STYLE AND SPEED IN PUBLISHING ABSTRACTS*

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A technical-abstract publication is a document of unique importance. It compacts into highly usable form the reported findings from a wide variety of sources. Its readers come to depend on it for completeness (at least within policy ranges) and accuracy. If it contains informative abstracts instead of simple listings or annotations, they rank it with primary sources of information. This is why more information groups are paying close attention to the whats, whys, and hows of informative abstracts, and of means to speed them to readers.

Informative abstracts can serve two purposes: (1) a "current-awareness" function as a source of information on new technical developments, and (2) a source for retrospective searching. The same abstract usually cannot accomplish both purposes equally well, however. For current-awareness, an abstract should be made available quickly and have maximum readability. For retrospective searching, it should have maximum information. These two sets of criteria tend to be mutually exclusive.

There is little doubt that Chemical Abstracts (CA), with its fine index, is the best over-all retrospective searching source available to the chemist. Its abstracts are particularly valuable when the reader knows exactly what he is looking for. However, as a current-awareness instrument it is far from ideal. Its abstracts are not easy to read, one after the other, when one is trying to keep up with new developments.

A current-awareness abstract should permit the busy reader to decide quickly whether or not the item abstracted can be of interest to him, and it should leave him, after he has read all or part of the abstract, with both the time and the inclination to read more abstracts. Such abstracts do not make as comprehensive a retrospective searching tool as Chemical Abstracts. However, such abstracts can be useful for searches on aspects of applied technology if a specialized index or classification system, such as that of the American Petroleum Institute (API), is available.

This paper will discuss the style of the current-awareness abstracts written by the American Petroleum Institute's Central Abstracting Service, compare them with Chemical Abstracts in regard to speed of delivery, and then add some comments about Esso Research's abstracting program, which uses the API abstracting services to cover about one-half of its literature abstracting requirement.

STYLE OF THE API ABSTRACT

As a current-awareness service, quick, easy readability is the first goal in the API's abstracting program.

The new development (or the scope of extensive experimentation, reported in the original) is communicated immediately. The first sentence of the abstract is the critical one. The succeeding sentences emanate logically from it. The reader learns qualitatively what was done and what was found. Reading the first sentence or two may be enough to tell him that the article, although it is in a related field, has no bearing on his work or interests; he can then move on to another abstract. If, on the other hand, the abstract seems of interest, he will get enough information by reading it through to have the "flavor" of the original article. He can then decide whether his interest is strong enough to justify looking at the original paper. The abstract is never a replacement for the original. It does not list the melting point and refractive index of each new organic compound. It need not do this, since the 140 journals abstracted by the API are generally available in petroleum-company libraries.

The API abstract, although informative, is relatively short; the absolute maximum is 200 words of text.

The abstract includes very few of the chemical symbols, formulas, abbreviations, etc., used by Chemical Abstracts. These short-cuts save space, but they make CA harder to read. The title comes at the beginning of the API abstract, but the bibliographic data (author, journal title, etc.) come at the end, where they do not interrupt the flow of factual information. Finally, the API uses a larger type face than Chemical Abstracts. Figure 1 shows a CA abstract and an API abstract of the same paper.

The CA abstract obviously contains more information. It could be a substitute for the original paper. But there can be no doubt that among people who are reading an abstracts publication to find out what's new, the API's style will be more effective. More people will read more abstracts in the API's style before they rebel at further reading of abstracts.

In carrying out its program, API has the advantage of a staff of full-time, professional abstracters. These people are personally trained by the editors. Furthermore, because they work together in a central location, a direct exchange of ideas is immediately possible whenever there is a point to be discussed.

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2,4'-Diphenylbiphenyl. Richard H. Wiley and B. J. Wakefield (Univ. of Louisville, Louisville, Ky.). *J. Org. Chem.* 25, 132–4(1960).—The previously unknown 2-$PhC_6H_4C_6H_4Ph$-4 (I) was synthesized. Redn. of 2-$O_2NC_6H_4$-$C_6H_4NO_2$-4, obtained as a by-product in the nitration of Ph_2 (Gull and Turner, *CA* 23, 2962), with Sn and HCl gave 65% 2-$H_2NC_6H_4C_6H_4NH_2$-4 (II). II (15 g.) and 25 g. Ac_2O heated 2 hrs. on a steam bath, the soln. poured into 400 ml. ice H_2O, the mixt. warmed 30 min. on a steam bath, cooled, the ppt. filtered off, and recrystd. from aq. EtOH gave 10 g. 2-$AcHNC_6H_4C_6H_4NHAc$-4 (III), m. 198–200°. II (6 g.) in HCl diazotized at 0°, the soln. allowed to warm to 5–6° while adding 100 ml. C_6H_6, the mixt. kept at 5–6° while adding 5*N* NaOH during 1 hr. with rapid stirring, stirred 1 hr. at 5–6° and 20 hrs. at room temp., the C_6H_6 layer sepd., dried, concd., the residue (5 g.) sublimed, and the product (15 mg.) recrystd. from C_6H_6 gave I, m. 208–10°. III (10 g.) in 150 ml. AcOH and 75 ml. Ac_2O treated with 10 g. anhyd. KOAc and 1 g. P_2O_5, the soln. cooled to −5°, treated with 5.5 g. redistd. NOCl in 10 ml. Ac_2O with stirring at −20°, the mixt. stirred 15 min., poured on 500 g. ice and H_2O, extd. twice with 200 ml. C_6H_6, the ext. washed twice with 50 ml. ice H_2O, dried, warmed to 35–40° until no more N was evolved (1 hr.), filtered, the filtrate steam distd., the residual tar (10 g.) chromatographed on acid Al_2O_3, eluted with C_6H_6, the eluate coming through the column before the colored material evapd. to dryness, and the product (0.3 g.) recrystd. from C_6H_6 or PhMe gave I, m. 209–10°, λ (MeOH) 257 and 274 mμ (log ε 4.55 and 4.55), ν 1605, 1529, 1484, 1456, 1403, 1350, 1170, 1076, 1005, 908, 839, 748, 686 cm.$^{-1}$ William Braker

2, 4'-DIPHENYLBIPHENYL was synthesized by a series of reactions starting with 2, 4'-dinitro- or 2, 4'-diacetamidodiphenyl, and its ultraviolet absorption characteristics were correlated with data for other quaterphenyls and related compounds. For all p-quaterphenyls, both the wave length of maximum absorption and the extinction coefficient increase with the number of nuclei present; for all m-quaterphenyls, the position of the maximum remains constant at about 250 mμ, but the extinction coefficient increases with the number of nuclei. Table and 17 references.
R. H. Wiley and B. J. Wakefield (Univ. Louisville) (J. Org. Chem. 25, No. 1:132-34(Jan. 1960)

Fig. 1 – Same article abstracted by CA (top) and API (bottom).

Apart from the readability feature, the API abstracting service has certain further advantages for the petroleum-refining industry.

1. It covers non-chemical material of importance to the industry, for example, theoretical studies on friction and lubrication. 2. It includes semi-technical material. This material, e.g., descriptions of petrochemical plants, has no permanent value, but is important to the development and economics people in the industry. 3. The subject breakdown in the API bulletin is much finer and more meaningful to petroleum-refining industry readers. API uses about 60 categories to subdivide about 200 abstracts per issue. Figure 2 is a partial list of the section headings used in the API bulletin.

A feature of the API bulletin that is helpful in locating references is the practice of printing all the abstracts from a given issue of a journal at the same time. API can do this because, with its staff of full-time professionals, no journal takes more than one or two days to be abstracted. At the front of each issue of its bulletin the API prints a listing of the journals and items covered in that issue (Fig. 3). Chemical Abstracts could not publish all the abstracts from a given issue

CRUDES AND CRUDE TREATMENT
GENERAL PROCESSES
- Distillation
- Extraction
- Sorption
- Combination Processes
- Retorting
- Miscellaneous Processes

GASES
MOTOR FUELS
- General
- Combination Processes
- Thermal Treatments
- Gasoline Recovery
- Catalytic Conversions
- Treating
- Hydrogenation
- Miscellaneous Processes
- Hydrocarbon Synthesis
- Compositions

WAXES
ASPHALT
OTHER PETROLEUM PRODUCTS

FUEL OILS
OTHER FUELS
LUBRICANTS
- Manufacture
- Lubrication
- Treating
- Miscellaneous
- Compositions

CATALYSTS AND CATALYSIS
CHEMICAL COMPOUNDS
- General
- Nitrogen Compounds
- Hydrocarbons
- Sulfur Compounds
- Oxygen Compounds
- Other Chemical Compounds
- Halogen Compounds

Fig. 2. – Section headings used in API abstracts bulletins (Partial list).

of a journal simultaneously, without delaying publication of some of its abstracts for a long time. The volunteer abstracters, no matter how good their intentions, have other interests that come before their CA work; it is the rare volunteer who can prepare more than three or four abstracts at one sitting.

It should be noted that API limits itself to coverage of the 140 journals that have been found to be the chief sources of information of interest

Anal. Chem. (Aug. 1960) 56A, 1058, 1069, 1079, 1107, 1110, 1131, 1135, 1137, 1141, 1168, 1171, 1205, 1206, 1211, 1213, 1215
Appl. Spectroscopy (Aug. 1960) 103
Bitumen, Teere, Asphalte, Peche (July 1960) 269, 275
Brennstoff-Chem. (July 1960) 62, 208, 213
Chem. Eng. News (8/15/60) 41, 60
Chem. Week (8/13/60) 18, 28, 41, 56, 63, 64, 82
Control Eng. (Aug. 1960) 129, 192
Diesel Power (Aug. 1960) ---
Erdoel u. Kohle (June 1960) 381, 382, 388, 390, 394, 396, 400, 405, 413, 416, 422, 433, 436. 440. 450

J. chim. phys. (June 1960) 449, 490, 500, 28, 34
J. Inst. Petrol. (July 1960) 233, 234, 237, 147A, 151A
J. Sci. Instr. (July 1960) 236, 242
Kolloid-Z. (July 1960) 20, 23, 61, 86, 97
Makromol. Chem. (June 1960) 1, 13, 27, 38, 44, 72, 85
Nature (7/23/60) 311
NLGI Spokesman (Aug. 1960) 173, 177, 180, 191
Oil Gas J. (8/8/60) 46, 52, 54, 56, 58, 63, 65, 66, 68, 71, 74, 77, 78, 80, 82, 86, 92, 96, 97, 99, 119, 120, 122
Petrol. Refiner (July 1960) 103, 108, 112, 115, 119, 127, 133, 143, 145, 149, 157, 161, 164, 167, 168, 180, 196, 204, 219, 220, 237

Fig. 3 – Portion of the list of periodicals covered in an issue of an API bulletin.

to the petroleum-refining industry. The size of this program thus bears no comparison with CA's coverage of over 8,000 publications.

SPEED OF PUBLICATION

A current-awareness publication should, obviously, deliver information to its readers with the greatest possible speed. It is therefore pertinent to study how Chemical Abstracts compares with the American Petroleum Institute in speed of delivery of chemical-subject abstracts.

Two studies have been made. The first covers abstracts of U. S. and other non-Soviet journals. The second covers Soviet publications.

In the first study, 84 chemical-subject abstracts published in the January 2 and January 9, 1959, issues of API Technical Abstracts were checked. These were abstracts of material in non-Soviet (U. S. and foreign) journals. Abstracts of 74 of these items appeared in Chemical Abstracts during 1959, between February and November, with the time distribution shown in Table I.

TABLE I COMPARISON OF ABSTRACT PUBLISHING SPEED
CA vs. API, both abstracting chemical information directly from original U.S. and other non-Soviet journals:
Basis: 84 abstracts published by API in January 1959

Month	Abstracts Found in CA
Prior to 1959	0
January 1959	0
February	8
March	11
April	21
May	9
June	6
July	5
August	2
September	5
October	4
November	3
Not covered in 1959	10

The second study was based on the April 17 and May 1, 1959, issues of the API Abstracts of Soviet Petroleum Technology. Chemical-subject abstracts in these issues were checked in the author indexes of the 1959 issues of Chemical Abstracts through August 10, 1959. This is 3.5 months after the delivery of the API abstracts. This study dealt with two categories:

The first category concerned chemical-subject abstracts made by the API directly from copies of the January or February 1959 issues of 18 Soviet journals. Out of 53 API abstracts of original Soviet chemical papers, 14 (27%) had appeared in CA 0-3.5 months after their API publication. None appeared in CA before API. Similar results were obtained from a recent recheck of early 1960 Soviet publications.

The second category in this Soviet literature study covered chemical-subject abstracts made by API from abstracts published in non-Soviet sources, such as the Journal of the Institute of Petroleum and the Journal of Applied Chemistry. (These are a byproduct of API's coverage of the non-Soviet, full papers in these journals.) Of 31 abstracts from these sources rewritten by the API, 21 (68%) appeared in CA before API (and before they appeared in the API's source journals), 3 (10%) appeared first in the API bulletin, and 7 (22%) had not appeared in CA 3.5 months after publication by the API.

These surveys show that the API is much faster than CA when abstracting directly from original material. CA, on the other hand, is generally faster when API is using non-Soviet abstracting sources for Soviet material.

COMMENTS ON ESSO RESEARCH'S ABSTRACTING PROGRAM

More than half of the literature abstracts that Esso Research distributes to the technical staff of the affiliates of the Standard Oil Company (New Jersey) come from the American Petroleum Institute's abstract bulletins. The rest of the abstracts are produced by the Company's staff of professional abstracters and are based on some 400 journals not covered by the API services.

Esso Research's ideal abstract is a 125-word statement beginning with a topical sentence that gives the scope of the document abstracted and the most important or interesting result obtained. The rest of the abstract elaborates on the first sentence but contains no subject matter that is not indicated or implied in that sentence. The title comes after the text.

The 125-word maximum calls for some very tight writing if the abstract is to give a worthwhile amount of information, but it permits the use of a rather large type face without creating an overly fat bulletin of abstracts. (Esso Research feels that a fat bulletin, by its mere size, would discourage busy people from reading it.)

In making use of the API's abstracts, Esso Research does not change their basic format. The title that runs into the text of the abstract is considered acceptable. This form permits smooth reading of the abstract without interruption by the bibliographic data.

Esso Research has not adopted the API style for the abstracts prepared by its own staff, however. It prefers to continue beginning its abstracts with a true topical sentence, believing that this style transfers information faster than the abstract that begins with a title. (On the other hand, API feels that the title-first abstract is easier to prepare.)

Figure 4 compares an Esso Research-style abstract with one that begins with a title (API style).

Both Esso Research's and API's abstracts speed information transfer to readers, compared with conventional abstracts.

The longer API abstracts are shortened for

NEW FUEL DRYING FOR SAFER JET FLYING. Linde Co.'s method of drying jet fuel by molecular sieves (Abstract No. 6-2062) can reduce dissolved water concentration to <1 ppm., thereby preventing fuel icing at high altitudes. A 100-1000 gal./min. adsorptive dryer costs $10,000-14,500 and consists of two cyclindrical steel towers filled with 4-A molecular sieves. One tower dries the liquid stream at about 2 ft./min., while the other is reactivated by an air flow at 500°F. and then cooled to the absorption temperature. Each drying period lasts about 4 hr. By switching from one tower to the other automatically, continuous operation can be maintained. Each column can be reactivated as many as 3000 times before recharging becomes necessary, and the cost of operation is practically negligible. The units are available in sizes suitable for use in the refinery, at the airfield, or aboard the aircraft. Photographs.
(Petrol. Week 8, No. 26:34, 37(6/26/59)

a) Drying jet fuel with molecular sieves can reduce dissolved water to <1 ppm., preventing fuel icing at high altitudes. A 100-1000 gal./min. adsorptive dryer costs $10,000-$14,500 and consists of two cylindrical steel towers filled with 4-A molecular sieves. One tower dries the liquid stream, at about 2 ft./min., while the other is reactivated by an air flow at 500°F. Each drying period lasts about 4 hr. Each column can be reactivated 3000 times; the cost of operation is practically negligible.
"New Fuel Drying for Safer Jet Flying."-(Petrol. Week 8, No. 26:34, 37(6/26/59)

Fig. 4 – Style of abstracts used by API (top) and Esso Research (bottom).

use in the Esso Research abstract bulletins. In rare cases this can be done by removing excess verbiage, but most of the shortening involves deleting material which the knowledgeable reader will, hopefully, be able to infer from the rest of the abstract. This type of information includes: 1. "self-serving" statements such as: (a) "the present process is an improvement over previous methods"; (b) "the theory gives results that agree with experimental data"; 2. detailed descriptions of equipment which generally are shortened by giving the principles of the apparatus and the new features; 3. listing of series of compounds, etc., thus, "oxidation of methane, ethane, n-butane, neopentane, n-heptane, and isooctane" becomes "oxidation of six C_1-C_8 paraffins."

SUMMARY AND CONCLUSIONS

This paper has shown how the American Petroleum Institute produces an abstracts publication that serves the "current-awareness" needs of the technical people in the petroleum industry. This is done by: (1) writing abstracts that are designed for easy reading, (2) publishing them under a system of categories that is meaningful to petroleum industry people, and (3) delivering them quickly. This is not being achieved as effectively by Chemical Abstracts because: (1) its primary objective is the creation of a retrospective searching tool, (2) it is intended to cover the entire field of chemistry, and (3) it uses hard-to-control volunteer abstracters.

It has also been shown how Esso Research, with a modest supplementary editing effort, incorporates the API abstracts into its own abstracting program.

For the petroleum industry, a complete information service must include both Chemical Abstracts and the American Petroleum Institute's abstracts or their equivalent. The primary purposes of these two services, retrospective searching in the one case, and quick communication in the other, complement each other. In secondary areas they also complement each other. API's specialized index is convenient for searching applied petroleum fields, while CA's breadth of coverage of chemistry is second to none.

REFERENCE

[1] Another comparison gave this interesting result: in abstracting Soviet papers, CA was faster than its Russian counterpart (Referativnyi Zhurnal, Khimiya) for 40% of the items checked.