

CANADA SCIENCE COUNCIL

... Canada has phd's piled high and deep with no jobs in sight

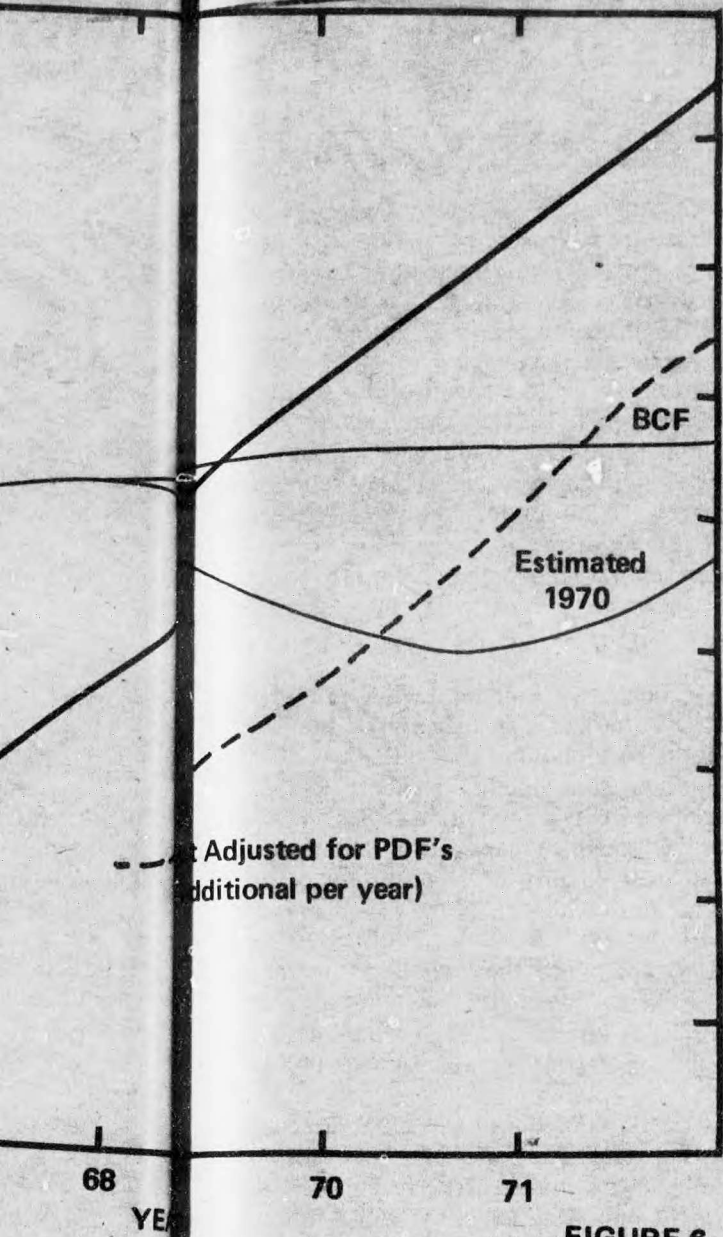


FIGURE 6

By Mattered Graduate

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ways like to teach in universities or sit in their little labs doing silly research to publish papers in journals that very few care to read). Anyhow, why need such a man in the industry, if research is needed to develop things then it's easier and cheaper to get it from the parent company in U.S.

Graduate students should be patriotic, may be they should

have a special thanksgiving for the wonderful planning that made them unnecessary all together. Examples of such wonderful planning are, expanding graduate studies at a rate of 23 per cent per year during the past ten years, Complete divorce between academic research and industrial and social problems, keeping most of the country industries in the primary stage (mineral exploration and export), buying all research needed from somewhere else, and giving American where else, and giving American Professors two years tac holiday if they take positions that can be filled with Canadian Ph. Ds.

For all my fellow graduate students, may I wish you happy dreams, good mental exercise and plenty of luck when looking for a job.

By the way, in case that you agree that a problem of under-employment (to be polite) of Ph. Ds exists, what are the solutions? ? Send your opinions to the editor.

universities. We comment on the likely rate of increase in PDF's below; for the moment it is sufficient to observe that the true output of Ph.D's will lie between the two curves.

Postdoctoral fellowships can be used to absorb this surplus, but only through rapid increases in university expenditures for this purpose. Figure 7 shows two courses of action universities may choose. Model I continues the recent trend of 400 additional PDF's each year, corresponding to a 20 percent annual increase in numbers. Model II, with a 7 percent annual increase, corresponds to the likely overall trend in university funding; it implies a reduction in additional PDF positions from 400 in 1970 to 100 in 1972.

The slope of the curves is, in itself, a measure of the suddenness with which the problem has arisen. We have not attempted to extrapolate these figures beyond 1972. Measures of control initiated immediately will presumably by 1973 have reduced the imbalance between output and demand.

The magnitude of this surplus is at first surprising it must be kept in mind, however, that the total surplus in 1972 is rather less than that year's Ph.D output-that Canada is, so to speak, only one year out of step.

Two factors further complicate this situation: immigration trends and discipline imbalance. We must attempt, however speculatively, to answer the questions

- (a) For how long and in what numbers, will Canada continue to import Ph.D's?
- (b) What is the effect on the overall employment outlook of shortages and oversupply in specific disciplines?

IMMIGRATION TRENDS

Before 1969 Canada had considerably more employment opportunities for Ph.D's than the domestic supply could fill. The resulting influx of scientists to Canada bridged this gap; as Table III suggests, much of the net immigration of scientists during 1964-68 was at the Ph.D level.

Now Canada has a small-but rapidly growing --surplus of domestically produced Ph.D's. How will this influence the immigration-emigration pattern?

Certainly we may expect emigration of scientists to the U.S., whether for postdoctoral training or permanent employment, to dwindle considerably. Employment opportunities in the U.S., in government, universities and industry, are currently almost negligible. Indeed, immigration of Ph.D's from the U.S. may soon reach significant levels: several Canadian universities are currently listing faculty positions and postdoctoral appointments in U.S. technical journals.

Immigration from Europe--and particularly the U.K.--may continue for a time at its former rate. This is a serious prospect--perhaps 300 Ph.D's entering each year on the basis of their intrinsic employability.

In short, the annual surplus of Ph.D's estimated earlier in this paper understates the gravity of the situation: the net immigration of Ph.D's to Canada will certainly continue at its former level, and may increase to 400 per year.

In presenting these figures it is assumed throughout that all Ph.D's are equivalent--that any Ph.D is capable of finding employment opportunity. This assumption is less valid for science and engineering than for any other professional category. In fact, employer and employee have increased their expectations and requirements.

It is difficult to measure the degree of imbalance that exists between supply and demand of Ph.D's because of discipline restrictions. For some specific disciplines, such as at the present time the supply of Physicists exceeds the demand by at least a factor of three, while the supply of Ph.D's in Oceanography is only one-half the demand. Overall, we have estimated a matching coefficient of 0.80 in a numerically balanced supply-demand situation, 80 out of 100 Ph.D's are likely to find employment opportunities corresponding to their specialization.

This means that the effective new employment positions per year will be only 80 per cent of the number shown in Table IV. The number is increased, but only moderately. The problem is the imbalance between output and new positions, regardless of discipline matching.

In future years the discipline matching coefficient may be expected to drop as more disciplines (in which the matching of supply and demand by discipline is high efficient, especially for postdoctoral fellowships) reduce their rate of growth. Counteracting this trend is the availability of a larger stock of Ph.D's which to choose will ensure at least a few positions are left vacant.

Insistence by Ph.D that they work in a field closely related to the subject of their thesis has been criticized as the cause of the imbalance. It is worth pointing out that the fault is often equally the employer's decision to hire: a Ph.D is not taken unless and only a candidate whose qualifications are tailored to the specific research requirements is likely to be considered.

This, then is the situation. Within six months Canada will begin to produce more Ph.D's than can be accommodated in training, research and development activities. Collectively, this occurs at the very time that proportionately more Ph.D's are being produced in Canada than in the U.S.

Awareness of the magnitude of this problem is likely to be gradual. Ph. D's emerge from a relatively steady stream from universities like the flood-tide of first degrees and second degrees. Also, the postdoctoral fellowship system acts as a reserve bank, evening out the demand picture.

We do not envisage 1,700 totally unemployed Ph. D's roaming the streets in the near future; a certain proportion will find part-time employment; many more will perform functions which a lower degree has been considered adequate qualification. We may, however, expect a number to remain literally unemployed. We may also expect unemployment of M.Sc's to increase as they unsuccessfully compete with Ph. D's for the limited number of new employment positions. How many of these will enroll in Ph. D programs, thus exacerbating the problem in 1976, is a matter for conjecture.