NH_4OH to 2–3 drrps excess and then added 1 ml of 0.1% dimethylglyoxime alcohol solution. The solution was diluted to 25ml, and resultant color intensity of the solution was measured with pulfrich photometer. In this procedure, the recovery of Ni was found to be about 85%.

Determination of Co: 40–60L of sea water was taken and Co was coprecipitated with Fe $(OH)_3$, and the precipitate was dissolved in HCl and made alkaline citrate solution as in the case of Ni. Then Co was extracted 3-times with each 5ml of 0.01% dithizone-CCl_4 solution. CCl_4 was evaporated to dryness, and ignited at the temperature less than 500°C. The residue was treated with a aquaregia and evaporated to nearly dryness. The residue was treated with a little water, and added 3ml of 10% NH_4SCN solution, 3–4 drops of 20% $SnCl_2$ and 15ml of acetone, then diluted to 25ml. The resultant color intensity was measured. In this procedure, the recovery of Co was found to be about 80%.

The results: Ni and Co in the sea water off shore of Shirahama, Wakayama Prefecture, Japan was found to be 0.8γ Ni/L and 0.5γ Co/L.

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9. On Equilibrium Relation between C, Si in Pig Iron and Slag under One Atomospheric Pressure of Carbon Monoxide Gas

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In case of production of pig iron in blast furnace, the equilibrium relation between pig and slag is the most important factor. Therefore, we determined at 1400°C and 1500°C the equilibrium relation between C, Si in pig iron and SiO_2–CaO–Al_2O_3 system slag under one atm. pressure of carbon monoxide gas. The carbon monoxide gas, which is produced by dropping formic acid into hot conc. sulphuric acid, is purified and is supplied to a hard porcelain tube. The sample, which was prepared from a high carbon white pig iron, artificial slag and metalic silicon is melted in a graphite crucible, which is placed in the above mentioned porcelain tube, and is kept under the planned various lengths of time under one atm. at 1400°C and 1500°C.

Now the graphite crucible is taken out from porcelain tube, and is cooled in water as soon as possible. Temperature is measured by both the optical pyrometer and Pt-PtRh pyrometer.

We determined firstly the duration of time which pig and slag reached the equilibrium. Then we determined the equilibrium relation between the pig and

several kind of slags.

It is found that the time when pig and slag reach the equilibrium is 2.5 hours at 1400°C and 2 hours at 1500°C on the first experiment. The following results were obtained by the second experiment:

Temperature	Pig		Slag			
	C%	Si%	SiO_2%	CaO%	Al_2O_3%	Basicity
1400°C	3.78	3.55	58.9	31.5	9.28	0.53
	4.28	1.87	46.5	41.0	9.70	0.88
	4.52	1.36	44.3	46.5	8.71	1.05
1500°C	3.57	5.67	68.7	20.2	10.34	0.29
	3.71	4.68	57.7	31.8	9.39	0.55
	4.20	2.93	46.1	43.0	9.46	0.93
	4.36	2.21	38.4	50.4	9.42	1.31

From these results we found that the higher the basicity of slag, the larger the solubility of carbon in pig iron and smaller the solubility of silicon in it. Thus from the above results we obtained the equilibrium relation between carbon and silicon in pig iron at 1400°C and 1500°C.

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10. Determination of the Density Change of Glass by the Sink-Float Method. (V). Determination of the Efficient Compacting Schedule of Glass

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To find out the efficient compacting- or stabilizing- schedule of glass, the density change of soda-lime glass of a definite composition subjected to various heat treatments was measured by the sink-float method (cf. this Bull. **19** (1949) 52). Unannealed rods of the glass, 3~5mm. in diameter and ca. 20cm. in length, were treated in the electric furnace having constant linear axial temperature distribution between 600°~400°C. After having been treated for a definite time, the rods were taken out rapidly from the furnace and cooled down in air to room temperature. They were cut and devided into the pieces of 5~10 mm. long and their densities were determined by the above method. It was found that the density of a certain section of rod samples corresponding to a definite heating temperature had the maximum value. The temperature T_m (°C) at which this maximum value occurs decreases with the holding time t (minute) according to the equation (cf. ibid., **25** (1951) 62):