COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Hydrofluoric acid; HF; [7664-39-3] (3) Water; H_2O; [7732-18-5]	Jaeger, A. Z. *Anorg. Chem.* 1901, 27, 22-40.
VARIABLES:	PREPARED BY:
Concentration of HF at 25°C.	T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of HgO in aqueous HF at 25°C.

C_{HF}/mol dm^{-3}	g Hg/9.6 ccm	C_{HgO}/mol dm^{-3}
0.12	0.0242	0.01258
0.24	0.0475	0.0247
0.57	0.1210	0.0629
1.11	0.2247	0.1168
2.17	0.4976	0.2586

The solid phase is not identified but the implication is that it is HgO.

The concentration of HgO varies almost linearly with the concentration of HF. The author concludes from this that the reaction of dissolution is

$$HgO(s) + H_2F_2 = HgF_2 + H_2O,$$

i.e., the molecular formula of hydrogen fluoride is H_2F_2.

In additional experiments, details of which are not included in the article, the solubility of HgO in aqueous HF was found to decrease when KF was added to the aqueous HF. The author attributes this to the lack of formation of mercury fluoride complexes.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Mixtures of red HgO and aqueous HF were shaken in a thermostat at 25°C. The mercury content of the saturated solutions was determined by electrolysis. No information is given about the length of time the mixtures were shaken. The glass apparatus was protected from attack by the HF by coating it with bee's wax or a commercially available gelatin-like material.	The materials were of a chemically pure grade.
	ESTIMATED ERROR: No details are given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Barium hydroxide; $Ba(OH)_2$; [17194-00-2] (3) Water; H_2O; [7732-18-5]	Schick, K. Z. *physik. Chem.* 1903, *42*, 155-173.
VARIABLES: Red and yellow HgO were used at 25°C.	**PREPARED BY:** T. P. Dirkse

EXPERIMENTAL VALUES:

Table I

Solubility of HgO in water at 25.0°C.

yellow HgO	0.0518 g dm^{-3}	2.39×10^{-4} mol dm^{-3} [a]
red HgO	0.0513 g dm^{-3}	2.37×10^{-4} mol dm^{-3} [a]

[a] Calculated by compiler.

Table II

Solubility of yellow HgO in barium hydroxide solutions at 25.0°C.

mol $Ba(OH)_2$ dm^{-3}	g HgO dm^{-3}	mol HgO dm^{-3} [a]
0.024	0.0586	2.71×10^{-4}
0.13	0.1363	6.29×10^{-4}

[a] Calculated by compiler.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Oxide-solvent mixtures were shaken in a closed vessel in a thermostat for a week, allowed to settle for 36 hours, and filtered. The mercury content was determined by two methods: (a) add 5 g NaCl to 100 ml of solution, heat to boiling and cool to 40-50°C, add phenolphthalein and titrate the NaOH produced by this reaction with HCl; (b) evaporate an aliquot of the solution to dryness and weigh the residue. Equilibrium was approached from both supersaturation and under saturation.

SOURCE AND PURITY OF MATERIALS:

Conductivity water and purified forms of the red and yellow HgO were used.

ESTIMATED ERROR:

The impurities in the oxides were estimated at less than 0.005%.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II)oxide; HgO: [21908-53-2] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H_2O; [7732-18-5]	Fuseya, G. *J. Am. Chem. Soc.* 1920, 42, 368-71.
VARIABLES: Concentration of NaOH at 25°C.	**PREPARED BY:** T. P. Dirkse

EXPERIMENTAL VALUES:

Red HgO was used. The results are reported at 25±0.01°C.

mol dm^{-3} NaOH	mol dm^{-3} OH^- [a]	Milligrams HgS in 100 ml solution	mol dm^{-3} HgO [b]	equilibrium constant [b,c]
2.09	1.253	7.20	3.09×10^{-4}	3.06×10^{-5}
1.0758	0.7660	6.52	2.80×10^{-4}	3.25×10^{-5}
0.502	0.4257	6.17	2.65×10^{-4}	3.98×10^{-5}
0.0955	0.0863	5.79	2.49×10^{-4}	4.19×10^{-5}
0.0503	0.0465	5.75	2.47×10^{-4}	3.98×10^{-5}
0.0096	0.0091	5.73	2.46×10^{-4}	-----
0.0000	0.0000	5.43	2.33×10^{-4}	----

[a] Values obtained by multiplying the NaOH concentration by the corresponding equivalent conductance ratios (1).

[b] Calculated by the compiler. The calculations in the original paper are in error.

[c] For the reaction $OH^- + HgO(s) \rightarrow HHgO_2^-$ on the basis of the following assumptions: (1) the total concentration of the OH^- ion is not appreciably altered by the reaction with HgO; (2) the degree of ionization of $NaHgO_2$ is the same as that of NaOH; (3) the solubility of HgO in water is the extrapolated value rather than the directly determined value.

Extrapolation of the solubility values in NaOH solutions gives a value of 2.45×10^{-4} mol dm^{-3} for the solubility of HgO in water. This is significantly higher than the directly determined value. The suggested explanation was that the NaOH disperses the HgO into finer, and more soluble particles.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Excess HgO was sealed in tubes containing the solvent. Half the solutions were agitated at 25°C for 4 days; the other half were agitated at 40°C for 4 days and then 4 days at 25°C. For analysis, the mixtures were acidified with HCl and treated with H_2S. The HgS precipitate was dried at 110°C and weighed.	Triple distilled Hg was dissolved in HNO_3, the solution was evaporated to dryness, and the resultant $Hg(NO_3)_2$ was heated to form HgO. The NaOH solutions were prepared by electrolytic decomposition of sodium amalgam. Conductivity water was used.
	ESTIMATED ERROR: This cannot be determined from the data given. The analytical data show that the differences between individual values and the mean value range from 0.5 to 4.1% of the mean value.
	REFERENCES: 1. Noyes, A. A.; Falk, K. G. *J. Am. Chem. Soc.* 1912, *34*, 454.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Lithium hydroxide; LiOH; [1310-65-2] (3) Water; H_2O; [7732-18-5]	Garrett, A. B.; Hirschler, A. E. *J. Am. Chem. Soc.* 1938, *60*, 299-306
VARIABLES: Lithium hydroxide concentration at 25°C.	**PREPARED BY:** T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of yellow HgO in LiOH solutions at 25°C.

mol LiOH/kg H_2O	(mol HgO/kg H_2O) x 10^5
0.0689	23.9
0.2019	24.6
0.4667	25.2

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Samples of HgO and solvent were sealed in nitrogen-filled flasks and shaken for 3 weeks at 25°C. Other mixtures were shaken at 42°C for about 3 days and then at 25°C for 3 weeks. After agitation, the samples were allowed to sediment for 4 days, then filtered through a sintered glass filter. Alkali concentration was determined by weight titration using methyl orange indicator. Mercury content was determined by potentiometric titration with KI (1).

SOURCE AND PURITY OF MATERIALS:

Two different preparations of yellow HgO were used. Reagent grade LiOH was dissolved in water and allowed to stand for a while so that the slight precipitate could settle out. Conductivity water was used throughout.

ESTIMATED ERROR:

Mercury analysis had a reproducibility within 0.5% The alkali analysis had an error of less than 5%. Separate solubility values were within 2% of the average.

REFERENCES:

1. Maricq, L. *Bull, soc. chim. belg.* 1928, *37*, 241.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Potassium hydroxide; KOH; [1310-58-3] (3) Water; H_2O; [7732-18-5]	Garrett, A. B.; Hirschler, A. E. *J. Am. Chem. Soc.* 1938, *60*, 299-306
VARIABLES: Concentration of KOH at 25°C.	**PREPARED BY:** T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of yellow HgO in KOH solutions at 25°C.

mol KOH/kg H_2O	(mol HgO/kg H_2O)x 10^5
0.1082	24.0
0.3038	24.3
0.8175	25.3

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Samples of HgO and solvent were sealed in nitrogen-filled flasks and shaken for 3 weeks at 25°C. Other mixtures were shaken at 42°C for about 3 days and then at 25°C for 3 weeks. After agitation, the samples were allowed to sediment for 4 days, then filtered through a sintered glass filter. Alkali concentration was determined by weight titration using methyl orange indicator. Mercury content was determined by potentiometric titration with KI (1).

SOURCE AND PURITY OF MATERIALS:

Two different preparations of yellow HgO were used. The hydroxide solutions were carbonate-free. Conductivity water was used throughout.

ESTIMATED ERROR:

Mercury analysis had a reproducibility within 0.5%. The alkali analysis had an error of less than 5%. Separate solubility values were within 2% of the average.

REFERENCES:

1. Maricq, L. *Bull. soc. chim. belg.* 1928, *37*, 241.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H_2O; [7732-18-5]	Garrett, A. B.; Hirschler, A. E. *J. Am. Chem. Soc.* 1938,*60*, 299-306
VARIABLES: Sodium hydroxide concentration at 25°C.	**PREPARED BY:** T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of yellow HgO in NaOH solutions at 25°C.

mol NaOH/ kg H_2O	(mol HgO/kg H_2O) x 10^5	mol NaOH/ kg H_2O	(mol HgO/kg H_2O) x 10^5
0.0000	23.7	0.2438	24.2
0.00010	23.4	0.2776	24.5
0.00042	23.7	0.3022	24.9
0.00082	23.8	0.3467	24.9
0.0018	23.2	0.5169	24.8 (u)
0.0040	23.7	0.5995	25.5
0.0100	23.7 (u)	0.7372	26.1
0.0207	23.7	0.8515	26.5
0.0290	23.9 (u)	1.006	26.8
0.0477	23.7	1.512	28.2
0.0770	24.2 (u)	1.776	28.4
0.0944	24.3	2.057	28.7 (s)
0.1015	24.4	2.562	29.6
0.1074	24.3	3.263	31.8 (u)
0.1448	24.2	3.405	30.6 (u)
0.1506	24.3 (u)	3.940	31.6
0.1513	24.2	4.460	31.2
0.2230	24.1	5.046	32.2
		5.952	31.1

(s) equilibrium approached from supersaturation only.

(u) equilibrium approached from undersaturation only.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Samples of HgO and solvent were sealed in nitrogen-filled flasks and shaken for 3 weeks at 25°C. Other mixtures were shaken at 42°C. for about 3 days and then at 25°C for 3 weeks. After agitation, the samples were allowed to sediment for 4 days, then filtered through a sintered glass filter. Alkali concentration was determined by weight titration using methyl orange indicator. Mercury content was determined by potentiometric titration with KI (1).	Two different preparations of yellow HgO were used. The hydroxide solutions were carbonate-free. Conductivity water was used throughout.
	ESTIMATED ERROR: Mercury analysis had a reproducibility within 0.5%. The alkali analysis had an error of less than 5%. Separate solubility values were within 2% of the average.
	REFERENCES: 1. Maricq, L. *Bull. soc. chim. belg.* 1928, 37, 241.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H_2O; [7732-18-5]	Garrett, A. B.; Hirschler, A. E. *J. Am. Chem. Soc.* 1938, *60*, 299-306
VARIABLES:	PREPARED BY:
Sodium hydroxide concentration at 25°C.	T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of red HgO in NaOH solutions at 25°C.

mol NaOH/kg H_2O	(mol HgO/kg H_2O) x 10^5
0.0000	22.5
0.00088	22.5
0.0050	22.5
0.0093	22.6
0.0187	22.4
0.1064	22.7 (s)
0.3398	23.1
0.4406	24.2 (s)
0.5818	24.6
0.7223	25.1 (u)
1.001	26.2
1.638	27.2
1.987	27.6 (u)
2.940	29.4
3.956	29.7
4.936	29.8

(s) equilibrium approached from supersaturation only.

(u) equilibrium approached from undersaturation only.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Samples of HgO and solvent were sealed in nitrogen-filled flasks and shaken for 3 weeks at 25°C. Other mixtures were shaken at 42°C for about 3 days and then at 25°C for 3 weeks After agitation, the samples were allowed to sediment for 4 days, then filtered through a sintered glass filter. Alkali concentration was determined by weight titration using methyl orange indicator. Mercury content was determined by potentiometric titration with KI (1)

SOURCE AND PURITY OF MATERIALS:

Five different preparations of red HgO were used. The hydroxide solutions were carbonate-free. Conductivity water was used throughout.

ESTIMATED ERROR:

Mercury analysis had a reproducibility within 0.5%. The alkali analysis had an error of less than 5%. Separate solubility values were within 2% of the average.

REFERENCES:

1. Maricq, L. *Bull, soc. chim. belg.* 1928, *37*, 241.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Nitric acid; HNO_3; [7697-37-2] (3) Water; H_2O; [7732-18-5]	Garrett, A. B.; Howell, W. W. *J. Am. Chem. Soc.* 1939, *61*, 1730-4.
VARIABLES: Concentration of HNO_3 at 25°C.	PREPARED BY: T. P. Dirkse

EXPERIMENTAL VALUES:

Table I

Solubility of red HgO in aqueous nitric acid solutions.

(moles HNO_3/kg H_2O) x 10^3 as samples were made up	(moles HNO_3/kg H_2O) x 10^3 from pH[a]	(moles HgO/kg H_2O) x 10^4
0.100	0.14	2.98
0.200	0.07	3.14
0.300	0.14	2.77 (u)
0.500	0.30	3.48 (s)
0.700	0.38	3.56
0.900	0.48	4.02 (u)
2.00	2.5	6.32
3.00	1.9	9.17
5.00	3.8	14.2
7.00	4.1	20.2
9.00	5.0	27.9
20.0	7.3	64.2 (s)

[a]The value of H^+ so determined was divided by the activity coefficient of HNO_3 (1).

(s) equilibrium approached from supersaturation only.

(u) equilibrium approached from undersaturation only.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:
Samples of HgO and solvent were sealed in nitrogen-filled flasks and shaken for 3 weeks at 25°C. Other such preparations were agitated for about 3 days at 42°C, then transferred to a 25°C. thermostat for 3 weeks. After the agitation the samples were allowed to sediment for about 4 days before analysis. The nitric acid solutions were prepared by dilution of standard solutions. pH was measured after equilibrium by using a glass electrode. Mercury content was determined by potentiometric titration with KI (2).

SOURCE AND PURITY OF MATERIALS:
Materials were reagent grade. Conductivity water was used to make all solutions.

ESTIMATED ERROR:
Nothing is stated and only averages of pairs of values are given.

REFERENCES:
1. Abel, E.; Redlich, D.; Lengyel, B. v. *Z. physik. Chem.* 1928,*132*, 189.
2. Maricq, L. *Bull. soc. chim. belg.* 1928, *37*, 241.

COMPONENTS:	ORIGINAL MEASUREMENTS
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Nitric acid; HNO_3; [7697-37-2] (3) Water; H_2O; [7732-18-5]	Garrett, A. B.; Howell, W. W. *J. Am. Chem. Soc.*, 1939, *61*, 1730-4

Table II

Solubility of yellow HgO in aqueous nitric acid solutions

(moles HNO_3/kg H_2O) x 10^3 as samples were made up	(moles HNO_3/kg H_2O) x 10^3 from pH[a]	(moles HgO/kg H_2O) x 10^4
0.0500	0.032	2.43
0.100	0.055	2.57
0.200	0.095	2.67
0.400	0.29	3.11
0.600	0.40	3.35
0.800	1.5	3.80
1.03		4.15
2.00	1.1	6.08
4.00	3.8	12.1
6.00		18.3
8.00		23.2
10.6		30.0
15.6		50.5
20.0	8.1	65.5
20.0		68.0
30.0		111
30.0		108
40.0		173
40.0		169
50.0	10	217
58.5	10	236
60.0		253
63.4	14	262
68.3	13	299
70.0		312
70.3	13	312
72.2	13	329
74.3	13	333
76.1	13	349
78.0	12	362
97.6	16	449
117	14	536
137		638
140	18	596
156	23	718
160	19	662

[a]The value of H^+ so determined was divided by the activity coefficient of HNO_3 (1).

REFERENCES:

1. Abel, E.; Redlich, D.; Lengyel, B. v. *Z. physik. Chem.* 1928, *132*, 189.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Hydrochloric acid; HCl; [7647-01-0] (3) Water; H_2O; [7732-18-5]	Garrett, A.B.; Lemley, J. *J. Am. Chem. Soc.*, 1942,*64*, 2380-3.
VARIABLES:	**PREPARED BY:**
Concentration of hydrochloric acid. The temperature is not stated but from comparison with other work it apparently is 25°C.	T. P. Dirkse

EXPERIMENTAL VALUES:

Table I

Solubility of yellow HgO in aqueous HCl solutions

(moles HCl/kg H_2O) x 10^2	(moles HgO/kg H_2O) x 10^4	(moles HCl/kg H_2O) x 10^2	(moles HgO/kg H_2O) x 10^4
0.0050	2.47(s)	0.80	18.7
0.010	2.52	0.80	36
0.030	3.7	0.82	18.1
0.030	4.1	0.84	18.6(u)
0.050	4.9	0.86	41.3
0.070	6.5	0.90	19.0
0.090	8.4	1.0	18.5
0.090	7.1	1.0	56
0.10	6.7	1.0	50.3
0.11	7.2	1.2	31
0.13	9.8	3.0	18.9
0.17	11.7	5.0	16.3
0.19	13.0	8.0	17.7
0.20	13.1	10.	19.8(u)
0.40	25.4	12.	22.8(u)
0.50	26.2	12.	34 (s)
0.50	25.8(u)	14.	47 (s)
0.60	29.6	18.	232 (u)
0.70	36.6	20.	414 (s)
0.70	28.7	28.	534 (s)
0.75	20.1(u)	40.	1490 (s)
		50.	1480 (s)

(s) equilibrium approached from supersaturation only.
(u) equilibrium approached from undersaturation only.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Solid HgO was added to solutions and shaken. Solubility was approached from undersaturation and from supersaturation. The general procedure is the same as that used earlier (1).

SOURCE AND PURITY OF MATERIALS:

Reagent grade chemicals and conductivity water were used.

ESTIMATED ERROR:

No estimate is given and the precision of the analyses cannot be inferred from the data given.

REFERENCES:

1. Garrett, A.B.; Howell, W. W. *J. Am. Chem. Soc.*, 1939, *61*,1730.

COMPONENTS:	ORIGINAL MEASUREMENTS
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Hydrochloric acid; HCl; [7647-01-0] (3) Water; H_2O; [7732-18-5]	Garrett, A.B.; Lemley, J. *J. Am. Chem. Soc.*, 1942,*64*, 2380-3.

EXPERIMENTAL VALUES continued...

Table II

Solubility of yellow HgO in aqueous HCl solutions

moles HCl/kg H_2O	(moles HgO/ kg H_2O) x 10^4	pH[a]	Solid phase color	%Hg
0.00100	9.0	5.0	yellow	
0.00300	20.8	4.9	yellow	
0.00500	3.18	4.9	yellow	
0.00700	40.7	4.7	yellow & black	
0.0090	28.9	4.9	yellow & black	
0.0120	30.9	5.1	yellow & black	
0.0160	29.1	5.0	yellow & black	
0.0200	22.1	4.8	yellow & black	
0.0300	15.0	5.0	yellow & black	
0.0400	10.0	5.2	yellow & black	
0.0500	21.6	5.1	brown	
0.1007	82	4.0	black	
0.1210	237	4.1	black	
0.1412	387	4.2	black	85.4
0.1614	545	4.0	black	
0.2018	880	3.8	black	85.5
0.2425	1150	3.9	black	85.6
0.2832	1410		black	85.4

[a]determined with a glass electrode

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H_2O; [7732-18-5]	Salem, T. M. J. *Indian Chem. Soc.* 1959, *36*, 83-6.
VARIABLES:	PREPARED BY:
NaOH concentration and pH at 35°C.	T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of red HgO in aqueous solutions at 35°C.

Solution	g Hg dm^{-3}	(mol HgO dm^{-3}) x 10^4	pH[a]
water	0.0696	3.47	
Buffers			
pH = 7.05	0.116	5.78	
pH = 7.55	0.0945	4.71	
pH = 8.09	0.0780	3.89	
pH = 9.11	0.0810	4.04	
NaOH mol dm^{-3}			
3.68 x 10^{-4}	0.0850	4.24	10.22
2.06 x 10^{-3}	0.0860	4.29	10.96
3.19 x 10^{-2}	0.0885	4.41	12.08
5.00 x 10^{-2}	0.0910	4.54	12.24
2.65 x 10^{-1}	0.0941	4.69	12.94
3.00 x 10^{-1}	0.0960	4.79	13.19

[a] There is no indication how these values were obtained.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Red HgO was shaken with the solution under a N_2 atmosphere for 120 hours at 50°C. and then at 35 ± 0.02°C. for 3 to 5 days. The clear solution was filtered through a sintered glass filter and analyzed. Mercury content was determined by potentiometric titration with KI. Buffer solutions were prepared according to the direction given by Palitzsch (1).

SOURCE AND PURITY OF MATERIALS:

Conductivity water and reagent grade chemicals were used.

ESTIMATED ERROR:

Mercury analyses had an error of not more than 1%.

REFERENCES:

1. Britton, H. T. S. *Hydrogen Ions*. 2nd Ed. Chapman and Hall, Ltd. London, 1932, p. 219.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury (II) oxide; HgO; [21908-53-2] (2) Sodium perchlorate; $NaClO_4$; [7601-89-0] (3) Water; H_2O; [7732-18-5]	Dyrssen, D.; Tyrrell, V. *Acta Chem. Scand.* 1961, 15, 393-402 and 1622
VARIABLES: pH at 25°C	PREPARED BY: T. P. Dirkse

EXPERIMENTAL VALUES:

Table I

Solubility of red HgO in 3 mol dm^{-3} $NaClO_4$ solutions.

Concentrations are expressed as mol dm^{-3}

-log [HgO]	-log [H^+]
1.657	2.023
2.371	2.402
2.509	2.523
2.698	2.616
2.799	2.660
2.764	2.698
2.799	2.723
2.964	2.768
3.124	2.903
3.199	3.013
3.246	3.028
3.341	3.157
3.369	3.181
3.551	3.368
3.582	3.508
3.705	3.808
3.737	3.828
3.701	4.233
3.753	4.463
3.746	4.833

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solvents were allowed to percolate through a column containing the solid red HgO. The solid was irradiated for 3 hours in a flux of 5.5×10^{11} neutrons cm^{-2} sec^{-1}. Mercury content was determined by taking a weighed sample, counting the gamma radiation and comparing it with a carefully prepared and analyzed standard. pH measurements were made with a glass electrode. pH was adjusted by adding 0.01 mol dm^{-3} NaOH or $HClO_4$.	Reagent grade materials and conductivity water were used.
	ESTIMATED ERROR: Analyses for individual samples had a standard deviation of 6×10^{-5}, but successive samples from a given system varied by 5% of the measured value. No indication is given as to how precisely the temperature was controlled.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Sodium sulfide; Na_2S; [1313-82-2] (3) Water; H_2O; [7732-18-5]	Milyutina, N. A.; Polyvyannyi, I. R.; Sysoyev, L. N. *Tr. Inst. Metal. Obogashch. AN Kaz. SSR* 1967, *21*, 14-9
VARIABLES: Concentration of sodium sulfide at 25°C	**PREPARED BY:** T. Michalowski

EXPERIMENTAL VALUES:

Solubility of HgO in aqueous Na_2S at 25°C

mol S^{2-} dm^{-3}	mol Hg(II) dm^{-3}	Ionic Strength, mol dm^{-3}	Activity coefficient of Hg(II)
0.18	0.00727	0.899	0.1233
0.518	0.01147	1.265	0.1109
1.5	0.0174	3.634	0.100
1.67	0.01932	4.08	0.1114
2.06	0.0199	5.04	0.1245
2.06	0.0188	5.187	0.127

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

No details are given, but from other work reported by these authors it appears that equilibrium was reached isothermally after agitation for about a day.

SOURCE AND PURITY OF MATERIALS:

The HgO and Na_2S were analytical grade materials.

ESTIMATED ERROR:

This cannot be estimated from the limited amount of information given in the paper.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Hydrofluoric acid; HF; [7664-39-3] (3) Water; H_2O; [7732-18-5]	Polyshchuk, S. A.; Khmeliova, M. G.; Zadneprovsky, G. M.; Kaidalova, T. A.; Kuptsova, N. V. *J. Less-common Metals* 1970, *21*, 63-9.
VARIABLES: Concentration of HF at 25°C.	**PREPARED BY:** T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of red HgO in HF solutions at 25°C.

Composition of solution phase

mass %		mol/kg [a]		composition of
HF	HgO	HF	HgO	solid phase
5.9	6.4	3.4	0.34	HgOHF
6.9	7.7	4.0	0.42	"
10.6	7.5	6.5	0.42	"
15.0	13.1	10.4	0.84	"
18.4	14.6	13.7	1.01	"
23.6	15.0	19.2	1.13	$HgF_2 \cdot 2H_2O$
25.0	15.7	21.1	1.22	"
31.5	11.0	27.4	0.88	"
38.0	8.5	35.5	0.73	"
45.3	7.2	47.7	0.70	"
48.2	8.4	55.5	0.89	"
54.5	7.0	70.8	0.84	"
58.4	5.6	81.1	0.72	"
64.5	5.3	107	0.81	"
70.7	2.8	133	0.49	"

[a] molalities calculated by the compiler

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Solubilities were determined by the isothermal method. Mixtures of red HgO and solvent were shaken in sealed polyethylene vessels at 25°C. Solid phase compositions were determined by the Schreinemakers' method of wet residues. Fluorine was determined by titration with thorium nitrate. Mercury was determined by titration with NH_4SCN.

SOURCE AND PURITY OF MATERIALS:

Reagent grade materials were used.

ESTIMATED ERROR:

Titration errors are stated as less than 0.2%. Water content is estimated to be within 2% of the correct value.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Mercury(II) oxide; HgO; [21908-53-2] (2) Potassium hydroxide; KOH; [1310-58-3] (3) Water; H_2O; [7732-18-5]	Zhou, Weifang; Chen, Xialing *Fudan Xuebao, Ziran Kexueban* 1983, *22*, 229-31.
VARIABLES:	PREPARED BY:
Concentration of KOH and temperature.	T. P. Dirkse

EXPERIMENTAL VALUES:

Solubility of HgO in aqueous KOH [a].

	$10^4 C_{HgO}$/mol dm^{-3}				
t/°C	A[b]	B	C	D	E
25	2.8	3.1	3.2	2.7	2.0
35	4.1	4.4	4.4	3.7	2.8
45	5.8	6.1	5.8	4.8	3.8
55	8.1	8.1	7.3	5.9	5.0

[a] These values are not included in the original article, but were supplied by the authors in a personal communication.

[b] The KOH concentrations (in mass %) for each column is: A = 1; B = 5; C = 10; D = 20; E = 30.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The e.m.f. of the following cell was measured: Hg|Hg(II),KOH(aq)|KOH(aq)|HgO(s)|Hg The KOH concentration was the same in both cell compartments. The concentration of Hg(II) in the left cell compartment was prepared accurately and was less than 50% of the concentration in the right cell compartment. The temperature was controlled to within 0.1°C.	The Hg, HgO and KOH were reagent grade materials. The water was distilled twice.
	ESTIMATED ERROR: Less than 5%.
	REFERENCES: