(Change to O'Meara)

Q. Are plans being made for research in California on desalinazation using atomic reactors? A. No, there has been no contract let for construction of an atomic reactor which might be used on desalinazation. The Atomic Energy Commission is checking the books now, but there are no plans. I am hoping that this will be done. But it will require a plant having a capactiy of 20 million gallons per day. We are hoping that experimental plants now in existence will yield information on this.

(Reynolds to Aston)

Q. Are comments in order from the floor? A. Yes. Comment - It appears that there are some questions on the quality as well as quantity of information on our water resources. We are concerned that many will be left with too dim a view of the information available on New Mexico water resources. We do have a revised program for preparing a comprehensive index. However, the job is not adequately financed. The inventory of water resources is being done in cooperation with the Geological Survey. A 50-50 cost-sharing proposition is the present situation. New Mexico occupies a leading position in the Southwest in this respect. Our state also leads in study and action to control phreatophytes (water-consuming weeds) to salvage existing water supplies.

The only surface water sources still not fully used in New Mexico are the San Juan River, the Canadian River below Conchas Dam, and the Gila-San Francisco Rivers...Industry can increase its available water supply simply by buying up water rights from farmers, as is permitted under New Mexico law.

(Aston to O'Meara)

Q. A community of 6,000 people in California is proposing a program to treat brackish water. Do you have any information on this? A. No, they went ahead on their own. But it will be an ionic process. They are importing water now by truck. The process will cut drinking water cost in half. This is the first city to my knowledge to do this.

(Aston to Miller)

Q. Do you have anything on this? A. It is supposed to produce 28,000 gallons per day for an average cost of $1.50 per day per capita

for drinking water on an investment of $80,000.

(Aston to Panel)

The population density in the Southwest of three persons per square mile is the lowest of any temperate area. Our limiting factor is water. Do any of you have any comment?

(Answer by Dearing)

We have made population studies in Arizona. It is hard to differentiate growth factors and trend factors (movement from one part of the county to another). There is a trend of new population to the Southwest. We wonder about such items as occupation, age group, and income. Is it from the retired group or a group of young settlers? Whatever the reason -- they are coming. And even a moderate increase in the supply of water has a big effect -- especially in electronics with its relatively low demand for water. But around Tucson, Phoenix, and in New Mexico, chemical industries are limited because of their large demands for water. We do have growth in electronics.

(Comments by Wentworth)

We have been watching population increases which are comparable only to two other parts of the world. Many people may be retiring but the missile-nuclear-electronic complex has had the effect of bringing in highly desirable types of people -- physicists, chemists, and engineers. We are getting a very desirable class not willing to leave the area voluntarily.

With 94 percent of our water used for irrigation, 4 percent for industry, and 1 percent for urban consumption, a small decrease in water used for agriculture could give a great impetus to industry. Actually, a small transfer would be all that is necessary. Other than this, New Mexico has three substantial areas of surplus surface water -- the Canadian, San Juan and Gila-San Francisco rivers. Concerning an inventory -- a very substantial contribution has been made by the New Mexico College of Mines in terms of education and research. The water shortgages are only relative. On the other hand, it is serious for most industries. We have consumed only beneficially about one million acre feet out of three million. We probably do have an adequate total supply. The problem is in putting it to beneficial use.

(Aston to O'Meara)

Has anything been done with desalinization by-products? Yes, with brine (possibly a pickle factor). Seriously, we can reduce the brine down for chemicals. However, it is not economical yet. We do have problems now of brine disposal. We cannot solve the problem

independent of site. Each site has its own problems. I would like to congratulate this group. Out talk must be followed by action. I congratulate you people for participating in this type of conference.

(Aston to Fiedler)

On predictions, how have predictions of disaster been avoided (such things as dropping water tables)? They are not now apparent. (Answer) The question has many aspects. I must confess that investigations of 1925-28 did not have the mathematical and hydrological tools available today. Old reports used common sense. On studies of the Roswell-Artesia Basin -- The answer was to try and get your teeth into it. First thing -- what problem is chosen. We tried to find out what was available. We reviewed old reports such as the geological survey (1905-25). We reviewed the laws of the period. We reviewed data based on reports of users to well supervisors. We had to cull out bad reports. We had to reconstruct the day-to-day evidence of what was occurring. We measured artesian quality of water. Also, we made observations on shallow ground water in the artesian basin. The solution we decided was to divert pressure from the artesian to the shallow ground water level. This is not related directly to artesian supply. All of this is rambling around the question. But in summing up: (1) Find out what we have for analysis, (2) Conduct out research in aspects of problems which are least known (i.e. brackish water, origin, migration, elimination of salt cedar). There is much to be done in fundamental research in the hydrologic cycle. From there we must formulate a plan. The plan must be made by those most qualified to make them. Also we need some selling. Where the public is involved, we must educate them. They must go along with the project. In utilization work, the plan must be sold to those carrying out the plan or to those that see the plan is to be carried out. We must convince people to get behind the plan (such as public-spirited citizens). The final problem is executing the plan.

(Comment by Robert Emmett Clark of New Mexico University)

The past year the Law School has received a $10,000 fund to purchase materials. The Law Faculty voted that one of the four areas in which this fund should be spent is natural resources. There is a need for understanding in this area. A large part of their decision was the recognized need for publication of these conferences. It was a unanimous vote.

(Question from floor to O'Meara)

Is there an overall federal program for control of water? (Answer) I am not able to answer that question.

(Question from floor to O'Meara)

Is there a program to study the use of waste and sewage water? (Answer) Yes, under the program of pollution control.

(Comment by Dearing)

In Los Angeles and Baltimore the effluent is being used in aluminum and steel plants (100,000 gallons per day). Some other studies indicate considerable sewage is being lost. Studies indicated water on highways and airports are being lost and airports in New York City alone could supply the water needs of 40,000 people.

The Water Research Council has been very concerned with pollution. About 50 percent of the water loss in the East is through pollution. It is a big source of damage. There are between 4,000 and 6,000 sources of pollution. The government does have a $50 million program on pollution control.

(Question from floor to Fiedler)

What percent of the total water supply is evaporated and how is it being controlled? (Answer) Suppression of evaporation is under study by several agencies in the Department of Interior, the Geological Survey with the Corps of Engineers, and local agencies. They have used monomolecular films in order to suppress evaporation. I am not too familiar with their studies, but considerable progress has been made. The answers are not yet conclusive. The suppressant is not effective on large areas because of turbulence by wind action. Progress is being made on transpiration. The U.S.D.I. and U.S.D.A. indicate substantial losses of water by transpiration. Different types of plants use different amounts and cutting down vegetation is one attempt to eliminate undesirable heavy users. Conversely, some plants are encouraged to prevent erosion. These should be plants with low water use.

(Question from floor to Aston)

My impression is that New Mexico is in a desperate water situation. Is this true? (Answer) No, because we have a lot of water which can be put into beneficial use if we can develop the proper techniques.

(Comment by Stucky)

We do have 90 million acre feet of water falling on New Mexico. We use only 4 million acre feet for municipal, industrial and irrigated agriculture. If we could cut down on the estimated 60

percent which evaporates annually, we would increase our water supply tremendously. Even a 5 percent reduction in this loss would give us over 4 million acre feet of water, or as much as we are now using.

(Comment by Reynolds)

Concerning effluent -- many cities are using it, but not local effluent. They are using the effluent from other cities. However, it occurs to me that the host institution can make a major contribution on the efficient use of water. The program is hampered by a lack of financing.

On Dr. Fiedlers comment on evaporation control -- the techniques are applicable to small reservoirs, 1 to 2 acres in size.

The stockman faces the problem of dry stock tanks in summer. If evaporation could be reduced 50 percent, and since stock use very little water, the technique is very applicable to stock tanks. The host institution could make a major contribution on design and management of stock tanks.

(Comment by Aston)

We are contemplating turning out a phamphlet which would define terms and indicate problems. No one should believe that New Mexico has used all of her ground water. We do have areas of unexplored resources. We should not project specific problems to cover all of the area.

(Comment by State Health Official)

New Mexico has only one community that does not have a sewage treatment plant. The federal government has given $2 million to the state for development of these plants. Eight million dollars has been spent in the past few years. They have made studies to determine if atomic plants are contaminating ground water. Anaconda has spent $500,000 to make sure they are not contaminating water. This indicates that they are quite concerned about contaminating water, when a private concern spends this much money

(Concluding Comment by Aston)

I suggest the group adopt a resolution to have one of the desalinization plants proposed by the government be located in New Mexico. (Vote taken and the resolution approved). I suggest we send the resolution to our congressional delegation, to various government offices, and to the office of the State Engineer.