

# 金属英語の活用辞典

大谷南海男  
市川理衛  
美浦康宏  
福富斌夫  
編

# 金属英語の活用辞典

大谷南海男  
市川理衛  
美浦康宏  
福富斌夫  
編

化学同人

大谷南海男

1942年 東京大学工学部冶金学科卒

現在 九州大学教授(工学部)

専攻 金属表面工学

工学博士

市川理衛

1942年 名古屋大学工学部金属学科卒

現在 名古屋工業大学教授(工学部)

専攻 金属材料学, 鋳造学

工学博士

美浦康宏

1963年 九州大学工学部冶金学科卒

現在 九州大学助教授(工学部)

専攻 物理冶金学, 金属材料学

Ph. D

福富斌夫

1944年 京都大学理学部化学科卒

専攻 無機化学

理学博士

1975年11月没

## 金属英語の活用辞典

1981年4月1日 第1版 第1刷 発行

編者 大谷南海男

代表 曾根寿明

発行者 (株)化学同人

京都市山科区西野野色町5-4

郵便番号 607

電話 075-592-6649(代)

印刷 (株)太洋社

製本 大日本製本紙工(株)

検印廃止

©N. Ohtani, R. Ichikawa, Y. Miura,  
T. Fukutomi 1981

Printed in Japan

ISBN 4-7598-0080-8

## 序

科学・技術の論文や報告を英語で書く場合には、研究・調査の目的・方法とその結果を正確に表現して、著者の考えていることを明確に読者に伝えさえすれば良いのである。しかし金属学の分野で働く人びとの中には、英語の論文を書くことを苦が手と感じている人も多いと思う。

英語の論文の書き方については本書の巻末に掲げたとおり、すでに多数の参考書が出版されているので、ここで詳しくは述べないが、まず第1に心掛けるべきことは、わかりやすい文章を作ることであって、そのためには(1) 短い文で文章を構成すること、(2) やさしい言葉を使うこと、(3) 一つの文には一つの内容を盛ることである。その上で日本語的発想と英語的発想の相違に注意すべきであろう。例えば、「鉄の変態点をこの方法で測定した」という日本文には主語がない。日本語的発想では、この文の主語は著者(人)であるが、英語的発想では物主構文、受身形の「鉄の変態点はこの方法によって測定された」と書くのが一般的である。またわれわれにとって最も厄介なものに冠詞の使い方があがるが、これはやはり英文に慣れ、経験によって覚えるべきものであろう。

本書はこのような点に留意して、金属学のあらゆる分野で働く研究者、技術者や学生たちが金属に関する論文や報告を英文で書くための参考書として編集された。採択された英文用例の内容は金属物理、金属化学をはじめ、鉄鋼・非鉄材料とその製錬、加工、鑄造、表面処理などの広汎な領域に及んでいる。読者は本書の第1部の見出し語あるいは関連語に集められている典型的な用例を参考にして、必要に応じて用例中の単語を入れ替え、多少の文法的修正を施せば簡単に日本語の論文を英訳することができ、また初めから英文を書きおろすこともできるはずである。第2部には第1部の用例中に現れた英語の単語を、その訳語と共に掲げて、その用例を第1部の中で探すことができるようにした。こうして読者の知っている英語の

単語をどのように使えば、目的の英文が書けるかがわかるようにした。

これはすべて「化学英語の活用辞典」(化学同人)に準拠したものである。それというのも同辞典が完成に近付いた1968年ごろ、福富弼夫委員から「金属英語の活用辞典を編集してはどうか」という話があり、やがて福富、大谷、市川の3人で用例の収集と分類を始めた。したがって本辞典の編集はすでに10年余りの昔にさかのぼるが、この間、福富委員が1975年に逝去されるという悲運に遭遇して、編集は一時、頓座の止むなきに至った。しかし1976年に新しく美浦委員を編集陣に加えて陣容の建て直しをはかり、鋭意、用例の収集と整理、編集につとめ、1981年1月ようやく完結にこぎつけることができた。思えば編集を始めてから10年余り、文字通り辛苦の連続であったが、この長い間の編集委員の活動を暖かく、そして力強く支援して下さった化学同人社長曽根寿明氏と編集部の方がた、特に西口守氏の深いご理解とご協力に対して心からの謝意を表したい。

1981年1月26日

編集委員を代表して

大谷南海男

## 凡 例

### 第1部（和英の部）

#### 〔見出し語〕

- 1) 採択範囲 金属に関係する重要な言葉を見出し語としたが、物質名、反応名、鉱物名などは原則として省略した。なお、第<sup>こ</sup>-、高<sup>こう</sup>-、光電<sup>こうでん</sup>-、次<sup>じ</sup>-、<sup>じゅう</sup>-重などの接頭辞、接尾辞も特に必要と認めた場合には見出し語とした。不、非、過、超、未、反、半、準などの接頭語をもつ言葉は、例えば不均一、非金属、過電圧、半導体などのように、特に良く熟したものだけに限り見出し語とした。
- 2) 小見出し語 必要に応じて見出し語に接尾語をつけ小見出し語とした。
- 3) 用例の分類 一つの見出し語に二つ以上の意味のある場合には、なるべく〔 〕を設けて分類した。
- 4) 配列 アルファベット順(修正ヘボン式)に配列した。外来語を見出し語とするときはカナ書きで示したが、「LD法」、「pH」、および「X線」に限りそのまま見出し語とし、それぞれL、P、およびXの項の最初においた。

#### 〔用例〕

- 1) 対応英語 用例中、見出し語に対応する英語は、場合によっては関連する前置詞、助動詞なども含めて斜体活字(イタリック)で示した。用例を挙げなかった対応英語は末尾にまとめた。また、見出し語に関連する用例のある他の見出し語を→印で示した。
- 2) 品詞 見出し語の品詞と用例中の対応英語の品詞とはなるべく一致するように努めたが、必ずしもそれにとらわれなかった。例えば、見出し語が名詞であるときは、関連する形容詞、動詞の用例もその見出し語のもとに置いた。
- 3) 説明 必要に応じて、対応英語の訳語または説明を用例末尾の( )内に示した。この場合、「～」記号を用いて見出し語の繰り返しを避けた。
- 4) 綴り 英語の綴りは原則として米式によった。
- 5) 態 見出し語が動詞である場合、用例の“態”については特に考慮しなかった。

## 第2部（英和の部）

## 〔見出し語〕

- 1) 採択範囲 本書第1部に出てくる言葉のうち、金属の論文を英語で書く立場から重要と思われる名詞、形容詞、動詞、副詞を採択した。また、第1部の見出し語に対応する言葉は、品詞のいかんにかかわらずほとんど採用した。
- 2) 表記法 見出し語の表記はつぎの基準によった。
  - a) 名詞は原則として単数形で表したが、不規則変化をするものについては複数形も見出し語とし、spectra(複)スペクトル、のように見出し語の後に(複)を付けた。
  - b) 動詞は、原形とは限らず、必要に応じ進行形、過去分詞形のままだ見出し語とした。
  - c) 見出し語に be 動詞や前置詞が密接に関連している場合には、composed, be ~ of … のように表した。
  - d) 記号 ~ : 見出し語の繰り返し
- 3) 配列 アルファベット順とした。

## 〔訳語〕

訳語は、原則として第1部の用例に対応する適訳一つを選んだ。

## 〔第1部との対応〕

見出し語の第1部中における所在はページ数と a, b, c, … とを用い、つぎのように示した。

(例) 6e 6ページのe欄



見出し語のローマ字綴方表 (修正ヘボン式)

a (ア)	i (イ)	u (ウ)	e (エ)	o (オ)
ka (カ)	ki (キ)	ku (ク)	ke (ケ)	ko (コ)
sa (サ)	shi (シ)	su (ス)	se (セ)	so (ソ)
ta (タ)	chi (チ)	tsu (ツ)	te (テ)	to (ト)
na (ナ)	ni (ニ)	nu (ヌ)	ne (ネ)	no (ノ)
ha (ハ)	hi (ヒ)	fu (フ)	he (ヘ)	ho (ホ)
ma (マ)	mi (ミ)	mu (ム)	me (メ)	mo (モ)
ya (ヤ)		yu (ユ)		yo (ヨ)
ra (ラ)	ri (リ)	ru (ル)	re (レ)	ro (ロ)
wa (ワ)	wi (ウィ)		we (ウエ)	wo (ウォ)
ga (ガ)	gi (ギ)	gu (グ)	ge (ゲ)	go (ゴ)
za (ザ)	ji (ジ)	zu (ズ)	ze (ゼ)	zo (ゾ)
da (ダ)	ji (ヂ)	zu (ヅ)	de (デ)	do (ド)
ba (バ)	bi (ビ)	bu (ブ)	be (ベ)	bo (ボ)
pa (パ)	pi (ピ)	pu (プ)	pe (ペ)	po (ポ)
kya (キャ)		kyu (キュ)		kyo (キョ)
sha (シャ)		shu (シュ)		sho (ショ)
cha (チャ)		chu (チュ)		cho (チョ)
nya (ニャ)		nyu (ニュ)		nyo (ニョ)
hya (ヒャ)		hyu (ヒュ)		hyo (ヒョ)
mya (ミャ)		myu (ミュ)		myo (ミョ)
rya (リャ)		ryu (リュ)		ryo (リョ)
gya (ギャ)		gyu (ギュ)		gyo (ギョ)
ja (ジャ)		ju (ジュ)		jo (ジョ)
bya (ビャ)		byu (ビュ)		byo (ビョ)
pya (ピャ)		pyu (ピュ)		pyo (ピョ)



## A

亜 *Hypoeutectoid* steels may be cooled slowly enough during the first part of the transformation. (～共析) / The composition changes from *hypoeutectic* to hypereutectic. (～共晶) / The presence of *subgrain boundaries* increases the strength of an initially soft material. (～粒界) / The former stage is associated with the formation of *sub-boundaries*, and the latter with the recrystallization. (～境界)

危ない → 危険

油 → グリース The large plant units may be heated with *oil*, coal, or gas. / Three of the specimens were conventionally quenched in *oil* at 60°C. / These furnaces are electric, gas-fired, or *oil-fired*, in order of decreasing popularity. (～燃焼式の) / *Oil-hardening* tool steels are used where high compressive strength is required. (～焼入れ) / Quenching produces a hard, blue, mottled surface that may be washed, dried, and *oiled*. (～を塗る) / *oily*. (～のような, ～だらけの)

亜鉛引き → 溶融めっき Some of the newer zinc phosphating compounds will coat both bare and *galvanized* steel.

あえて We *did* use an optical microscope because of its easy handling. / We insisted *positively* that these reactions were not complete. / They *dare* not insist on the justice of their assumption.

あふれる Molten metal which *flows over* the edge of crucible is often dangerous for the workers. / Slag *overflows* continuously from one side of the furnace. / The hot metal must be added so as to prevent any slag from *overflowing* the banks of the furnace. (～こと) / They have one nearly-filled zone with a small "overflow" of electrons into the second zone. (溢流) / *run over*.

上がる The specific heat of substances increases as the temperature *rises*. / After 1 hr at 380°C it *rises* again to 29.6 million psi. / This holder has a piston, *rising* and falling with the volume of gas. / The temperature of the contact surface *increases* since the frictional temperature is at a maximum near the middle of the crater. / A price of the virgin ingot *ascended* at the end of the last year. (高騰する)

上げる This causes excessive loss of iron, but does *raise* the temperature. / This bar is provided with a lever by which it may be *raised* or lowered. / A sensitive balance was used to *increase* the accuracy of the measurement. / Electric i

motors are used for *raising* and lowering the doors.(~こと)/For *lifting* the **a**  
crosshead, auxiliary cylinders are attached to the main cylinder.(~こと)/The  
weight must *be moved up and down* vertically.(上げ下げする)

挙げる In the data *presented* below, the properties determined on samples of nickel  
of high purity are summarized./Gill and others *cite* an instance where 18% W **b**  
steel with less than 0.50% C shows a low hardness after quenching./These  
processes differ from those previously *enumerated*./Pressure welding is used  
for railroad rails, and propeller hubs, to *name* only a few of the important  
applications of the process. **c**

間 The rod was annealed at 450°C *for* half an hour./Diffusion is rapid *while* the  
plate is hot./*During* recrystallization the (531) type crystallites are the pre-  
ferred nuclei which grow at the expense of other nuclei./*During* operation, the  
salt concentration of the copper sulfate bath will increase. [二つの物の間] **d**  
The agreement *between* the observed and calculated data was not improved by  
the use of separate temperature factors./The difference *between*  $\Delta\rho$  and  $\Delta\rho_0$   
should correspond to the resistivity change due to point defects produced by  
plastic deformation./Two principal kinds of bonds may be formed *between* **e**  
metals.(~に) [多数の物の間] Consideration was focussed on the underly-  
ing relationship *among* the factors involved./For other operations, tempera-  
tures *ranging* from 400 to 500°C are used satisfactorily.(~の)

相反する They will move in *opposite* directions./The resultant curve is due to the **f**  
*opposing* effects of the decrease of diffusion constant with temperature./Such  
variations are found to have an *adverse* influence on furnace performance./  
*Conflicting* properties of hardness and toughness are required for bearing  
alloys./This force must be overcome by the *counteracting* force./Data **g**  
obtained in the laboratory are often *in disagreement* with the results in a  
factory.(一致しない)/*be contrary* to.

あいまいな The mechanism of the stress corrosion cracking in austenitic stainless  
steels has remained *obscure*./*Ambiguous* results are obtained when unknown **h**  
ions are present in the test solution./Our concepts of crystal imperfections  
have been sharpened from their *vague* early forms into the present clearly-  
defined ones.

相まって This, *together with* the simple crystal structures, is responsible for the **i**  
ability of metals to undergo plastic deformation./The matter may be quite  
important *in cooperation with* the sintering of iron alloys./These results,  
*coupled with* the high value of the activation energy of the process, suggest that  
the process is controlled by some phase boundary reaction./*correlatively*. **j**

相接する Solid state reactions occur at boundaries where two different phases are

*adjacent* to each other./The temperature of the liquid *in contact with* the solid **a** must be low enough to maintain the necessary amount of supercooling./The surface is therefore repelled by the negative electron cloud of any nonreactive metal with which the oxide *comes into contact*./The misorientation of the two *neighboring* grains can often be described as a "tilting" of one with respect to **b** the other./*(形)contiguous, (動)touch, adjoin.*

**相対する** Many plants have experienced these two mutually *competing* effects on fuel consumption./This theory *stands opposite* to the view supported by the following fact./Our conclusions are *reverse* to those obtained by Dr.A, **c** concerning the rate of densification in liquid-phase sintering.

**相ついで** The growth of particles will continue *in succession* for many more hours./A mirror polish is produced by polishing on *successively* finer emery papers, and lapping on revolving cloth-covered wheels./*one after another.* **d**

**明るい** [光学] The corresponding area appears *bright* under the microscope./In Fig. 1 more than half the field is transformed as indicated by the *bright* area./This green color *was brightened* by adding copper ion.(明るくする)/When the facets are nearly in the plane of the specimen the incident light is *brightly* **e** reflected.(明るく) [知識] Blast-furnace men *were acquainted with* this principle./For those who *are familiar with* solid-state physics, an introduction such as this is unnecessary./It provides all the fundamental information required by the reader who *is unfamiliar with* the subject.(明るくない) **f**

**明るさ** The *brightness* of the image is varied by changing the current in the second condenser lens./For metal surfaces, loss of *brightness* is sometimes regarded far more seriously than loss of weight.

**あける** → **開く** A rotary machine is used to *open* and close a pair of dies./New **g** possibilities for application of the microscope *are opened up* when novel principles for producing contrast are introduced.(開く)/Cast iron parts having several *drilled* holes were covered with light mineral oil.(孔を～)

**明らかな** It is *obvious* from equation (1) that *k* is a function of the reaction rate./ **h** Annealing twins usually form at or near the corners of grains, although there is no *obvious* reason for this./It is *apparent* that a subboundary always consists of a single array of dislocation./Additions of nickel produce no *apparent* change in yield strength./It is *clear* that the driving energy of the two **i** processes is the same./It can provide a *clear-cut* test of applicability of this model to a given diffusion system.(明快な)/It is *evident* from the hardness values that several of the austempered steels have mixed structures./The *distinct* difference is found on grains which are cold worked and annealed./ **j** There is an *explicit* change in electric conductivity at the upper and lower

transformation temperatures.

a

明らかに Obviously, there must be a mismatching of unit cells having unlike orientation. / Twin bands may apparently broaden by the coalescence mechanism suggested by Burke. / Clearly, this coefficient is a property of the phase to which the atom is moving. / The production of dendrites is evidently a result of the establishment of a positive gradient of supersaturation. / Slip is distinctly different from twinning in the grain. / explicitly.

b

明らかにする To reveal the structural details, the polished surface is etched with a chemical solution. / This method fails to reveal the finer details of metal structure. / It is possible to clarify their correlation by the addition of cobalt. / His report makes clear the behavior of the soluble elements in the solid solution. / A surface-located thermocouple is capable of disclosing peculiarities of the cooling curve. (～こと) / A few specific examples will serve to elucidate the problem. / A deeper understanding of the behavior of hydrogen in  $\alpha$ -iron has been acquired by studying its diffusivity. (理解が得られる, 明らかになる)

d

圧下 The first reduction of 20% usually reduces the elongation to about 1/3 of its initial value. / Cold reduced low-carbon steels readily accept phosphate coatings. (冷間～された) / The screw-down motor and control must be capable of positioning the rolls within close limits. (～電動機)

e

圧下率 Some special processes use heavier drafts followed by stress relieving. / Reductions per pass vary greatly, depending on the alloy and hot rolling conditions. / During hot rolling, even with little reduction, an excellent, oxide-free weld is made.

f

悪化する → 劣化する The wear on the latter section is aggravated by the rising flame. / become worse.

g

圧潰 The maximum squeezing force of a pneumatically operated machine is defined by the following equation. (～力) / Soft materials never show a clear squeezing point. (～点)

圧環強さ The radial crushing strength is an important mechanical characteristic for metal powder sintered bearings. / A hollow cylinder is submitted to a continuously increasing radial load until breakage occurs. (圧環荷重)

h

圧痕 It is important to make sharp and accurate impressions, particularly when using light loads. / The diameter of the indentation is the same as the diameter when the ball was in contact with the metal. / The Brinell hardness test consists in indenting the metal surface with a 10-mm-diameter steel ball at a load of 3000 kg. (～をつけること)

i

アーク With the arc process, a monel electrode may be used. (～法) / Joints produced by the various arc methods are as strong as the parent metal, or

j

stronger in most instances.(～法)/Inconel may be melted in *electric-arc furnaces*.(～炉)/An *arc-welding process* is the most important means of minimizing sensitization during fusion welding.(～溶接法)

あまり [残り] Any *surplus* not needed to fill either upper or lower dies is flowed over the edges of both dies./Some iron and manganese react with any *surplus* of oxygen, preventing it from entering into the bath. [程度] Nitrogen and oxygen are *less* obstructive.(～…でない)/In industry exposures are far *too slight* to cause real harm.(～…なので…しない)

余る In the carburizing process, it is very important to remove CO<sub>2</sub> gas which is *in excess* in the atmosphere./It is a work *beyond* my capacity./*remain, be left over, be more than enough*.

網目 Platinum wire *mesh* is fabricated by cross-wire welding with similar equipment./The three-dimensional *network* of the cation voids has no very pronounced directional concentration.(～構造)

アームコ鉄 The starting material consisted of strips of rolled *Armco iron*.

#### 案 → 提案

孔 When a deeper *hole* is required, the drill must be withdrawn a sufficient number of times for removal of chips./A *peep hole*, called the wicket is provided for inspection of the interior of the melting chamber.(覗き～)/An interrupted surface may be obtained by pre-roughening the *bore* by shot blasting./The cracks or *porosity* that characterize chromium deposits are undesirable in terms of resistance to corrosion./The finished bearing should be well bonded and free from *porosity*./Because of the small *orifices*, the sprue can be filled quickly./The size of these *openings* should be such that they can be adjusted to maintain a slight pressure in the furnace to exclude air./Current efficiency during barrel plating is greatly affected by the size of the *perforations* in the barrel./Fine wires are hanging vertically from the ends of the sample through *slots* in the bottom of the chamber.(細長い～)/*Slotted* draft-box type of unit is ordinarily used.(～のある)/There is a *vent* or opening to provide for the release of heated air from inside the container./Although “blanking” and “punching” are terms often used synonymously, the two operations are not the same.(～抜き)/The pressure is applied to force the air through the *pores* of the charge by means of suction./It is difficult to obtain dense and *pore-free* electrodeposits of chromium.(～のない)/For any of the stainless steels, this film is considered to be *nonporous* and self-healing.(～のない)/*pit*.

孔型 The ingot is entered into the 14-in. *pass* of the roll-body, given two passes and turned./Subsequent *passes* are alternately oval and square in section.

孔をあける It is usually safe practice to *drill* to a depth four times the drill

diameter on the first entrance. / Such information has been particularly a valuable in *piercing* billets of commercial bronze. (〜こと) / Barrels are *perforated* to allow the slurry to escape and recirculate. / The bottom of the pot should be scraped with a *perforated* ladle to remove sludge. (孔のあいた) / In other instances, the metal may be *pitted* in relatively few areas. (孔があく) b

アングル European *angles* are widely used for structural work.

暗示 He has made a *suggestion* to explain changes in shape required for maximum density. / The data obtained in the present work seem to be *full of suggestions*. (〜に富む) / His experimental results are very *suggestive*. (〜的) / The results c shown in Table 1 are *indicative* but not conclusive. (〜的) / *hint*.

暗示する This figure *suggests* that the boundary between the two grains can be quite well matched. / The preceding dislocation model *suggests* the following picture of an ordinary grain boundary. / This frequently *implies* decrease of d radius with time.

暗黙の The foregoing remarks contain the *implicit* assumption that the vacancy content of a crystal can change. / The pattern would shrink indefinitely, as was *implicitly* assumed above. (暗黙に) e

アンモニア In using dissociated *ammonia*, it is important that 100% dissociation be obtained. / The tank of *ammoniacal* gas must be placed in an adequate position. (〜性の)

案内 This handbook may serve as a useful *guide* for alloy selection. (手引き) / f Contours of the utmost complexity are flame-cut by *hand-guided* torches. (手動の)

アノード → 陽極 An aluminum plate was used as the *anode* of an electrolytic cell containing dilute sulfuric acid. / These precipitates will alter the potential of g the alloy in the *anodic direction*. (〜方向) / In a corrosive environment, the *anodic constituent* corrodes electrochemically. (〜成分)

アノード液 → 電解液

アンペア Electricity is introduced at low voltage and high *amperage* into immersed h electrodes. (〜数) / The voltage may be from 5 to 8 volts and a cell can take from 30,000 to 70,000 *amperes*.

安定度 A change in pH can often have a profound effect on physical *stability* of the system. / The meter should be sufficiently sensitive and never lack zero i *stability*.

安定化 There is so little difference between chlorine and bromine with regard to *stabilization* of the transition state. / This alloy is solution treated without using the *stabilization (stabilizing) treatment* at 800 to 850°C. (〜処理) / Virtually no j *stabilizing elements* are lost when stainless steels are welded by this method.



(～元素)

安定化する Chromium may be added to *stabilize* carbide. / The current must be *steadied* by the reactors. (安定化させる) / A titanium-*stabilized* type 430 stainless steel was selected for the drip pan. (…で～)

安定な The addition of tungsten to steel narrows the range where *stable* austenite can exist, and in turn, enlarges the range of *stable* ferrite. / These represent less *stable* conditions than are shown in the phase diagrams for the Fe-Mn-C system. / The usual cast iron is structurally somewhere between the *metastable* and *stable* systems. (準～)(～) / The  $\alpha'$  primary product is *unstable*, however, and decomposes according to the reaction. (不～) / High frequency current was superimposed on the welding circuit to establish a *steady* arc.

鞍点 The typical trajectory passes near, not through, the *saddle point*. / It will not be possible to guess the  $\xi$  value corresponding to the *saddle point*.

安全 Safe concentrations in air have been set at 6 mg/m<sup>3</sup>, a limit easily maintained in industrial operations. / The *safe limits* for most of the alloys are from about 150 to 250°C. (～限界) / *Factors of safety* in excess of five, varying up to eight and even more, are often required for *safe* and economical operation. (～係数) (～な) / Usually, *safety equipment* will not permit introduction of atmosphere when furnace temperature is below 700°C. (～装置)

青写真 A *blueprint* or sketch of the forging is submitted to the die shop as a guide in sinking the dies.

青粉 It is difficult to cause the zinc in *blue powder* to coalesce into the liquid pool of metal.

圧粉 *Compacting* is the most important operation in powder metallurgy.

圧粉体 Density determinations on *green compacts*, or pre-sintered *compacts* are usually performed by determination of dimensions and weighing. / Depending on the size and shape of the *compact*, pressure at which the material is pressed varies.

アップセット(据え込み加工) Especially common are operations involving *upsetting* the end of a rod, as in heading a bolt. / In *upsetting machine* the piece to be forged is clamped between two dies with vertical faces. (～機) / The *upset test* consists of subjecting test pieces to severe compression under a hammer at a forging temperature. (～試験)

粗い The progression from *coarse* to fine grit size may be made in steps of 20 to 40 mesh. / Neither extremely *coarse* nor extremely fine finishes are normally obtained by polishing. / Slow cooling produces *coarser* structural formations. (比較的～) / The steel should be *rough* machined, then heat treated so as to have a sorbitic structure. (粗く) / The *roughened* surface is reproduced by the



deposit.(粗くした)

a

あらかじめ → 先立って It is very difficult to predict *in advance* whether operating conditions will be carburizing or decarburizing./The single crystal of iron was set in the carbon boat which had been baked *in advance* (*beforehand*)./The alloy *previously* heated to 800°C is quenched into water at once./The test pieces are polished *prior to* measuring./The two phases that are formed have different structures from the *pre-existing* phase.(～存在する)

b

粗くする This *was coarsened* to an unacceptable 80 micro-in. by sand blasting./A deep chemical attack *roughens* the fine details of the surface structure./Certain oil-hardening steels are often *roughened* without being defective./The surface of strain hardened grains *becomes roughened*, while the surface of strain-free grains remains quite smooth.(粗くなる)/The next *roughing* operation entails the use of a portable disk grinder, powered by air or electricity.

d

荒磨き The specimens *are then coarse polished* on a wheel covered with flat silk crepe, revolving at about 300 rpm.(～する)/A *coarsely polished* surface of the specimen is not adequate for the examination of its microstructure.

荒のへ Methods for rolling sheet involve an initial *breakdown* of large cast ingots at an elevated temperature./The temperature of the *roughing rolls* may vary from 70°C to about 150°C.(～ロール)

粗さ If not removed, these solid particles cause *roughness* in the plate./Depending on its *coarseness*, more or less of the carbide persists even after surprisingly long intervals of time./The *roughness factor* of the specimen is estimated at 2.4.(～因子)/They report a *roughness factor* of 3 for mild steel abraded with 2/0 emery.(～因子)

争う → 競争 Zinc and lead are difficult to *contend with* because they are absorbed by the refractories./*dispute*.(論争する), *compete with*.

荒筋 → 概要 For illustration, a change in state is described by the following *scheme*:/An ore is sampled according to the following *scheme*:

改める This textbook *is revised* specifically for a one-semester course for engineering or science students.(改訂される)/The rate of diffusion of an element through the lattice may *be profoundly modified* by the presence of a third element./As far as cold-working techniques are concerned, these methods should *be renewed* for Fe-Cr-Ni alloys.(更新する)

i

洗う When the joint has been completed, it should *be washed* (*cleaned*) well with a solution of about 5% soda./The work should *be air-cooled* to room temperature before the salt *is washed off* in water.(洗いおとす)

現れる Value 7.2, which *appears* in the literature, seems to be too low./The original crystal structure *reappeared* at the higher temperatures.(再び～)/

j

Three wrought grades of 18% Ni maraging steel have *emerged*./These structures can *be revealed* by several etchants over a limited range of surface orientation./The degree of cleanness of the parts *was reflected* in the degree of variation of the phosphate coating.(反映する)

あらわす → 示す [示す] Curve "A" *presents* the emission current obtained from the emitter prior to activation./The reactions *represented* by equations (1) and (2) above have very high rates./The author wishes to *express* his deepest gratitude to Dr.A for his interest in the present work./The results *are expressed* in pounds per square inch of sheared section./Cooling curves *depict* the stages of heat transfer that occur in quenching./The term "alloy iron" is used to *designate* cast iron to which chromium, copper or other elements have been added./Standard weights of lead pipe *are designated* by the actual inside diameter and by a letter showing the wall thicknesses./This fact will *be indicated* by a change in the total core losses./Specimens *are truly indicative* of casting quality./A plane which intercepts X negatively and the other axes positively would *be denoted* by ( $\bar{h}kl$ )./Furthermore, "RT" *symbolizes* the temper resulting from strain hardening after heat treatment.(記号で～)/The same symbol in italics *stands for* the absolute value of the vector. [現す]  
Reduction of carbon produces materials that may *exhibit* satisfactory mechanical properties./Examination *disclosed* the presence of precipitated constituents.(明らかにする)/After forming or forging, such products must *be* heat treated to *develop* high strength./The fluorescent magnetic particles should be used for *bringing out* the fine discontinuities./Solid slag samples cooled in water *display* similar colors.

あらゆる → すべて  
ありふれた → 普通 As a *common* example, *ordinary* boiler plate steel is used as a low-cost construction material./The production of rod by *conventional* but modernized rolling methods is to be preferred over the newer, but costly process./The most *popular* gases for the use are oxygen and hydrogen.  
ありそう It is *probable* for the amount of supercooling to increase for a distance into the liquid before decreasing to zero./The particular arrangement shown in Fig. 1 is *improbable*.(～にない)/Most *likely* foreign elements in aluminum are copper, silicon and iron./Regeneration of the cracks by the local stresses is *unlikely* (*not likely*) where plastic deformation can occur.(～にない)  
ある(或る) *Certain* steels may be preheated as high as 500°C or more for gas cutting./The great work hardening rate of a *given* alloy before annealing is required./In *one* plant, irregularities occurred in the thickness of phosphate coatings on deep drawn parts./The number of nearest neighbors may in *certain*