

Contents of the Preprints for the 66th Grand Lecture
Meeting of The Iron and Steel Institute of Japan.

CONTENTS

Lect. No.	T i t l e	Lecturer
1	On the Break Down of Sinter at Transport.	<i>Dr. Kazuo MIYAGAWA, et alii.</i> ...1261
2	Relation between Size Distribution Characteristics of Iron Ore Fines and the Optimum Size for Pelletizing. (Fundamental studies of pelletizing—I)	<i>Hisashi KAHATA, et alii.</i> ...1262
3	Effects of the Mixing Rate of Return Ore on Sintering Properties. (Effects of the size and mixing rate of return ore on sintering properties—II)	<i>Dr. Kenzō ITO, et alii.</i> ...1264
4	On the Variation of the Permeability during Sintering.	<i>Masahiro MAEKAWA, et alii.</i> ...1266
5	Effects of the Limestone Addition on Temperature Distribution of the Sintering Bed. (Studies on sintering process of iron ores with a small sintering apparatus—II)	<i>Yasumoto ŌTAKE, et alii.</i> ...1268
6	On the Effect of Bed-Blending Ore in Sintering.	<i>Tadashi MURAKAMI, et alii.</i> ...1270
7	Study of High Basicity Sinter.	<i>Norihiko SATO, et alii.</i> ...1272
8	Study on Operating Factors of Sintering by Plant Experiment.	<i>Michio YASUNAGA, et alii.</i> ...1273
9	Equipments and Operation of No. 1 Sintering Plant at Mizue Works.	<i>Kazuo FUKAYA, et alii.</i> ...1275
10	Operations of No. 1 Sinter Plant at Chiba Works.	<i>Junsaku KURIHARA, et alii.</i> ...1277
11	Transfer Velocity Distribution of Raw Materials in Sintering Mixer.	<i>Hisashi MORI, et alii.</i> ...1279
12	Sintering Test of Fuel Addition into Semi-Pellets.	<i>Isao AIZAWA, et alii.</i> ...1281
13	Application of Heavy Oil to the Fuel for Sintering.....	<i>Tadashi TSUDA, et alii.</i> ...1282
14	Operating Results, Using Pellets on Hirohata No. 1 Blast Furnace.	<i>Ken KANAMORI, et alii.</i> ...1285
15	Relining of Muroran No. 3 Blast Furnace and Its Operation since Blowing-In.	<i>Tatsuaki WADA, et alii.</i> ...1287
16	Effect of Slag Viscosity on Phenomenon of Escaped Iron from Cinder Notch. (About escaped iron from cinder notch of Muroran No. 4 blast furnace—I)	<i>Yoshio OKUNO, et alii.</i> ...1289
17	About High Blast Pressure with the Phenomenon of Escaped Iron from Cinder Notch. (About escaped iron from cinder notch of Muroran No. 4 blast furnace—II).....	<i>Yoshio OKUNO, et alii.</i> ...1290
18	Investigation of Iron Ore Reduction Rate in Blast Furnace....	<i>Yukihiro ABE, et alii.</i> ...1292
19	Blast Furnace Operation under TiO ₂ -Bearing Iron Ore Charging.	<i>Hideo KANOSHIMA, et alii.</i> ...1294
20	Indirect Reduction and Coke Ratio in Practical Blast Furnace Operation Data. (Iron ore reduction in a blast furnace and coke ratio—II)	<i>Akitoshi SHIGEMI, et alii.</i> ...1295
21	Study of Reduction Process in Shaft of Blast Furnace. ...	<i>Takehiro HORIO, et alii.</i> ...1299
22	Improvement in Burden Size and Its Results on Blast Furnace Operation.	<i>Hiroshi NOMIYAMA, et alii.</i> ...1300
23	Study on the High Blast Temperature Operation of Hot Stove.	<i>Kunio TSUBOI, et alii.</i> ...1302

* To be held on October 18~20, 1963 at Nagoya University.

- 24 On the Higashida No. 1 Blast Furnace Blower.....*Hozumi HASHIGUCHI*...1304
- 25 On the Effects of Powder-Coal Injection into the Blast
Furnace. (Experiments on the powder-coal injection
by 1 t blast furnace—I) *Dr. Mitsuru TATE, et alius.* ...1306
- 26 On the Heat Compensation at Powder-Coal Injection.
(Experiments on the powder-coal injection by 1 t
blast furnace—II)*Cheoul Woo KIM, et alii.* ...1308
- 27 On the Coke-Equivalent of Powder-Coal. (Experiments
on the powder-coal injection by 1 t blast furnace—III)
.....*Chihu NAKANE, et alii.* ...1310
- 28 Consideration on Fuel Injection into Blast Furnace.*Masaharu MATSUI, et alii.* ...1312
- 29 Relation between Si Content and Temperature of Basic
Iron under Heavy Oil Injection.*Sadamu ŌTA, et alii.* ...1314
- 30 Operation of Foundry Pig Iron with Self-Fluxing Sinter
in the Small Blast Furnace.*Masayuki YASUTAKE, et alii.* ...1316
- 31 Measurement of the Wear of Wakayama No. 1 Blast
Furnace Brickwork.*Shyozō OKAMURA, et alii.* ...1319
- 32 Properties of Scars on Brick Linings in Kukioka No. 1
Blast Furnace. (Study on wearing mechanism of
blast furnace linings—III)*Keisuke HIRAGUSHI, et alii.* ...1321
- 33 Several Tests on the Blast Furnace Dusts Collected in
Thickener. (Utilization of sludges—I)*Kinichi SUGAWARA, et alii.* ...1323
- 34 On the Measurement of Dust in Top Gas during Oil
Injection into Blast Furnace.*Toshitaka TSUTSUMI, et alii.* ...1324
- 35 Distinction of Constituted Materials in Blast Furnace
Dust. (Study on blast furnace dust—I)*Tatsuya TSUJI, et alii.* ...1327
- 36 Some Considerations about Micro Distinction of Blast
Furnace Dust and Operation. (Study on blast furnace
dust—II)*Tatsuya TSUJI, et alius.* ...1329
- 37 Measurement of Interfacial Tension between Molten
Graphite Saturated Iron and $\text{CaO-SiO}_2\text{-Al}_2\text{O}_3$ Slags.
(Fundamental study on interfacial phenomena in
iron-and steel-making processes—I).....*Kazumi OGINO, et alii.* ...1331
- 38 Measurement of the Electric Conductivity of Molten
 $\text{SiO}_2\text{-MgO-Al}_2\text{O}_3$ Slags.*Shigeta HARA, et alii.* ...1333
- 39 Solubility of Sulphur in CaO-SiO_2 Binary Slags.*Dr. Kiyoshi SAWAMURA, et alius.* ...1334
- 40 Study of Coke Strength by Drum Method Adopted in
U. S. S. R.....*Masatoshi KOBAYASHI, et alii.* ...1336
- 41 Characteristics of Coke Produced in Usiminas Coke Plant.
..... *Shiro IDA, et alii.* ...1338
- 42 On the Agglomeration and the Re-Oxidation in the Kiln.
(Study on the pre-reduction of iron sand with a rotary
kiln—IV).....*Hideo ARAKAWA, et alius.* ...1340
- 43 On the Abnormal Phenomena in the Kiln. (Study on the
pre-reduction of iron sand with a rotary kiln—V)*Hideo ARAKAWA, et alius.* ...1342
- 44 On the Microstructure of Magnetite Single Crystal Reduced
at Several Temperatures. (Studies on the reduction of
iron ores—II).....*Masanori TOKUDA, et alius.* ...1344
- 45 On the Reduction of Silica Coexisted with Iron by Solid
Carbon.*Tōru TANIMURA, et alius.* ...1345
- 46 Studies on the Carbon Deposition by Thermo-Balance.
(Reduction of iron oxide by the mixed gas of CO and
 H_2 —III).....*Jiro HIRAO.* ...1347

- 47 On the Properties of As-Reduced Sponge-Iron Powder. ...Akimitsu ŌKURA, *et alius.* ...1349
- 48 Separation of Chromium from Lateritic Iron Ore.Takeo FURUI, *et alius.* ...1351
- 49 Some Consideration on the Operation of Blast Furnace by
Theoretical Equation of Energy Balance.....Hiroyoshi SUZUKI. ...1353
- 50 Determination of P and S in Steel and Pig Iron by X-Ray
Fluorescence Analysis.Tomoya ARAI, *et alii.* ...1355
- 51 General Review of the Intrinsic Standard Method. (Fluorescence
X-ray analysis on the intrinsic standard method— I)
..... Dr. Nobuhisa UJIYE, *et alii.* ...1356
- 52 Establishment of Working Conditions of Gas Chromatography.
(Control of protective gas by gas chromatography— I)
.....Nobuya IWAMOTO, *et alii.* ...1358
- 53 Considerations on Quantitative Accuracy of Gas Chromato-
graphy. (Control of protective gas by gas chromatography
— I)Nobuya IWAMOTO, *et alii.* ...1360
- 54 Gas Chromatographic Analysis of Furnace Atmosphere by
CH₄ Internal Standard Method.Asaji HOSOI, *et alii.* ...1361
- 55 Effect of Pig Ratio on the Operational Results. (On the
operation of an LD converter— I)Hachiro ARAKI, *et alii.* ...1363
- 56 Operations with a Few Kinds of Iron Oxide Coolant in the
LD Converter.Hisashi MATSUNAGA, *et alii.* ...1365
- 57 On the Control of Scrap Ratio in an LD Converter.
(Study on the end point control of an LD converter— I) Masao TAKEDA, *et alii.* ...1367
- 58 Some Effects of Oxygen Pressure on [C], [P] and
Temperature at the End Point in LD Process.Yū NIIMIYA, *et alii.* ...1369
- 59 On the Subjects and Equipments of Computer Control System
of an LD Converter. (Computer control of an LD converter
operation— I)Kiyomi TAGUCHI, *et alii.* ...1371
- 60 The Behavior of Some Components during Blowing-in an
Oxygen Converter.Jyunichi KATSUKI, *et alii.* ...1373
- 61 The Equilibrium of Dephosphorization in 150 t Oxygen
Converter at Chiba Works.Jyunichi KATSUKI, *et alius.* ...1375
- 62 A Study of Desulphurization in LD Process.Sankicichi HORI, *et alii.* ...1377
- 63 On the Influence of Si Contents in Hot Metal in LD
Process. (Some study on the influence of hot metal
components— I)Narito KIMURA, *et alii.* ...1379
- 64 Fundamental Consideration about the Melting of Low
Nitrogen Rimmed Steel at Mizue LD Plant. (Behavior
of nitrogen in oxygen converter steelmaking— I)
.....Kiminari KAWAKAMI, *et alii.* ...1380
- 65 Improvement of LD Operation by Multi-Nozzle Lance.
..... Junichi MATSUNO, *et alii.* ...1382
- 66 Duplex Process in Combination of an LD Converter with
an Electric Furnace.Hiroyasu HIRAYAMA, *et alii.* ...1384
- 67 Estimation of Hot Face-Temperature Distribution in
Converter Linings by Means of Used Bricks.Kiyoshi SUGITA, *et alii.* ...1386
- 68 On the Techniques of Immersion Pyrometry in Pouring
Stream of Steel. (Studies on the pouring temperature
of steel— I)Noboru HIRAOKA, *et alius.* ...1388
- 69 Influence of Some Factors on the Temperature Drop of
Molten Steel after Tapping. (On the continuous
immersion pyrometry of molten steel— IV)Noboru HIRAOKA, *et alius.* ...1389
- 70 On the Ladle Design and Ladle Bricks. (The development
of pit yard refractory for recent ten years— I) ...Chikara YAMAGUCHI, *et alius.* ...1391

- 71 Hot Repairs of Ladle Lining with Caster Gun Mix. *Kenichiro UMEDA, et alii.* ...1393
- 72 On the Limestone Calcining Operation in a Rotary Kiln.
.....*Morihiro SHIMABUKURO, et alii.* ...1394
- 73 Study on Homogeneity of Pig Iron in Mixer Using ¹⁹⁸Au
Tracer Method.*Midori MATSUO, et alius.* ...1396
- 74 Masstransfer in B. O. H. Metal Bath. (Tracer application
of RI to steel works—I)*Hitoshi YOSHII, et alii.* ...1398
- 75 Masstransfer in B. O. H. Metal Bath during Tapping.
(Tracer application of RI to steel works—II).....*Hisashi MORI, et alii.* ...1400
- 76 Operational Results of Open Hearth Furnace in Depression. ...*Akira IZUMI, et alii.* ...1401
- 77 Measurement for Improvement in Regenerator Life of an
Open Hearth Furnace and Operational Result.*Kingo NAGANO, et alius.* ...1402
- 78 On the Equipment and Operation of a Krupp Large
Electric Arc Furnace.*Sadao HARA, et alii.* ...1405
- 79 Layout of 70 t Arc Furnace Plant at Chita Works.*Yūshirō FUKAO, et alii.* ...1407
- 80 Planning of the 250 t Electric Arc Furnace Plant.*Ken AOYAMA, et alii.* ...1409
- 81 The State of Wear of "Hot Spot" and Its Counterplot
on 250 t Electric Arc Furnace.*Yasuo IGARASHI, et alius.* ...1410
- 82 Steel Bath Temperature Distribution of 250 t Electric Arc
Furnace.*Nobuhiko HIRAMATSU, et alius.* ...1412
- 83 On the Sulphur Removal in 250 t Electric Arc Furnace. ...*Kiko TAKAHASHI, et alii.* ...1414
- 84 Improvement of Mold-Using.*Yasushi ANZAI, et alii.* ...1416
- 85 Effect of Treating Process on Deoxidation and Decarboniza-
tion Limit. (Study on rimmed steel ingots solidified
under reduced pressure—I)*Ryoji ARIMA, et alii.* ...1417
- 86 Effects of Some Operational Conditions on Skin Blowhole
of Killed Steel Ingots. (Prevention of surface defect
of killed steel—I).....*Fumio KODAMA, et alii.* ...1419
- 87 Study on the Deoxidation of Large Semi-Killed Steel Ingots.
.....*Yoshinori KITAGAWA, et alii.* ...1421
- 88 Nonmetallic Inclusions in Capped Steel Ingots.*Yukiyoshi ITOH, et alii.* ...1423
- 89 On Experiment of Solidification by Model Ingot of Stearic
Acid.*Akira HOSHINO, et alii.* ...1425
- 90 Relation between Solidification Rate and Segregation in
Low C-Cr Steels. (Study on the casting of ingots—II)
.....*Tokuji KIMURA, et alii.* ...1427
- 91 Deoxidation Reaction of Si during Solidifying Process.
(Studies on behavior of nonmetallic inclusion solidifying
process—I)*Yoshitaka NAKAGAWA, et alii.* ...1429
- 92 Results of Preliminary Experiments on the Relation between
Solidifying Rate and Segregation. (Studies on the
solidification of ingots—II)*Akitsugu MOMOSE, et alii.* ...1431
- 93 Effect of the Difference of Alloy Concentration on the
Occurrence of Heterogeneous Structures in Medium
Carbon Steels.....*Takayasu OKADA, et alii.* ...1433
- 94 On the Slab-Ingots by Vacuum Arc-Melting.*Toshihiko MARUOKA, et alii.* ...1434
- 95 Standard Free Energy of Formation of Iron Oxides and
Other Metal Oxides. (Study on oxygen concentration
cells at high temperature—III)*Kazuhiro GOTO, et alius.* ...1436
- 96 Effects of Cobalt and Tungsten on the Activity of Sulphur
in Molten Iron.*Dr. Zenichiro MORITA, et alius.* ...1438
- 97 On the Deoxidation Rate of Liquid Iron by Diffusion with
the Slag, FeO-MnO-CaO Saturated with Silica.

- (Kinetic study of the deoxidation of steel—Ⅵ).....*Nobuo SANO, et alii.* ...1440
- 98 Effect of Phosphorus on the Activity of Oxygen in Liquid Iron-Phosphorus-Chromium Alloys. (Study on dephosphorization of molten steel—Ⅰ)*Hideo KOIZUMI, et alius.* ...1442
- 99 On the Rephosphorization during the Melting of Stainless Steel. *Tatsuo HAYASHI, et alii.* ...1444
- 100 For the Distribution of Chromium at the Low-Chromium Concentration. (Distribution of chromium between silica-saturated acidic slag and liquid iron alloy—Ⅰ)*Yasushi KOJIMA, et alius.* ...1446
- 101 Effect of Sulphur on the Rate of Absorption of Nitrogen in Liquid Iron. (Studies on the rate of absorption of nitrogen in liquid iron—Ⅰ)*Takao CHŌ, et alius.* ...1448
- 102 Effect of Carbon, Silicon, Phosphorus and Nickel on the Solubility of Hydrogen in Liquid Iron. (The solubility of hydrogen in liquid iron alloys—Ⅰ) *Dr. Shiro BANYA, et alii.* ...1450
- 103 Influence of Chromium Addition on the Oxide Inclusions. (Fundamental studies on the nonmetallic inclusions in steels of the Fe-Cr-O system—Ⅰ)*Nobuya IWAMOTO, et alius.* ...1452
- 104 Influence of the Oxygen Contents on the Silicate Type Inclusions in Metal Baths. (Studies on the origin of silicate type inclusions in steel—Ⅰ).....*Shōgo ODA, et alii.* ...1454
- 105 Effects of Used Aluminium on the Sand Seams of High-C, Cr Bearing Steel. (Studies on the sand seams of rolled bearing steel—Ⅰ)*Norikazu KURI, et alii.* ...1456
- 106 Some Experiences in Reducing Inclusion Caused from Refractory. (Prevention of surface defect of killed steel—Ⅰ)*Takekazu YAMAGUCHI, et alii.* ...1458
- 107 Effects of Mn, Al, Ti, Zr, V, Nb and Cr on Fe-S System. (Study on sulphide inclusions in steel—Ⅰ)*Takami IKEDA, et alius.* ...1459
- 108 An Experiment on Formation of Sulphide Inclusions in Steel. (Study on free-cutting inclusions in steel—Ⅰ)*Haruhiko HIRAI, et alii.* ...1461
- 109 On the Behavior of Free-Cutting Inclusions Formed in High Chromium Steel. (Study on free-cutting inclusions in steel—Ⅰ).....*Dr. Tooru ARAKI, et alii.* ...1463
- 110 An Experimental Study on Influences of Nonmetallic Inclusions on Mechanical Properties of a Low Si-Mn Alloy Steel. *Takashi HURUKAWA, et alii.* ...1466
- 111 Deformation of Inclusions in Steels Deoxidized with Manganese. (Deformation of nonmetallic inclusions during rolling of steel—Ⅰ) *Dr. Iku UCHIYAMA, et alius.* ...1468
- 112 Relation between Macroinclusions and Microinclusions.*Kazuteru SENDA*.....1470
- 113 Vacuum Melting of Pure Iron. (Study on pure iron—Ⅱ)*Toshikatsu ŌTANI, et alius.* ...1472
- 114 Grain Boundary Relaxation of Cold Worked Pure Iron.*Haruki SHIRAISHI, et alii.* ...1474
- 115 Effect of Coil-Temperature before Skin-Pass on Yield Point Elongation of Cold-Rolled Steel Sheet.*Hirotsugu HIRAMATSU, et alii.* ...1476
- 116 On the Change of the Hardness by Strain Aging. (Study on the hardness and fluting sensitivity of tinplate—Ⅳ)*Etsurō SHUTŌ*...1477
- 117 On the Change of the Fluting Sensitivity by Strain Aging. (Study on the hardness and fluting sensitivity of tinplate—Ⅴ).....*Etsuro SHUTO*...1479

- 118 The Effect of Lead on Work Hardening and Strain Aging
of Low Carbon Steel.Akira KOYANAGI, *et alii.* ...1481
- 119 Relation between Sheet-Metal Formability and Steel Defects.
.....Keiichi SUZUKI, *et alii.* ...1483
- 120 The Effect of Lead on the Torsion Test Characteristics of
Carbon Steel.Akira KOYANAGI, *et alius.* ...1485
- 121 On the Cold-Draw Reduction and Impact Transition Tem-
perature of Leaded and Non-Leaded Low Carbon Steel
Tubes.Akira KOYANAGI, *et alii.* ...1487
- 122 An Anisotropic View of Material Strength of Carbon Steel
Dispersed with Free-Cutting Metallics when Tested at
Elevated Temperatures.Dr. Toru ARAKI, *et alius.* ...1490
- 123 The Fatigue Property of Leaded Free-Cutting Steel. (Study
on the leaded free-cutting steel—X).....Dr. Tatsuo FUJIWARA, *et alii.* ...1492
- 124 Influences of Previous Heat Treatments on the Nitriding
Inclination of Popular Hot Die Steels.Michihiko SUZUKI, *et alii.* ...1494
- 125 Effect of Various Elements on Cr-Mo Case Hardening
Steels.Koji KAMIYA, *et alius.* ...1496
- 126 Continuous Cooling Transformation Diagrams of Cr-Mo
Case Hardening Steels.Hirooki NAKAJIMA, *et alius.* ...1498
- 127 Relation between Austenite Grain Size by the Method of
McQuid-Ehne and Martensite Grain Size. (Study on
coarse martensite grain in carburized and quenched
steel— I).....Iwakazu TAKIKAWA, *et alii.* ...1500
- 128 Statistical Study on the Distortion of Case Hardening. Toshimi SASAKI. ...1502
- 129 On the Dimensional Change of Case Hardening Steel
S15CK after High Temperature Carburizing. (Studies
on the distortion of steels in high temperature
carburizing— I) Dr. Zenichiro MORITA, *et alii.* ...1504
- 130 On the Austenite grain Size at Elevated Temperature.
(Study on grain size of steel— III)Atsumasa OKADA.1505
- 131 Controlled Atmospheres in the Sintering Furnace for
Sintered Iron Products. Dr. Shintaro YAMADA, *et alius.* ...1507
- 132 Effects of Lamination on Fatigue Properties for High
Strength Steel. (Studies of defects with steel plate—
I)Takayoshi ISHIGURO, *et alii.* ...1508
- 133 Mechanical Properties of Cold-Rolled Low-Carbon Martensite
Steels. (Studies on high strength steel utilizing cold-
rolling— I) Dr. Ryōhei TANAKA, *et alii.* ...1510
- 134 Properties of Heavy Plates with 100 kg/mm² and 80 kg/mm² Strength.
(On the characteristics of IN-treated high-tension
steels— I)..... Dr. Hisashi GONDOH, *et alii.* ...1512
- 135 Weldability of Heavy Plates with 100 kg/mm² and 80 kg/mm² Strength.
(On the characteristics of IN-treated high-tension steels— II)
..... Makoto SATŌ, *et alii.* ...1514
- 136 Effects of Heat Treatments on Notch Toughness of HY-
80 Steel.Tohru WATANABE, *et alii.* ...1517
- 137 Characteristics of the Steel Containing Small Amount of
Niobium. (Study on high yield strength steel— I) ...Dr. Hisashi GONDOH, *et alii.* ...1519
- 138 On Properties of High Si Ni-Cr-Mo Steel. (Study on ultra
high strength steel— I)Shotaro ARAKI, *et alii.* ...1521
- 139 On Heat-Treatment Behavior and Mechanical Properties of

- Maraging Steels. (Study on ultra high strength steel—
I)*Hiroshi SASAKI, et alii.* ...1523
- 140 Fatigue Strength of High Strength Deformed Bars.*Masuhiko SATO, et alii.* ...1525
- 141 Study on High-C, High-V Co-Mo High Speed Steels.*Takeshi Itō, et alii.* ...1527
- 142 On Residual Stress of Rail.*Akinori ITO, et alii.* ...1529
- 143 The Effect of Alloying Elements on the Properties of
Si-Cr-Mo-V Steels. (Studies on the Si-Cr-Mo-V steels
for forging dies—II) *Dr. Tatsuro KUNITAKE, et alius.* ...1532
- 144 Effects of Alloying Elements on the Various Properties of
Heat-Treated Mn-Cr-W Non-Deforming Tool Steels.
.....*Fujio URUSHIHARA, et alii.* ...1533
- 145 Effects of Aging Temperature and Time on the Precipitation
Hardening and Mechanical Properties of Ni-Mo
Steel Containing 0.2% Carbon. (Study on precipitation
hardening hot-work die steels—II)*Kenzi HAYASHI, et alii.* ...1535
- 146 On the Tempering Behaviour of 12Cr-W-V-Co Steels.
(Study on hot work tool steels—II)*Tomitaka NISHIMURA, et alius.* ...1537
- 147 On the Tempering Behaviour of W-Cr-V Steels. (Study
on hot work tool steels—III)*Yoshiyuki SHINYAMA, et alius.* ...1539
- 148 Uranium Addition to Low-Alloy High Tension Steels.
(Influence of uranium addition on iron and steel—III).....*Ichiro ONODA, et alius.* ...1541
- 149 On the Effect of Uranium Additions upon Behaviors of
Carbon and Sulphur in Austenitic Stainless Steels.
(Studies on behavior of uranium in austenitic stainless
steel—I)*Kazuo EBATO, et alii.* ...1543
- 150 On the Effect of Nitrogen-Absorption Treatment on
Properties of Low Ni-18Cr Stainless Steels.*Takeshi NAITŌ, et alii.* ...1545
- 151 Effect of Al and Ti on the Properties of Ni-Bearing
16Cr Stainless Steel.*Eijirō ISHIKAWA, et alii.* ...1547
- 152 A Study on the Intercrystalline Corrosion Properties of
Low-Carbon Austenitic Stainless Steel. (Effect of
chemical composition and solution heat treatment of
corrosion resisting properties—I)*Hirofumi HAMADA, et alii.* ...1549
- 153 Characteristics of Non Magnetic Cold Work Hardening
Steel and Precipitation Hardening Steel. (Study of
non magnetic steel for turbo-generator—III)*Masatoshi MAEDA, et alii.* ...1551
- 154 Addition of Rare Earth-Ca-Si Alloys to Heat Resisting
Alloys. (Modification of stainless steels by means of
rare earths addition—III)*Masayuki SANO, et alii.* ...1553
- 155 Study on the Creep Rupture Properties of Tubular
Specimen.*Dr. Yoshio KURANUKI, et alii.* ...1555
- 156 Effect of Carbon on 5%Cr-1%Mo-0.5%V Steels for
Turbine Shafts.*Haruo NAKAJIMA, et alii.* ...1557
- 157 Study of High Manganese Heat Resisting Steels.*Heitarō YOSHIDA, et alii.* ...1559
- 158 Effect of Carbon, Tungsten and Cobalt on Creep Rupture
Strength of 12% Chromium Heat Resisting Steels.*Dr. Toshio FUJITA*...1561
- 159 Effect of Nitrogen on Long Period Creep Rupture Strength
of 12% Chromium Heat Resisting Steels.*Dr. Toshio FUJITA*...1563
- 160 Effect of Solution Temperature on High-Temperature
Characteristics of 25% Cr Austenitic Heat-Resisting
Steels. (Studies on high-nitrogen 25% Cr austenitic
heat-resisting steels—III)*Dr. Ryōhei TANAKA, et alii.* ...1565
- 161 Trial Production of 25Cr-4Ni-1.5Mo Stainless Steel Tubes

- and Their Properties. *Takehiko ŌSHIRO, et alii.* ...1567
- 162 Effect of Uranium on Mechanical Properties of 28Cr-15Ni
Heat-Resistant Cast Steels. *Yōsuke MATSUMOTO, et alii.* ...1569
- 163 Effect of Alloying Elements on the Corrosion Resistance
of Exhaust Valve Steels to Lead Oxide. *Mitsuo YAMAZAKI, et alius.* ...1571
- 164 Effect of Si, Cr and P on the Properties of SEH 4 Valve
Steel. *Zenichi KAWAMATA, et alius.* ...1573
- 165 Effect of Carbon Content and Heat Treatment on Aging
Properties of Udimet 500 Alloy.
(Study on the Ni-base heat-resisting alloys—I) *Kanō KIKUCHI, et alii.* ...1575
- 166 On the Spring Properties and Cold Work of Refractaloy
26 Type Alloy. (Studies on super alloys for spring—II)
..... *Yoshiaki KANAI, et alii.* ...1577
- 167 On the Spring Properties of Refractaloy 26 Type Alloy
under Repeated Cycle of Heating. (Studies on super
alloys for spring—IV) *Kazunori KAMISHOHARA, et alii.* ...1578
- 168 Relation between Banded Structure and Fatigue Strength
of Spring Steel. *Kazuo IINO, et alii.* ...1580
- 169 The Effect of Tempering Banded Structure on the Fatigue
Strength of Spring Steel. *Dr. Tatsuo FUJIWARA, et alius.* ...1581
- 170 Study on Some Low-temperature Mechanical Properties of
Iron and Steel. *Mitsutane FUJITA, et alius.* ...1583
- 171 Some Experiments of Low-Carbon 9% Ni Steel. (Study on
low temperature service steel—III) *Yuzuru SHINDO, et alius.* ...1585
- 172 Effect of Grain Size and Deformation Rate on the Transition
Temperature of Steels. *Masanobu OHMORI, et alii.* ...1587
- 173 Some Results of the Heating Tests on the Characteristics
of Aluminized Steel. *Katsuyuki TOKI, et alii.* ...1589
- 174 Corrosion Protection for Zinc-Surfaced Articles. *Minoru SAWAMURA, et alii.* ...1590
- 175 Columbium-Bearing Steel for Glass Lining. (Study on
columbium in steel—III) *Kōshi MIYAZAKI, et alii.* ...1592
- 176 On Corrosion Inhibitors for Steel in NaNO_2 - KNO_3 - NaNO_3
Molten Salt. *Haruno TAKENAKA, et alii.* ...1594
- 177 The Rate of Solution of Steel in Liquid Aluminium Alloys.
..... *Mineo KOSAKA, et alii.* ...1596
- 178 Spectrophotometric Determination of Carbon in Steel. *Kazuo NISIKIŌRI, et alii.* ...1598
- 179 Determination of Oxygen in Steels by the Inert Gas Fusion
Method. *Shigeo ICHINOSE, et alius.* ...1600
- 180 Isolation of Oxides of Iron and Manganese in Steel. (Study
on isolation of inclusions in iron and steel—I) *Teruaki ISHII, et alii.* ...1602
- 181 Spectrographic Determination of Niobium in Steel with
Spark Discharge in Argon Atmospheres. *Tetsuo MATSUMURA, et alii.* ...1604
- 182 Determination of Boron in Austenitic Stainless Steel.
(Spectrographic analysis of boron in steel—I) *Tetsuo MATSUMURA, et alii.* ...1605
- 183 Emission Spectrochemical Analysis of High Speed Steel.
(Direct reading analysis of iron and steel—I) *Fumio SAWAI, et alii.* ...1607
- 184 On the Effect of Forging for the Mechanical Properties
of Large Forgings. (Fundamental study of large forgings
—I) *Etsurō FUKUDA, et alii.* ...1609
- 185 On the Production of Electric Resistance Welded
Large Tubes for High Pressure Gas Vessels. *Zenroku BABA, et alius.* ...1611
- 186 On the Bending Deflection of Model Rolls. (Investigation
of bending deflection on the built-up type back-up rolls
for 4 high strip mills—I) *Katsushige MIURA, et alii.* ...1613
- 187 Theoretical Analysis of Strip Thickness Variation in

	Rolling.	<i>Ichirō KUNO, et alius.</i>	...1615
188	Effect of Cooling Condition on the Fire Crack of Slabbing Mill Rolls. (Study on the fire crack of slabbing mill rolls—I)	<i>Chiyuki UTAHASHI, et alii.</i>	...1617
189	Measurement of Roll Surface Temperature. (Study on the fire crack of slabbing mill rolls—II)	<i>Takayoshi YANAGISAWA, et alii</i>	...1619
190	Effect of Roll Surface Finish on Fire Crack. (Study on the fire crack of slabbing mill rolls—III)	<i>Mikio HACHISU, et alii.</i>	...1620
191	Effect of Difference between Top and Bottom Roll Speed on Fire Crack. (Study on the fire crack of slabbing mill rolls—IV)	<i>Juro WATANABE, et alii.</i>	...1622
192	On the Most Appropriate Time for Charging Large Ingots into a Soaking Pit Furnace.	<i>Genichi USUI, et alii.</i>	...1624
193	Deformation Pattern and Closing of Internal Cavities in Ingot by Upsetting. (Study on forging of ingot—I)	<i>Yasushirō HAYASHI, et alii.</i>	...1625
194	On the Relation between the Heating Conditions and the Hot Workabilities of Some Commercial Steels.	<i>Naoki EGUCHI, et alii.</i>	...1627
195	Improvements of Hot Workability on Austenitic Stainless Steels.	<i>Akira INOUE, et alii.</i>	...1629
196	Metal Flow in Rolling of Angular Section Bar.	<i>Tōru ISHIDA, et alius.</i>	...1631
197	On the Metal Flow in Mannesmann Piercing Process.	<i>Iwao TAKAI, et alii.</i>	...1633
198	Comparison of Cold Drawability of Low-Carbon Rimmed Steel Wire Rod between Open Hearth and LD Steel.	<i>Tetsu ŌNO, et alii.</i>	...1635
199	Studies on the Bright Annealing by Continuous Furnace.	<i>Hyōjirō KURABE, et alius.</i>	...1637
200	On the Purging and Conditioning. (Atmosphere control in the batch type hardening furnace—I)	<i>Masabumi YASUDA, et alius.</i>	...1639
201	On the Dew Point, Enrichment and Carbon Potential in Furnace Atmosphere. (Atmosphere control in the batch type hardening furnace—II).....	<i>Shigeru MASUMOTO, et alius.</i>	...1641

PANEL DISCUSSION MEETING

(To be held on Oct. 18, 1963, at Nagoya University)

On Melting of High Carbon Steel in LD Process

Discussion Programs

Lect. No.	T i t l e	Lecturer
1	Outline of LD Converter Process. (On the high carbon steelmaking.)	<i>Jo DOI.</i>
2	On Melting of High Carbon Steel in LD Process.	<i>Motohiko NAKATANI.</i>
3	On Melting of High Carbon Steel by Oxygen Process.	<i>Shōzō MITSUSHIMA.</i>
4	High Carbon Steels Produced by Oxygen Converter.	<i>Hiroharu USUI.</i>
5	On Melting of High Carbon Steel by LD Process. (Some problems on dephosphorization.)	<i>Takashi ITOKA.</i>