authors, however, used the approximation in converting the M II frequencies. Employing the more precise relation increases the discrepancy to 11 map units. It would appear, then, that Zickler's data probably do require explanation, although it is clearly not necessary, as Ryan (*13*) pointed out, to accept his hypothesis of M II segregation of the centromeres.

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[1] After the present manuscript was accepted for publication a paper by Papazian (*Genetics,* **37**, 175 [1952]) appeared in which relation (8) was derived by a somewhat different argument.

Comments and Communications

Scientific Personnel in the USSR

ANALYSIS of recent Soviet official reports[1] indicates a rapid rate of growth in that country's professional labor force, both in absolute numbers and in relation to total nonagricultural employment. In 1952 the number of persons employed in professional positions who were graduates of higher educational institutions in industry, agriculture, and health totaled 860,000 as compared with 358,000 in 1937. As a proportion of total employment excluding collective-farm workers, this figure increased from about 1.3% in the earlier year to 2.0% in the later.

The 1952 professional labor force includes about 475,000 engineers and natural scientists in manufacturing, construction, transportation, and communications, plus some 145,000 in agriculture. It comprises about 240,000 physicians, dentists, and pharmacists. Professors and instructors in higher educational institutions numbered 80,000 in 1950. In that year, teachers in primary and secondary schools totaled 1,600,000, but two thirds of them had only a secondary school education.

Whereas the over-all enrollment in Soviet primary and nonspecialized secondary schools (37 million in 1950) has been little greater than before the war, that in technical and other specialized secondary schools has risen rapidly. By 1948 it had reached 1,094,000 as compared with 823,000 in 1940; the numbers of graduates in the two years were 252,000 and 164,000, respectively. Comparable data are unavailable for 1952, although the rise in technical school enrollments and graduations has unquestionably continued.

In higher education, the trend has been comparable. By 1948 the number of full-time undergraduate and graduate students aggregated 734,000, compared with 583,000 in 1940. The 1952 figure approximated 974,000. Furthermore, the number of persons taking part-time or correspondence courses has jumped from 229,000 in 1940 to half a million in 1950. The number graduating was 102,000 in 1940, 122,000 in 1948, and about 127,000 in 1950. Graduate students working for strictly research degrees (*Kanditat* and *Doktor*) totaled 21,000 in 1950, compared to a 1941 *goal* of 13,300. On the other hand, the number of higher educational institutions has increased somewhat more slowly than enrollment: 782 in early 1941; 880 in 1950.

Data are unfortunately lacking for a current breakdown of enrollment and graduation in higher education by fields, but it is clear that major fluctuations have taken place in recent years. Thus the immense shortages of medical personnel caused by World War II led to a very high output (presumably based on an accelerated program) in 1948 and 1949. In those years the net increases in Soviet physicians, graduate dentists, and graduate pharmacists were 24,000 and 26,000, respectively. For 1950, however, the number

TABLE 1

Speciality	Percentage of total	
	Enrollment	Annual graduates
Industry	24.4*	20.9*
Transportation and Communications	5.6*	5.9*
Agriculture	8.2*	7.8*
Medicine	18.6	16.3
Education	37.3	42.6
Including foreign-language specialists	2.9	2.5
Art	1.3	1.4
Economics	1.9	2.6
Law	1.1	1.0
Others	1.6	1.5
Total	100.0	100.0

* At least one fifth administrators and political officers.

[1] *Tretii Pyatiletnii Plan Razvitiya Narodnoye Khozyaistro SSSR* ("Third Five-Year Plan for the Development of the National Economy of the USSR"), 184, 238; *Gosudarstvennyi Plan Razvitiya Narodnoye Khozyaistvo SSSR na 1941 g* ("State Plan for the Development of the National Economy of the USSR for 1941"), 612–46; *Narodnoye Khozyaistvo: Sbornik* ("National Economy. A Collection") **3**, 413, 445 (1950); **4**, 132, 138, 140–2, 423–4 (1951); *Izvestiya,* Oct. 7, 1952.

did not exceed 13,000—a figure substantially below the 1941 (peacetime) goal of 18,600.

With these cautions, the data from the 1941 plan are presented as rough approximations of the breakdown by *undergraduate* fields (Table 1).

In summary, substantial evidence is available from Soviet official sources to indicate a rapid rate of increase in that country's professional labor force in recent years. Furthermore, it is likely that the data presented are considerably under the actual totals, for I do not believe that military institutions, which play an important role in Soviet higher education and research, are included. As a whole, this qualitative improvement of the Soviet labor force opens up possibilities of profound new developments in science, technology, and other fields. It is a phenomenon that permits of no complacence on the part of the West.

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Perfection and Ideality

IN A paper now being published by the Willow Run Research Center,[1] we have included the following definitions in the glossary:

Perfect gas—one which conforms to the state equation $P = \rho RT$.
Ideal gas—a perfect gas which has constant specific heats.

In theory, assumptions that lead to perfection may also lead to ideality. In practice, however, these concepts are used for purposes of approximation, and derivations often make use of the one approximation without wishing to imply the other.

The advantage in scientific writing of having words with precise meanings is, of course, well known. The terms "perfect gas" and "ideal gas" have long been used interchangeably, with little regard for which of the above two definitions is meant. I should like to recommend consideration of the general adoption of these definitions.

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[1] UMM 97, a shock tube investigation of detonative combustion, by R. B. Morrison.

Age of the Denbigh Flint Complex[1]

THE Denbigh flint complex (*1*), the oldest well-known cultural horizon in Alaska, has aroused widespread interest and speculation as to its antiquity (*2, 3*). This fact makes desirable a preliminary notice of results obtained in geologic investigations at Iyatayet, the discovery site. The geologic significance of several related sites in the Brooks Range also needs clarification.

[1] Publication authorized by the Director, U. S. Geological Survey.

Iyatayet, the site of excavations by J. L. Giddings, Jr., is located on the west coast of Cape Denbigh on Norton Bay, 115 miles east of Nome, Alaska. Evidence from topographic features, sediments, soils, and cultural deposits indicates that people of the Denbigh flint complex occupied Iyatayet Valley during a warm interval preceded and followed by intervals when the climate was colder than at present. The warm interval during which the site was first occupied probably coincided with a warm interval about 8500 years ago, recorded by dated muck north of Nome; but it may have coincided instead with an older, pre-Mankato warm interval more than 10,000 years ago, represented by dated muck near Fairbanks.

Cultural objects belonging to the Denbigh flint complex have been collected on glacial deposits at three sites in the Brooks Range in northern Alaska (*4, 5*). According to Solecki (*5*), "the fact that these early manifestations were found in glaciated areas conclusively points out that these sites were occupied during post-glacial times." However, several distinct ice advances, each less extensive than its predecessor, are recognized in the Brooks Range (*6*). None can be dated at present. The glacial sediments upon which objects of the Denbigh flint complex were found may have been deposited during a relatively early advance, and examination of air photos suggests that this is the case in at least one of the sites. On the basis of present knowledge, therefore, it can only be said that the Brooks Range sites are younger than an early glacial advance; they are not necessarily younger than the latest Pleistocene glacial advance.

Giddings and I have in preparation a manuscript describing in detail the results of geologic investigations at Iyatayet.

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Common Names for Subspecies

AS AN amateur ornithologist, albeit professionally a taxonomic botanist, I must endorse wholeheartedly the plea voiced by Howard Campbell in SCIENCE for June 6.

There has recently been an epidemic of subspecific common names in ornithology, along with many proposed changes of specific common names, some of which—e.g., gray jay for Canada jay (*Perisoreus canadensis*)—seem to serve no useful purpose. Some lists of proposed names have been published and have been followed in varying degrees by many bird clubs, sometimes with an astonishing degree of confusion. For three years I undertook to prepare Christmas bird census lists for publication in the *Canadian Field-*