

Jr. Knows Best . . . or Does He?

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Six years ago, Carl Milanovich and Jack Sherick stood on a street corner of Butte, Montana, talking about next year's prospects. High school seniors at Butte Public, both ranked in the upper quarter of their class. Sons of Serbian workmen in the Butte copper mines, they had heard all their lives that a college degree was the passport to enter the good life. High school career days had given them a rosy view of every field from agriculture to zoology. Any and all fields seemed to lead to Mickey Mantle's salary with the Yankees or Clyde Weed's with the Anaconda Company.

The scuttlebutt around the high school was that either Business Administration at the University in Missoula or the Commerce course at Montana State in Bozeman was the easiest and the surest, safest way to that essential college degree. Carl assured Jack that this was the smart thing to do; get that degree and have a good time while doing it. Jack was tempted to agree but had been offered a \$250 scholarship by Montana State if he would take Chemical Engineering. The scholarship money had come from the Continental Oil Company, the State people told him, and it made him feel good that a big outfit like Conoco considered him that important. The scholarship was not large but it did cover the tuition fees for the freshman year. He felt he would immediately be earning part of his college expenses.

So Carl went to the University to major in Business Administration. A full 25% of the 4500 students there were doing the same. Jack enrolled in Chemical Engineering at Bozeman; about 3% of the students there were in that field. Today Jack, a capable engineer, is at the Reactor Test Station in Idaho developing an atomic-powered engine designed to push a space craft to the moon, Mars, and beyond. Carl too has his degree. He is clerking in the Butte J. C. Penney store and considers himself very lucky to have a job.

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Bob Young climbed aboard the Northern Pacific's crack North Coast Limited at Bozeman, Montana, and settled down in his seat for the long ride back to Chicago. Bob was discouraged and failed to share his fellow

passengers' enthusiasm for the magnificent mountain scenery that slipped by as the train climbed to the summit of 6000-foot Bozeman pass. Bob Young is Universal Oil Products Company's chief recruiter and his recent tour of colleges in the Northwest looking for engineers had been very disheartening. The trip started badly. Winter storms over the Rockies and the Great Plains had caused the cancellation of Bob's flights and forced him to cover this immense territory by train. That wouldn't have bothered Bob, a seasoned traveller, if the trip had been more fruitful.

Bob's problem: to find scores of engineers, mostly chemicals, for UOP's burgeoning projects. UOP had just negotiated a contract to build several units of a refinery for the Rumanian government. A project of great national importance—President Johnson's plans for improved East-West relations and the weaning of Rumania away from dominance by Russia hinged upon projects like this —, it would require the full-time service of many UOP employees for the next three years. And UOP has more than a hundred other projects under contract.

Bob's experiences at Bozeman were typical of what he encounters everywhere now-a-days. When he arrived at the campus, he was greeted cordially by Placement Director Brick Breeden. Breeden had prepared a schedule of interviews, one every 30 minutes for a day and a half. Breeden asked Bob if he would talk to Commerce, General Studies and Industrial Arts majors — there were hundreds of them available — but Bob declined saying he was looking only for chemical, mechanical and electrical engineers and a few chemists. Bob lunched with faculty members from the Departments whose students he interviewed. The students Bob talked to were all well-dressed and conversed freely and easily with him — too easily perhaps, thought Bob. These boys know all the answers. "What salary do you want?", asked Bob. "The going salary for a man of my qualifications", they answered to a man. "What kind of a place are you looking for?", he asked. "A company in which my capabilities will be developed to the fullest and where I

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important chemical engineering publications . . .

THERMODYNAMICS

By **William C. Reynolds, Stanford University.** 458 pages, \$9.50.

Designed for a fundamentally oriented first course in thermodynamics, this unique text provides an understanding of macroscopic thermodynamics not possible in classical treatments. The subject is developed retaining the generality and simplicity of purely macroscopic thermodynamics but utilizing microscopic insights. This approach integrates microscopic and macroscopic concepts to provide a common conceptual foundation for thermodynamics and quantum statistical mechanics.

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will ultimately attain a position where I contribute to company policy", they all replied.

After the interviewing, Bob went over to the Chemical Engineering office to talk with Professor Berg, the Department head. Berg told him that of the 1115 seniors at Montana State, only twenty-six were chemical engineers and nine of these were unavailable due to plans for graduate study or military commitments incurred via advanced ROTC. Berg showed Bob the employment scorecard for the current recruiting campaign. With the season barely half gone, thirty-one companies had already been on the campus looking for chemical engineers. The list included such formidable competitors as Conoco, Shell, Humble, Esso Standard, Standard of California, Texaco, Dow, 3M, FMC, Union Carbide, Dupont, and Monsanto. Berg's scorecard showed that every boy that Bob had sized up as a good prospect already had at least six offers, and it was only February. No wonder these kids knew all the answers during the interview. They had been practicing since last October.

* * *

These two true stories point up a bleak fact in American education today. The ever-increasing college enrollment is not producing enough people trained in the areas where the demand is. It is being left up to the high school kids to decide the quantity and type of trained people needed, and the evidence is piling up that they are guessing wrong.



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qualitative comparisons in the body of this paper are based (for what they are worth) on a comparison of these central values with those of Equations 2.

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