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J. S. Cummings, Inc.

MINERAL EXPLORATION

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April 1, 1980

Editor
CIM Bulletin
400-1130 Sherbrooke St. West
Montreal, Quebec H3A 2M8

Editor:

This is in regard to the article by D. F. Sangster ("Quantitative Characteristics of Volcanogenic Massive Sulphide Deposits") which appears in the February issue of CIM. It is legitimate to question the reason for one spending time to comment on published articles, in the same way that it is legitimate to question the basis and intent of many articles. I am not living under the illusion that this letter will be published, but my decision to "strike out" is based on the fact that management (at least in exploration) embraces published speculation as if it were scientific law. Today in earth science there is no shortage of theories or hypotheses, but the scientific basis for such is often lacking. Papers are published and papers are criticized and the whole process is often akin to college athletics, wherein each proponent is very concerned with victory on the day of battle, but a year later the whole thing is forgotten.

From my own standpoint, one of the most frustrating experiences on the road to discovery has been the necessity of replying to management because our direction or theories often did not fit the "in thinking" in volcanics, geochemistry or geophysics.

One of the best examples of the above has been the so-called "rhyolite dome" syndrome. It is an easy catch-all term for management to grab hold of, without looking into the basis of such. Our principle successful program was nearly terminated because of the "rhyolite dome" syndrome. In throwing about these terms, one should ask, what are rhyolite domes? Does a mass which contains 50% rhyolite material constitute a rhyolite dome, or does it require 90%? And what is the areal extent of a mass? Does one square mile constitute a rhyolite dome, or does 50 square miles? Does material which averages 1,000 feet in thickness constitute a rhyolite dome, or does it require 25,000 feet?

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As early as 1957 I employed a volcanic province search for massive sulphides and thus I do not feel beholden to the explosive growth in volcanogenic ideas in the last 20 years. Obviously there have been some commendable works during that period, but with respect to individual scientific investigators, we seem to have left the days of Faraday and Madame Curie, wherein one carried out extensive investigation before publication.

In his paper, Sangster reveals serious problems of intertwining quantitative and hypothetical information.

I would strongly disagree that if a significant (5 MT from Sangster's viewpoint) deposit had not been located in the last ten years, that the district had reached the full exploration potential.

Sangster's development of information as to average expected total metal content per district (4.6 MT) and average area (32 km diameter circle) do not appear particularly meaningful if the data presented is closely examined. For example, intending to arrive at some meaningful quantitative data on so-called massive sulphide deposits, Sangster has used speculative considerations to divide the so-called Bathurst district. There is no doubt that the size of the region referred to as the Bathurst district presented difficult quantitative problems for Sangster, and thus he has reached into speculative theories to satisfy his quantitative definitions. Even if we do not accept Manitouwadge as a district because of its extremely small size (apparently less than 15 sq. km.) we still have enormous variations, in that Matagami is only on the order of 230 sq. km. (i.e. by Sangster's definition) whereas Bathurst is on the order of 2030 sq. km. or a factor of 10.

There is no denying that some type of clustering exists for massive sulphides, but the data for Matagami (and Manitouwadge) vs. Bathurst clearly points out the futility of attempting to predict total contained tonnage or tons of metal. Except in hindsight, how do we use the figures which show that Bathurst (without speculative division) contains on the order of 21 MT of metal vs. Sangster's average of 4.6. Having found 4.6 tons of metal in a new district, should we then relax our efforts, considering that everything has been found, or should we look at Bathurst and say, "we are only beginning"?

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Obviously data presented is far too meager to allow this type of extrapolation. Sangster's comments on page 79, as to why Buchans was not included, "this would not affect total metal content, but would affect metal distribution patterns" is unintelligible, at least to me. Considering that Bathurst is the only paleozoic group included in Sangster's analyses, his inference that Buchans may represent the near total exhaled metal in that district, is certainly not substantiated by comparing it with the Bathurst district. On that basis, only about 18% of the metal in the Buchans district would have been located to date.

Although Sangster's sketches of the districts are naturally generalized, we are nevertheless faced with the problem of criteria and definitions of categories as shown. In the figure 2 sketch, Sangster notes that the felsic volcanics (including volcanogenic sediments) are shown in a stippled pattern and in his application of results and conclusions, Sangster notes constraints with respect to the areal extent of the felsic volcanic and the relationship of the orebody-rhyolite clusters. Considering the emphasis which is placed on the regional extent of the favorable felsic volcanics, the quantitative extent of such as a percentage of various districts, shows little or no correlation.

Thus in Snow Lake and Matagami, we are looking at only a few percent felsic volcanics as defined by Sangster, whereas in Bathurst, we are looking at something on the order of +50%. However, this great divergency probably reflects a lack of quantitative litho work, and Sangster's compilation merely reflects varying degrees of prejudice. If we assume that Sangster's outline of felsic volcanics is roughly accurate as obtained from other mappers, we are faced with the more critical question as to his meaning of felsic volcanics, that is, what percentage of those zones are actually felsic volcanics? In his figure 2 sketch, Sangster has noted that such would include volcanogenic sediments, but we have no idea whether we are talking about 10% or 90%. Experience suggests that in these felsic volcanics there also will be sections of intermediate and mafic volcanics, so what does the term felsic volcanics mean as used by Sangster?

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Published maps available for the Bathurst district prior to the discovery in the 50's do not resemble post-discovery mapping, and it is apparent that mapping in the Bathurst district is liberally slanted toward felsic volcanism. It is assumed, but not certain, that Sangster's use of the word "felsic" represents materials at least as siliceous as dacite, but his use of the term orebody-rhyolite clusters on page 80 casts doubt on whether he is using the term felsic as equivalent to dacitic. It appears that the word "caldera" has now replaced the "rhyolite dome" as the watch word for massive sulphide regions.

More recently and prior to our principle discovery in Northern Maine, there were public statements by professionals that Northern Maine was not a good place to look because of the "lack of" felsic volcanics. With the type of information published at that time and still being published with respect to quantitative litho compositions, people in management could dismiss areas due to lack of a "rhyolite dome", or lack of "felsic volcanics" etc., even though they were completely in the dark as to the approximate surface area of any district which was of felsic composition.

We do not know what percent of Sangster's felsic volcanics are of felsic composition, but his notations as to the amount of felsic volcanics which appear significant is disconcerting. Thus on page 78, Sangster notes that "districts are characterized by....abundant felsic volcanics". On page 79, he notes that a "concentration" of felsic volcanics may imply a cluster. On page 80, he notes that massive sulphides may be distributed around the felsic "accumulation". Certainly we must ask what do the words abundant, concentration and accumulation mean in a quantitative sense?

A few other comments with respect to Sangster's size distribution should be noted. Considering Sangster has arbitrarily selected districts with a minimum of four deposits and has arbitrarily selected 0.1 MT as the minimum for consideration, a logarithmic distribution for four deposits, the minimum being 0.1 MT, would result in a single deposit having 90% of the tonnage. If you continue this logarithmic distribution, but add more deposits, the figure would obviously decrease. Thus it is interesting that by taking Bathurst as one district, we find that Brunswick 12 represents only 50% of the total tonnage, not 70% as noted by Sangster. This decrease is expected and further decrease will result as more deposits are found in the Bathurst district.

J. S. Cummings, Inc.

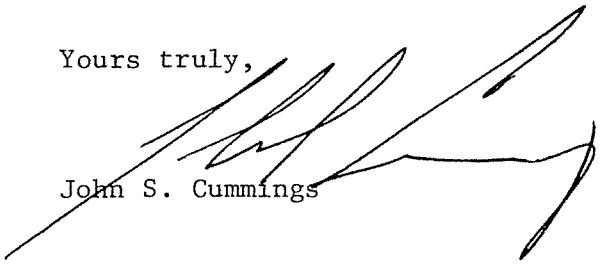
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One of the most serious problems with respect to Sangster's quantitative analysis is lack of quantitative judgements with respect to exploration. Although he touches on the problem on page 78, mentioning that known tonnage may only represent metal in a thin skin, penetrable by exploration methods, he has gone on to dismiss such and consider that these figures represent near maximum.

Massive sulphide activity probably occurs throughout a stratigraphic range of 2000 to 4000 feet. If we can perceive of a newly formed region containing 20 deposits distributed through a stratigraphic range of nearly a mile, throughout an area of 500 square miles, then one can quickly perceive the exploration problem. From a statistical standpoint, only a small percentage could occur within the few hundred feet that is explorable, except by random drilling. Add to this the problem of responses, in conjunction with exploration attitudes and it is evident that even the surface of the bedrock in most regions has not been adequately explored, and that below 200 feet, except in areas where drilling is based on extension of known deposits, exploration can be considered nil.

After an exploration program has been in gear for some time, the problem of effectiveness interfaces with reassessment as to the regional potential. Sangster's statement, that given two conditions (submarine calc-alkalic or island arc) the possibility of undiscovered massive sulphide deposits occurring in the study area is "good", demands examination. The real problem comes in assessing Sangster's definition of "good". Does such an evaluation mean that the area is worth 100,000 dollars, 1 million dollars, 10 million dollars, or 100 million dollars in pre-discovery exploration funds? What usually happens is that great enthusiasm degenerates rapidly, if a few years go by and success has not been obtained. In some cases the areas undoubtedly do not deserve further work, and in some cases intensive additional work should be carried out. However, because of vague regional guidelines, bad areas and good areas are usually assessed in a similar fashion.

Yours truly,



John S. Cummings

JSC/chl

cc: D. F. Sangster
Associates
Friends

Backup Data - J. S. Cummings, Inc. Exploration Record

Blind volcanogenic massive sulphides discovered within size considerations given by Sangster.

1. 35-40 MT - probably commercial - no deposits or prospects in entire region prior to discovery (1977)
2. 4 MT (metal grade slightly sub-commercial) no deposits in belt prior to discovery (1974)
3. 0.1 MT - commercial grade, too small (1972)

All of the above were within areas which had been subjected to intensive Canadian style massive sulphide exploration by American and Canadian companies. The first two deposits represent the only blind discoveries of significant massive sulphides ever made in New England, (i.e. outside of sulphide zones found by prospecting).

J. S. Cummings, Inc.

ADDRESS DELIVERED TO BANGOR KIWANIS
ON SEPTEMBER 12, 1979 BY JOHN S. CUMMINGS

I APPRECIATE THE OPPORTUNITY TO SPEAK BEFORE THE BANGOR KIWANIS CLUB REGARDING CERTAIN MINERAL ACTIVITY IN MAINE AND THE RELATION OF MINERALS TO OUR WAY OF LIFE. BRIEFLY I WOULD LIKE TO EXPLAIN THE RELATIONSHIP OF MY COMPANY, J. S. CUMMINGS, INC., TO THE DISCOVERY OF A LARGE DEPOSIT OF COPPER IN AROOSTOOK COUNTY, AND TO THE MAJOR CORPORATIONS WHO HAVE BEEN INVOLVED IN FINANCING THE WORK LEADING UP TO THE DISCOVERY.

APPROXIMATELY TWELVE YEARS AGO I ORIGINATED A JOINT VENTURE EXPLORATION PROGRAM WHICH WAS FINANCED BY FOUR MAJOR CORPORATIONS. AS THE YEARS WENT BY, THREE OF THOSE CORPORATIONS DROPPED OUT OF THE PICTURE. TODAY THE JOINT VENTURE IS MADE UP OF TWO COMPANIES, THE SUPERIOR OIL COMPANY AND THE LOUISIANA LAND AND EXPLORATION COMPANY.

ON SEPTEMBER 20, 1977, A DRILL HOLE IN T12,R8, AROOSTOOK COUNTY PENE-TRATED A LARGE MINERAL DEPOSIT CONTAINING SIGNIFICANT AMOUNTS OF COPPER, AND LESSER AMOUNTS OF ZINC, SILVER AND GOLD.

THE EXPLORATION WORK IN NORTHERN MAINE LEADING UP TO THIS DISCOVERY, WHICH IS REFERRED TO AS THE BALD MOUNTAIN DEPOSIT, WAS FINANCED BY THE SUPERIOR OIL COMPANY AND THE LOUISIANA LAND AND EXPLORATION COMPANY. J. S. CUMMINGS, INC. ESTABLISHED THE CONCEPT AS TO WHY SUCH DEPOSITS MIGHT EXIST, AND CARRIED OUT THE EXPLORATION PROGRAM.

FIGURES RELEASED BY THE FUNDING CORPORATIONS (SUPERIOR AND LL&E) AT THIS TIME SHOW THE DEPOSIT CONTAINS AT LEAST 36 MILLION TONS OF COPPER AND/OR ZINC BEARING ROCK WITH MUCH OF THE DEPOSIT CONTAINING ON THE ORDER OF 1-2% COPPER. BY COMPARISON IT IS WORTH NOTING THAT THE RECENTLY CLOSED ZINC-COPPER MINE IN BLUE HILL WAS KNOWN TO CONTAIN ONLY ABOUT ONE MILLION TONS OF ORE AT THE TIME OPERATIONS WERE STARTED. THE BLUE HILL OPERATION EXTRACTED ABOUT 750,000 TONS OF ORE DURING THEIR PERIOD OF ACTIVITY. THE ONLY OTHER METAL DEPOSIT WHICH HAS OPERATED IN MAINE IN THE TWENTIETH CENTURY WAS A ZINC-COPPER DEPOSIT AT HARBORSIDE. THIS DEPOSIT WAS CONSIDERED TO CONTAIN ABOUT ONE MILLION TONS (i.e. PRIOR TO STARTING OPERATIONS) AND PRODUCED ABOUT 800,000 TONS DURING THE LIFE OF THE MINE.

THUS, THE BALD MOUNTAIN DEPOSIT IS VERY LARGE IN COMPARISON WITH THE ONLY TWO PRIOR PRODUCING METAL OPERATIONS IN MAINE AND IS CONSIDERED A MAJOR METAL DEPOSIT.

IN APRIL OF 1978 THE OVERALL SIZE, AND GRADE OF THE METAL, INDICATED THAT THE DEPOSIT MIGHT BE ECONOMICALLY VIABLE. THE FUNDING CORPORATIONS ELECTED TO CARRY OUT DETAIL ENGINEERING OR PRE-DEVELOPMENT WORK TO DETERMINE IF IT WOULD BE FEASIBLE TO OPERATE THE DEPOSIT ON A COMMERCIAL SCALE. THUS AS OF APRIL 1, 1978, THE SUPERIOR OIL COMPANY ASSUMED DAY TO DAY MANAGEMENT FOR THE PRE-DEVELOPMENT OR FEASIBILITY WORK WHICH WOULD DETERMINE IF THE DEPOSIT WAS ECONOMICALLY VIABLE. J. S. CUMMINGS, INC. CONTINUES TO MANAGE EXPLORATION WORK FOR THE TWO COMPANIES IN AN APPROXIMATE 350,000 ACRE TRACT.

THE PRE-DEVELOPMENT WORK MANAGED BY SUPERIOR HAS INCLUDED ADDITIONAL DRILLING AND ASSAYING, PLUS MINING AND METALLURGICAL STUDIES TO DETERMINE HOW THE ORE WOULD BE EXTRACTED AND SEPARATED. OTHER STUDIES IN PROGRESS WOULD INCLUDE ENVIRONMENTAL, TRANSPORTATION AND POWER CONSIDERATIONS.

IT IS ANTICIPATED THAT ENGINEERING AND ENVIRONMENTAL STUDIES WILL BE COMPLETED BY 1981. IF STUDIES INDICATED THE DEPOSIT IS ECONOMICALLY VIABLE, AND IF ENVIRONMENTAL PERMITS ARE OBTAINED, THEN IT WILL REQUIRE AN INVESTMENT OF ABOUT 100 MILLION DOLLARS TO PUT THE DEPOSIT INTO OPERATION. THIS 100 MILLION DOLLARS WOULD BE EXPENDED OVER A 2-3 YEAR PERIOD AND WOULD INVOLVE PREPARING THE SITE AND ERECTING THE NEEDED FACILITIES.

IT IS ANTICIPATED THAT 400-600 JOBS WOULD BE AVAILABLE DURING THE CONSTRUCTION PERIOD, AND 300-400 ON A FULL TIME BASIS ONCE COMMERCIAL MINING WAS UNDERWAY. THUS, THE EARLIEST ANTICIPATED COMMERCIAL MINING WOULD BE 1984. AT THIS TIME, BASED ON THE PROJECTED RATE OF PRODUCTION, THE MINING OPERATION WOULD HAVE A MINIMUM 15 YEAR LIFE IN ADDITION TO THE 2-3 YEAR CONSTRUCTION PERIOD.

THE HISTORY OF THIS TYPE OF DEPOSIT SUGGESTS THAT ADDITIONAL ORE WILL LIKELY BE FOUND SO THAT THE 15 YEAR PERIOD COULD BE EXTENDED.

AT THIS POINT I WOULD LIKE TO DIVERT FROM THE SUBJECT OF EXPLORATION AND POTENTIAL MINING ACTIVITIES AND CONSIDER THE NATURE OF MINERALS AND/OR MINING AS IT PERTAINS TO THE STANDARD OF LIVING IN MAINE AND THE UNITED STATES.

ONE MIGHT ASK, WHY SHOULD WE MINE HERE IN MAINE OR ELSEWHERE?

THE UNITED STATES HAS BECOME SO AFFULENT IN THE TWENTIETH CENTURY THAT A LARGE SEGMENT OF AMERICANS HAVE LOST SIGHT OF THE ORIGINS OF WEALTH. IN AN UNDEVELOPED SOCIETY, THE TOIL FOR EXISTENCE IS SO SEVERE THAT THE INDIVIDUAL EFFORTS ARE TOTALLY CONSUMED IN ACQUIRING FOOD AND SUFFICIENT SHELTER FOR SURVIVAL. IT IS ONLY IN THOSE SOCIETIES THAT HAVE PRODUCED EXCESS RESOURCES (i.e. FOOD, TIMBER, MINERALS) THAT SUFFICIENT WEALTH HAS BEEN GENERATED SO THAT ANCILLARY SERVICES SUCH AS EDUCATION, MEDICAL, LEGAL, INSURANCE, RECREATIONAL AND RETAILING CAN BE DEVELOPED.

A COMMUNITY SUCH AS BANGOR IS INSULATED FROM RESOURCE DEVELOPMENT AND THUS THE EXTENT TO WHICH OUR SHOPPING CENTERS AND OUR OTHER SERVICES ARE DEPENDENT UPON RESOURCE DEVELOPMENT (i.e. POTATOES, TIMBER, PAPER) IS OFTEN NOT APPARENT. THE PRODUCTS OF MINING TOUCH ALL OF OUR LIVES IN MANY WAYS AND IN MANY FORMS, AND YET MOST PEOPLE SEEM TO THINK MINING IS SOMETHING STRANGE OR REMOTE, WHICH HAS NO DIRECT BEARING ON THEIR DAILY LIVES.

IF WE IN MAINE WERE TO RID OURSELVES OF ALL MATERIALS OR ACCESSORIES WHICH ARE DERIVED FROM MINING, THEN WE WOULD BE LEFT WITH SIMPLY OUR FOOD AND WOOD. THE PRODUCTS OF MINING ARE ALL ABOUT US, THE MOST OBVIOUS ONES BEING MANY TYPES OF METALS AND PLASTICS WHICH MAKE UP CARS, TELEVISIONS, REFRIGERATORS, ETC. SOME OF THE LESS OBVIOUS WOULD BE THE PLASTER AND MORTAR IN OUR BUILDINGS, GLASS IN WINDOWS AND LIGHTBULBS. EACH DAY OF OUR LIVES, ALL OF US USE PRODUCTS CONTAINING DOZENS OF METALS AND A LARGE NUMBER OF NON-METALS. RECENT FIGURES INDICATE THAT IT IS NECESSARY TO MINE 40,000 POUNDS OF MINERALS EACH YEAR FOR EACH AMERICAN TO PROVIDE FOR OUR PRESENT STANDARD OF LIVING. THE COMMON TELEPHONE CONTAINS MANY METALS WHICH COME FROM MANY MINES.

MAINE IS UNUSUALLY DEFICIENT IN MINERAL PRODUCTION, WHETHER IT BE NON-METALS SUCH AS GYPSUM, SALT, CLAY, ETC. OR BASIC METALS SUCH AS IRON, COPPER, ALUMINUM, OR RARE METALS SUCH AS TUNGSTEN, COBALT, ETC. CONSIDERING THAT MAINE HAS CERTAIN GEOGRAPHIC DISADVANTAGES WITH RESPECT TO THE REST OF THE NATION (i.e. IN TERMS OF FABRICATING OR MANUFACTURING) IT IS LIKELY THAT OUR LOW PER CAPITA INCOME (50TH BASED ON RECENT FEDERAL INCOME FIGURES) IS AGGRAVATED BY THE FACT THAT WE ARE NEAR THE BOTTOM (i.e. IN THE U.S.) WITH RESPECT TO THE VALUE OF MINERAL COMMODITIES WHICH WE EXPORT TO OTHER STATES.

WHEN WE CONSIDER THE AMOUNT OF DOLLARS WHICH GO "OUT-OF-STATE" FOR THE PURCHASE OF VAST AMOUNTS OF GOODS, WHETHER IT BE CALCULATORS, LAWNMOWERS, CARS, REFRIGERATORS, ETC., IT IS EVIDENT, THAT WERE IT NOT FOR THE RETURN OF MONEY GENERATED BY SUCH RESOURCES AS PULP, TIMBER, AND POTATOES, OUR ECONOMIC SITUATION WOULD BE MORE DIRE THAN IT IS. OVER MANY DECADES, WE HAVE WITNESSED IN MAINE THE COMING AND GOING OF NUMEROUS FABRICATING INDUSTRIES. MANY SUCH MOVES HAVE BEEN PREDICATED ON THE BASIS OF LOW WAGES IN MAINE. WHEN ECONOMIC CONDITIONS CHANGE OR OUR WAGES BECOME LESS COMPETITIVE, MANY OF THESE INDUSTRIES HAVE TAKEN FLIGHT. ALTHOUGH BASIC RESOURCES ARE SUBJECT TO ECONOMIC CYCLES, AND ALTHOUGH THERE HAVE BEEN BAD TIMES IN POTATOES, AND IN PULP AND PAPER, THE INDUSTRY DOES NOT "PACK UP" AND TAKE FLIGHT, BECAUSE BASIC RESOURCES ARE "WHERE YOU FIND THEM" AND ARE NOT SUBJECT TO RELOCATION.

MAINE'S INBALANCED POSITION WITH RESPECT TO MINERALS (THAT IS, WE IMPORT AN ESTIMATED 99% OF THE MINERALS WHICH WE CONSUME) SUGGESTS THAT BOTH FROM AN ECONOMIC STANDPOINT AND FROM THE STANDPOINT OF INDEPENDENCE WE SHOULD DEVELOP OUR MINERAL RESOURCES IF WE HAVE THEM. I AM PROUD OF BEING A NATIVE OF THE STATE, BUT WE MUST SERIOUSLY QUESTION THE NOTION THAT MAINERS ARE INDEPENDENT. WHETHER IT BE THE TRACTOR ON THE FARM, THE CHAINSAW IN THE WOODS, THE CARS ON OUR CITY STREETS OR TELEVISIONS IN OUR HOMES, THESE PRODUCTS ARE MADE FROM MATERIALS MINED IN OTHER STATES AND COUNTRIES.

OUR STANDARD OF LIVING DEPENDS UPON MINING VAST QUANTITIES OF A LARGE NUMBER OF MINERALS, WITHOUT WHICH, OUR WAY OF LIFE, WOULD REVERT TO THAT WHICH EXISTS IN UNDEVELOPED COUNTRIES. IN THIS RESPECT IT IS IRONIC THAT OUR SCHOOL SYSTEMS STRESS TERMS SUCH AS ENVIRONMENT AND ECOLOGY, BUT AT THE SAME TIME NEGLECT TO DISCUSS OUR INTERACTION WITH THE ENVIRONMENT, IN TERMS OF EXTRACTING MINERALS WHICH ARE NECESSARY TO OUR WAY OF LIFE.

ALL OF US RECOGNIZE THAT THERE WERE EXCESSES IN THE PAST WITH RESPECT TO INDIVIDUAL AND INDUSTRIAL POLLUTION. ON AN INDIVIDUAL BASIS THERE WAS LITTLE CONCERN, NOT TOO LONG AGO, ABOUT DISCHARGING VARIETIES OF POLLUTANTS. HAVING GROWN UP IN MAINE, I CAN REMEMBER THE POLLUTED NATURE OF THE ANDROSCOGGIN RIVER IN THE 1930'S and 1940'S. TODAY THERE ARE LAWS WHICH PREVENT SUCH EXCESSES, AND THERE IS TECHNOLOGY THAT CAN ACCOMPLISH CLEAN-UP. THIS SITUATION IS ANALOGOUS TO MINING, AS OF COURSE THERE WERE EXCESSES IN THE PAST, BUT PRESENT TECHNOLOGY AND PRESENT LAWS WILL PREVENT SUCH TODAY.

THE EXTREME VOICES IN THE ENVIRONMENTAL MOVEMENT WOULD HAVE US BELIEVE THAT OUR PRESENT SOCIETY IS SLOWLY POISONING ITSELF WITH A VARIETY OF INDUSTRIAL COMPOUNDS AND THAT WE ARE AFFLICTED BY MORE SICKNESS AND SUBJECT TO SHORTER LIFE SPANS THAN LESS DEVELOPED SOCIETIES. TO THE CONTRARY, ALL OF THE EVIDENCE SHOWS THAT OUR TECHNOLOGY BASED SOCIETY IN THE UNITED STATES HAS RESULTED IN CONSIDERABLY LONGER LIFE SPANS AND MUCH LOWER INFANT MORTALITY RATES THAN EXIST TODAY IN THE SO-CALLED UNDEVELOPED COUNTRIES. FOR EXAMPLE IN 1968 THE AVERAGE LIFE SPAN IN THE U.S. WAS 70.2 YEARS WHEREAS, IN 1970 IT WAS 35 YEARS IN SOUTH VIETNAM, 37 YEARS IN THE CONGO, 43 YEARS IN EAST AFRICA. HOWEVER, PERHAPS OF MORE IMPORTANCE WOULD BE THE FACT THAT A COMBINATION OF ABUNDANT FOOD SUPPLIES (i.e. WHICH HAVE BEEN MADE POSSIBLE BY DEVELOPING BETTER MACHINES AND MORE EFFICIENT

FERTILIZER), MEDICAL TECHNOLOGY, AND OTHER TECHNOLOGICAL INNOVATIONS SUCH AS SEWERAGE TREATMENT, HAVE VASTLY IMPROVED THE QUALITY OF AMERICAN LIFE. MUCH OF THIS IS DISCUSSED IN A RECENT BOOK ENTITLED "ENVIRONMENT, TECHNOLOGY, AND HEALTH" BY DR. MERRIL EISENBUD, DIRECTOR OF NEW YORK UNIVERSITY'S INSTITUTE OF ENVIRONMENTAL MEDICINE. DR. EISENBUD NOTES: (page 85)

"DURING THE PERIOD BETWEEN 1965 and 1969
INFANT MORTALITY IN THE LESS-DEVELOPED
REGIONS OF THE WORLD WAS 140/1000 LIVE
BIRTHS COMPARED TO 27/1000 IN THE DE-
VELOPED COUNTRIES"

DR. EISENBUD SHOWS THE RELATIONSHIP OF ECONOMIC DEVELOPMENT TO LIFE EXPECTANCY, WITH COUNTRIES HAVING THE LOWEST GROSS NATIONAL PRODUCT PER CAPITA BEING IN THE LOWER LIFE EXPECTANCY RANGE (page 87). IT IS OF INTEREST THAT DR. EISENBUD SHOWS AFGHANISTAN AS HAVING ONE OF THE LOWEST PER CAPITA INCOMES AND ALSO ONE OF THE LOWEST LIFE EXPECTANCIES. THIS IS CORROBORATED BY MY CONVERSATIONS WITH A CLOSE RELATIVE WHO HAS BEEN WORKING IN AFGHANISTAN FOR A FEW YEARS. PERHAPS THE THING THAT HAS INFLUENCED THIS RELATIVE THE MOST HAS BEEN THE OBVIOUS DIFFERENCE IN THE QUALITY OF LIFE IN AFGHANISTAN VS. THE UNITED STATES. BASED ON THE PERSONAL DESCRIPTIONS OF THIS RELATIVE, THE STRUGGLE FOR EXISTENCE HAS RESULTED IN AN INTOLERABLE "QUALITY OF LIEE", PARTICULARLY FOR THE CHILDREN.

IN THOSE ENVIRONMENTS WHERE THE TOIL FOR EXISTENCE MAKES LIFE A BURDEN, THERE IS NEITHER THE TIME NOR THE ENERGY TO LOOK TOWARD A BETTER WAY OF LIFE. ASPECTS OF OUR LIVES (HERE IN THE U.S.) WHICH ARE NOT CONSIDERED LUXURIES SUCH AS CARS AND TELEVISIONS WOULD, OF COURSE, BE CONSIDERED SUCH IN THOSE ENVIRONMENTS. THE DEVELOPMENT IN THE U.S. OF VARIOUS TYPES OF ART, WHETHER IT BE MUSIC, PAINTING, ETC., IS MADE POSSIBLE SOLELY BECAUSE THE PRODUCTIVITY OF OUR SOCIETY ALLOWS THESE MONIES TO BE DIVERTED INTO THESE CHANNELS.

REMOVED, AS MOST AMERICANS ARE, FROM THE BASIC RESOURCES WHICH CREATE WEALTH, AND WITHIN A SOCIETY THAT IS EVER MORE ENCUMBERED BY FEDERAL GOVERNMENT REGULATIONS, WE TEND TO LISTEN AND BELIEVE THE THEORETICAL DEBATES FROM THE ECONOMIC EXPERTS IN WASHINGTON AS TO THE CAUSES OF INFLATION, CAUSES OF UNEMPLOYMENT AND OTHER PROBLEMS WITH THE ECONOMY. THESE CAUSES NOTED ARE OFTEN MERELY THE SYMPTOMS OF THE DISEASE.

THE OIL PROBLEM OF THE LAST FEW YEARS HAS GIVEN AMERICANS A FIRST HAND TAST OF THE DANGERS OF SEEKING A LARGE PORTION OF A BASIC RESOURCE OVERSEAS. THE FACT THAT EVER INCREASING AMOUNTS OF AMERICAN WEALTH MUST GO OVERSEAS MEANS THAT LESS MONEY CAN BE SPENT HERE AT HOME ON THINGS THAT WILL IMPROVE OR MAINTAIN OUR WAY OF LIFE. IF WE COUPLE THAT WITH OVERALL PRODUCTIVITY, AND RESOURCE DEVELOPMENT PROBLEMS, WE ARE AT THE HEART OF OUR ECONOMIC PROBLEMS, WHETHER IT BE UNEMPLOYMENT OR INFLATION. EVER INCREASING AMOUNTS OF GOVERNMENT REGULATIONS MEAN THAT COSTS MUST INCREASE TO COMPENSATE. LONG TERM DELAYS IN THE UTILITY FIELD AND IN OTHER RESOURCE DEVELOPMENT FIELDS ARE COSTLY AND INFLATIONARY, AND IN THE LONG RUN GREATLY INCREASE THE COST OF GOODS.

REPORTS OUT OF RUSSIA INDICATE WIDESPREAD DEVELOPMENT OF RESOURCES AND AN EVER INCREASING ABILITY TO BE SELF SUFFICIENT IN ALL BASIC RESOURCES.

ONE NEED NOT BE A GENIUS TO LOOK AT THE ECONOMIC PROBLEMS INDUCED BY ONE RESOURCE (i.e. OIL) TO REALIZE THAT OUR STANDARD OF LIVING WILL SIGNIFICANTLY DETERIORATE OVER THE NEXT FEW DECADES IF WE RETARD THE DEVELOPMENT OF RESOURCES IN THIS COUNTRY.

SOMETIME, ONE HEARS THE COMMENT THAT "WHAT DIFFERENCE WILL ONE DEPOSIT OF COPPER (e.g. IN MAINE) MAKE WITH RESPECT TO THE TOTAL NEEDS OF THE COUNTRY". THE PROBLEM, IS THAT THIS TYPE OF THINKING CAN BE APPLIED TO A COPPER DEPOSIT IN MONTANA, ARIZONA, NORTH CAROLINA, OR A DEPOSIT OF ANY OTHER METAL IN ANY OTHER STATE.

NO SINGLE MINERAL DEPOSIT BY ITSELF WILL HAVE ANY OVERALL EFFECT ON THE WELL-BEING OF THE COUNTRY, BUT ONE BY ONE, IF WE RETARD OR BLOCK RESOURCE DEVELOPMENT, THE END RESULT WILL BE DISASTROUS. FROM AN INDIVIDUAL STATE STANDPOINT, MAINE BADLY NEEDS PRODUCTS WHICH CAN BE SOLD OUT OF STATE OR OUT OF THE COUNTRY.

CERTAINLY THE "RUSSIAN BEAR" MUST BE GETTING A GOOD LAUGH OUT OF PRESENT DAY AMERICA, AS PRODUCTIVITY LOWERS AND INFLATION INCREASES DUE TO SELF-INFLICTED PROBLEMS. AMERICA SPENDS HUGE AMOUNTS OF MONIES ON DEFENSE, AND EXPENDS GREAT EFFORT ON NEGOTIATING DISARMAMENT TREATIES. HOWEVER, LOOKING AT OUR SELF-INFLICTED INTERNAL PROBLEMS, WITH RESPECT TO ENERGY AND RESOURCE DEVELOPMENT, ONE COULD EASILY CONCLUDE THAT THE REAL DANGER TO THE "NATIONAL SECURITY" IS THE POTENTIAL FOR DETERIORATION OF OUR STANDARD OF LIVING OVER THE NEXT FEW DECADES. IT IS LIKELY THAT THE RUSSIANS HAVE ALREADY RECOGNIZED THIS, AND THUS VIEW TREATIES SUCH AS "SALT" AS MERELY A DIVERSION.