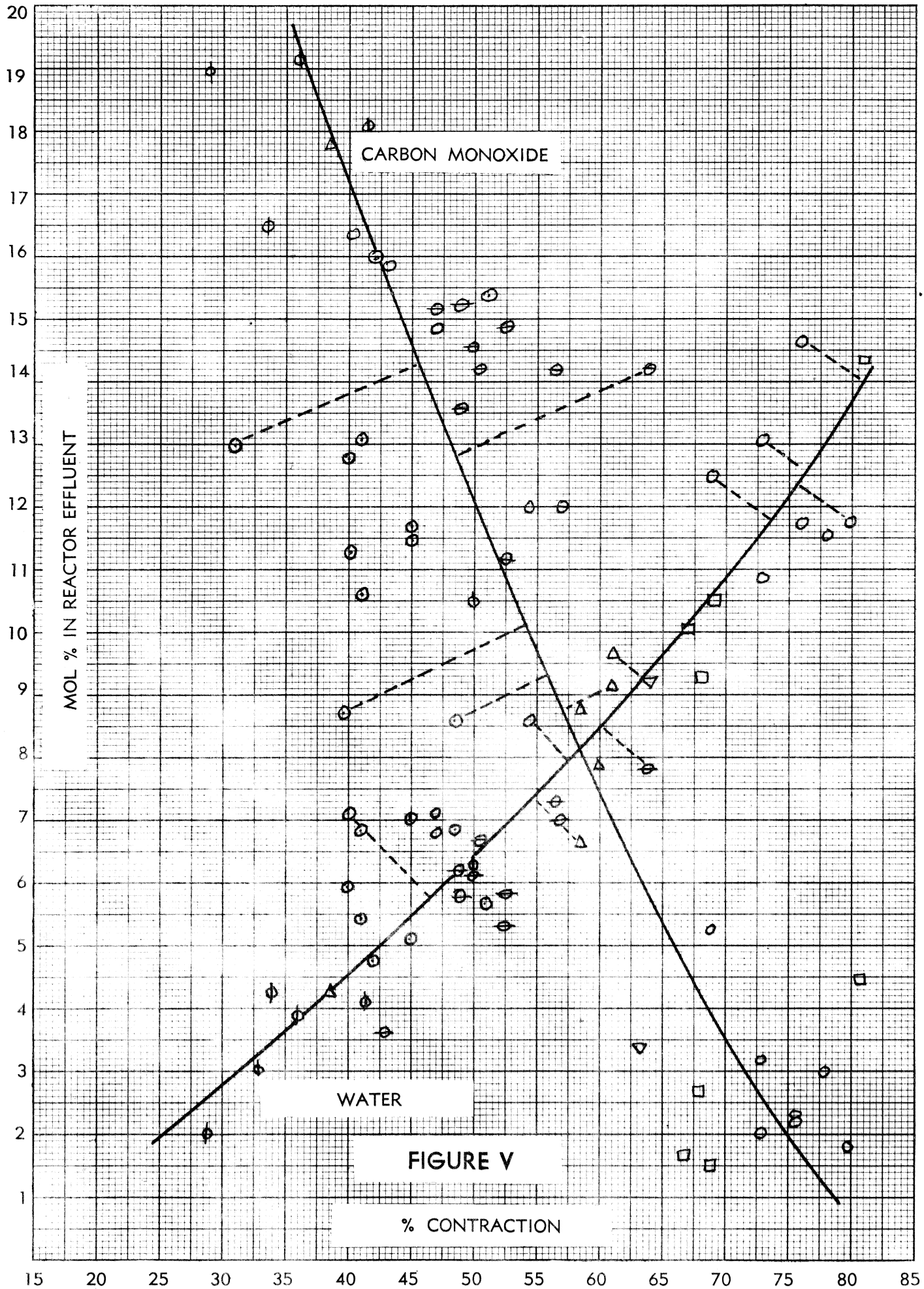
CARBON MONOXIDE
WATER
MOL % IN REACTOR EFFLUENT
% CONTRACTION
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85

FIGURE V

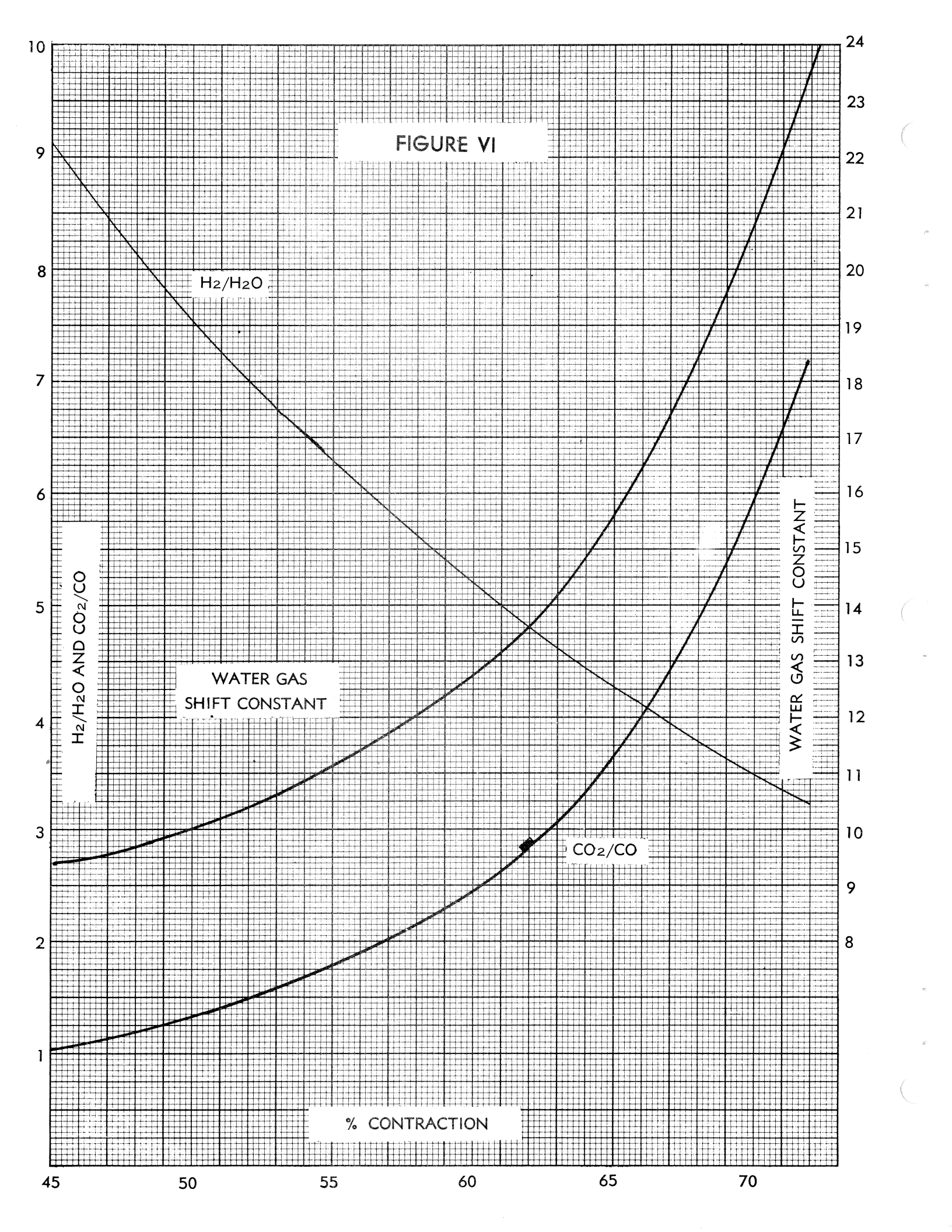
FIGURE VI
H2/H2O
WATER GAS
SHIFT CONSTANT
CO2/CO
H2/H2O AND CO2/CO
WATER GAS SHIFT CONSTANT
% CONTRACTION
10
9
8
7
6
5
4
3
2
1
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
45
50
55
60
65
70

oxide were plotted against contraction in the opposite Figure VI. The product of these two ratios represents the water gas shift constant and has been plotted in this same Figure. Since the temperatures in the reactor usually varied between 610°F. and 675°F., the shift constant values should be between 20 and 30; but as can be seen from the plot, the figures actually obtained were between 10 and 23. It appears that equilibrium was approached only under conditions that gave high contractions.