the All Union Scientific Research Institute of ... in the presence of various derivatives it was shown that...").

A number of translators felt that Russian journals contain more misprints than their western counterparts, but this may simply be the result of their having to work so closely with them. There are also differences in the quality of writing in the articles themselves, although again, this is not unusual in the west. However, there is admittedly a problem when an article is published by an author from one of the Soviet republics in which Russian is not the native tongue.

There are, naturally, many more comments on things of which a translator of chemical Russian should be wary, but it is impossible to list them all here. The most importants ones have been mentioned.

For those in whom the foregoing has raised doubts about their resolution to become translators, I offer this final thought from another of Plenum's chemistry translators:

> "If I had to start again, I would take a one-year elementary class (evenings) or lessons from an individual tutor, or if these were not available, follow some radio or television Russian course. After that I would read any kind of Russian that interested me—Russian novels, Russian sports magazines, or scientific Russian, preferably with my feet up and the Russian dictionary on a distant shelf."

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The Accuracy of Chemical Production Forecasts as Reported in the Literature

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Received December 2, 1969

Estimates of production in the United States of 20 organic chemicals for 1965 as reported in ten trade journal articles are compared with production figures recorded in *Synthetic Organic Chemicals, U. S. Production and Sales* published by the U. S. Tariff Commission. Of 23 forecasts, 17 were underestimates and six were overestimates. Of nine estimates made before 1964, all were lower than Tariff Commission figures. The most recently published estimates were most accurate. Of 12 estimates made in 1965, all were at least 80% accurate. Twelve of 18 estimates from *Chemical & Engineering News* were more than 80% accurate.

Numerous articles published in trade journals contain estimates of capacity, production, and consumption of synthetic chemicals. Although theories and techniques used in making these market forecasts have frequently been described, little attention has been directed toward the accuracy of the predictions.

Recently, Pafford[1] analyzed 40 marketing research forecasts prepared by consultants and marketing personnel of chemical consuming industries. The forecasts included capacity, demand, output, and sales figures for 1965–67. By comparing forecast figures with actual government figures, he found that 72.5% of the forecasts were too low by a mean of 17.25%.

In this report, forecasts of only one market parameter, production, for a single year (1965) are studied. Estimates of production in United States of 20 organic chemicals for 1965 as reported in ten articles are compared with production figures recorded in *Synthetic Organic Chemicals, U.S. Production and Sales* published by the U.S. Tariff Commission (USTC).

In Table I, year in which forecast is published, estimated production, Tariff Commission production figures, difference between estimates and USTC figures and accuracy of estimates (%) for each chemical are shown.

As shown in Table II, 17 of the 23 estimates were underestimates and six were overestimates. Of the nine forecasts made before 1964 all were lower than the Tariff Commission figure.

The most recently published estimates were most accurate. Of the 12 forecasts made in 1965, all were

Table I. U.S. Production of Organic Chemicals, Millions of Pounds (1965)

Chemical	Year Forecast Published	Estimate and Reference	U.S.T.C. Figures	Difference	Accuracy of Estimate, %
Acetic acid	1965	1100[a]	1346	−246	81.7
Acetic anhydride	1965	1430[a]	1531	−101	93.4
Acetone	1965	1135[a]	1124	+11	99.0
Acrylonitrile	1962, 1965	450[b], 670[a]	771.6	−321.6, −101.6	58.3, 86.8
Aniline	1965	170[a]	195.5	−25.5	86.4
Benzoic acid	1962	12[c]	16.2	−4.2	74.1
Carbon disulfide	1965	690[a]	756.5	−66.5	91.3
Carbon tetrachloride	1965	570[a]	593.6	−23.6	96.0
Cyclohexane	1963	1200[d]	1700	−500	70.6
Decyl alcohol	1961	75[e]	105.9	−30.9	70.8
Ethylene glycol	1965	2000[a]	1798	+202	89.9
2-Ethylhexanol	1961	210[e]	293.2	−83.2	71.6
Formaldehyde	1965	2770[a]	3106	−336	89.2
Iso-octyl alcohol	1961	85[e]	126.7	−41.7	67.1
Isopropyl alcohol	1963, 1964	1400[f], 1640[g]	1540	−140, + 100	90.9, 93.9
Monosodium glutamate	1961	30[h]	43.1	−13.1	69.6
Pentaerythritol	1965	72[a]	69.3	+2.7	95.8
Phthalic anhydride	1964, 1965	550[i], 650[j]	608.3	−58.3, +41.7	90.4, 93.5
Propylene glycol	1965	265[a]	212.8	+47.2	80.3
Propylene oxide	1963	480[f]	604.6	−124.6	79.4

[a] *Chem. Eng. News* **43** (1), 12, 1965. [b] *Ibid.* **40** (53), 11, 1962. [c] *Ibid.* **40** (46), 34, 1962. [d] *Oil Gas J.* **61** (6), 107, 1963. [e] *Chem. Eng. News* **39** (46), 129, 1961. [f] *Oil Gas J.* **61** (23), 202, 1963. [g] *Chem. Eng. News* **42** (49), 26, 1964. [h] *Ibid.* **39** (49), 29, 1961. [i] *Chem. Week* **94** (3), 59, 1964. [j] *Chem. Week* **96** (2), 79, 1965.

Table II. Accuracy of Estimates by Year of Publication

	Underestimates, Degree of Accuracy			Overestimates, Degree of Accuracy		
Year	<70%	70–80%	>80%	80–90%	90–100%	Total Estimates
1965	...	...	7	2	3	12
1964	...	...	1	...	1	2
1963	...	2	1	...	...	3
1962	1	1	...	...	...	2
1961	2	2	...	...	...	4
Total Estimates	3	5	9	2	4	23

at least 80% accurate. The six predictions made in 1961 and 1962 were less than 80% of the government figures.

Of the 18 estimates from *Chemical & Engineering News*, 12 were more than 80% in agreement with the Tariff Commission figures. Six of these forecasts were at least 90% of the government statistics.

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The Use of Molecular Formula Distribution Statistics in the Design of Chemical Structure Registry Systems

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Received December 4, 1969

The development of large computer files of chemical structures has increased the need for efficient registration techniques. In a recent paper, Lynch *et al.*[1] have described an extension to the isomer sort technique in which registration is accomplished without generating a unique description for the compound being registered.

The technique depends on prediction of the approximate size of the group of chemical compounds having the same molecular formula as the compound being registered in a particular file. This is then used to decide the appropriate level of description for the compound; in general, the larger the molecular formula group, the deeper is the level of description necessary to obtain subgroups of optimum size. In this paper, we describe a method of predicting molecular formula group sizes from the molecular formula itself and the known file characteristics.

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