

warrant officer W-4, in the Navy, subject to the qualification therefor as provided by law.

Donald E. LeDuc, U.S. Navy, retired, to be reappointed from the temporary disability retired list as a permanent chief warrant officer W-2, in the Navy, subject to the qualification therefor as provided by law.

Bruce E. Nolin (naval enlisted scientific education program candidate) to be a permanent ensign in the Line or Staff Corps of the Navy, subject to the qualification therefor as provided by law.

Robert M. Valko (civilian college graduate) to be a permanent lieutenant and a temporary lieutenant commander in the Dental

Corps of the Navy, subject to the qualification therefor as provided by law.

The following-named (Naval Reserve officers) to be permanent lieutenant (junior grade) and temporary lieutenant in the Dental Corps of the Navy, subject to the qualification therefor as provided by law.

Roderick W. Butlin Michael S. Lucas
Van D. Henson Jerry E. Young
William Shao-Ru Hwang

The following-named (Naval Reserve Officers) to be permanent lieutenants and temporary lieutenant commanders in the Dental Corps of the Navy, subject to the qualification therefor as provided by law:

"M" Dan Morris
Robert C. Wisser

WITHDRAWAL

Executive nomination withdrawn from the Senate August 7, 1970:

DIPLOMATIC AND FOREIGN SERVICE

Richard H. Zorn II, of Illinois, to be a Foreign Service officer of class 7, a consular officer, and a secretary in the Diplomatic Service of the United States of America, which was sent to the Senate on July 27, 1970.

EXTENSIONS OF REMARKS

ASSESSMENT OF UNITED STATES-RUSSIAN POWER BALANCE

HON. HARRY F. BYRD, JR.

OF VIRGINIA

IN THE SENATE OF THE UNITED STATES

Friday, August 7, 1970

Mr. BYRD of Virginia. Mr. President, on Sunday, August 2, the Richmond Times-Dispatch published a comprehensive article entitled "Naval Strength." It provides an assessment of United States-Russian power balance by Rear Adm. G. E. Miller.

I know Admiral Miller personally and hold him in high regard. He is Assistant Deputy Chief of Naval Operations for Air.

I ask unanimous consent that the article be printed in the Extensions of Remarks.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

NAVAL STRENGTH: ADMIRAL PROVIDES AN ASSESSMENT OF U.S.-RUSSIA POWER BALANCE

(By Rear Adm. G. E. Miller)

(NOTE.—What is the naval preparedness of the United States? To help answer this question, now being debated in Congress, staff specialists of Media General newspapers questioned Rear Adm. Gerald E. Miller, assistant deputy chief, naval operations for air. Participating in the taped interview at the Pentagon were James P. Berry, special projects writer and editor for The Times-Dispatch, Bill Connelly of the Washington bureau of the Winston-Salem (N.C.) Journal and Sentinel, John Steen of the Washington bureau of the Tampa Tribune and Warren H. Kennet, military affairs writer for the Evening News of Newark, N.J.)

QUESTION. It has been said that the Russians are more willing to innovate than the United States and consequently are ahead of us in various types of surface craft and propulsion systems. What is our Navy doing to close this gap?

MILLER. I would not admit they are more willing to innovate, but the evidence shows they have exercised their will more than we have any way. I think that is a pretty significant statement.

Let me show you why I think so and see if you arrive at the same conclusion. Let us start off with some of the smaller ships that they have. Let us talk about the surface-to-surface missile-launching patrol craft, small ships.

The Komar boat with two surface-to-surface missiles on it, the OAS with four surface-to-surface missiles, a missile that will go theoretically 22 nautical miles and never

get more than a thousand feet in the air. We know it works because this is the one that sank the Israeli destroyer from about 12 miles away. We do not have any ships like that in our Navy, but they have got quite a few of them and they have given a lot of them to their friends. They have not stopped with that. They have developed a follow-on to that called a Nunuchka, 800 patrol craft and launchers surface-to-surface missile launchers. They put a new type. We find six of a new type.

QUESTION. Triple pot?

MILLER. Yes, one on each side of the bow. So they are moving on in that area and we have not seen many of these yet, but this shows that they are developing in that area, in an area where we do not have any weapons system of that nature at all.

Let us move to a larger type ship—the patrol craft, the MERKA class patrol craft, gas turbine and diesel power combination. There are a lot of those. They have the Petka class, Petka-1 and Petka-2, and they have tried various combinations of power plants on those, but again it is a combination gas turbine and diesel-powered ship.

We do have some diesel and gas turbine-powered patrol craft of varying capabilities, not in the numbers that they have.

But let us go to the next larger size. Let us get up to the destroyer, Cashin class, DLG. This has a surface-to-surface launcher, torpedo tubes in the stern, sonar in it, good air search radar. The most significant is four stacks and completely gas-turbined power. It has been operational. They started with them about 1963 but it has really been operational since '67. And they are active today . . . and we see them around all the time. High speed, maneuverable, a good all-weather ship, about 4,600 tons. We do not have a gas turbine capital ship of that size in this country, not in our Navy.

The new contract that was just let to Litton for 30, what we call the DD-963 class, will be our first all-gas turbine powered ship of capital ship size and it will not be operational for four or five years.

So in that regard they are considerably ahead of us. However, if that 963 works out well, and we have every reason to believe it will, that will be a significant step forward for us because that class ship is about a 7,000 tonner, whereas this is only 24,600 tonner. But right today this is what they are operating.

QUESTION. What about the continuing demands from Mr. Rivers [Rep. L. Mendel Rivers, chairman of the House Armed Services Committee] to build the nuclear frigate, fighting at times people in the administration and people over here? Is there any chance that this dispute is going to be settled and we are going to get nuclear-powered frigates?

MILLER. We are hoping we would get the nuclear-powered frigate and we are working

in that direction; but at this stage with the budget cut and the emphasis, we would like to be optimistic but we really are very concerned about getting approval of that ship. We certainly thank Mr. Rivers for his support, I will tell you that.

QUESTION. Do you consider the gas turbine route the compromise rather than going to full nuclear-powered for your capitol ships?

MILLER. I would say the answer to that is yes.

QUESTION. A cheaper compromise, and still maintain some superiority?

MILLER. There would be a point in size of ship where you would want to hesitate about putting in a nuclear power plant. The big advantage being range applying more to a ship of large size. So if you were down to a 4,600-ton ship. I do not know whether you would want to go to a nuclear-powered plant or not. But each type of power plant has its place in the size. The significant thing about the Russians is that they are the world leaders in the production of gas turbine-powered ships. They have built more than all of the rest of the countries put together.

QUESTION. How many do they have altogether?

MILLER. About 150.

QUESTION. How many do we have?

MILLER. I do not know the exact number, but it is considerably less. They are doing a lot in this area.

Cruisers, staying or with the surface ships. They have moved and are moving away from their bird loft class, we call it, the conventional gunships, although they have kept up with guns and done very well in the gun business. They have moved into surface missile launching cruisers that are also multipurpose. They have surface-to-air missiles with them and here is the Kresta class, which has a surface-to-air launcher and surface-to-air missiles are down in this area and the surface-to-air launcher down here.

Then we went to Kresta-2, which is a modification of the other, and the launchers are up here, two on each side of the bridge. So this is a pretty nice ship. This is about a 7,000-ton cruiser with good speed, good range, steam-powered, two twin SAMS and two QUAD surface-to-surface missiles. These are quadruple launchers. There are eight surface-to-surface missiles on this ship. A very fine cruiser. Remember, we could not have a surface-to-surface missile in any of our cruisers. We still have surface-to-surface missiles in some of ours and guns.

QUESTION. Where does this leave us?

MILLER. Let us take a look at another cruiser.

This is the Kynda class, a little smaller, a 5,600 tonner, and here we have two QUAD surface-to-surface missile launchers. Again a multipurpose ship. A couple of guns here and torpedo tubes. Pretty nice.

Then we get the Moskva, with its Hormone helicopters. About 14 of those. We have seen as many as ten of them flying simultaneously . . .

QUESTION. They are basically helicopter carriers?

MILLER. Yes. But it looks like the primary mission is antisubmarine warfare, because they have ASW rocket launchers here on the bow. They have, we think a new type of ASW weapon and this is the launcher for it here. We believe they have a new surface-to-air missile launcher. We are quite sure of that and these are two new control radars that go with these two launchers. Then they have the three dimensional radar, which we find is going to be quite sophisticated and a very excellent system. We have three dimensional radars in our Navy and have had for years. This is a very good one that they have. The torpedo tubes you saw in the movie and sonar you can lower below the surface and sonar in the hull and helicopters aboard. Really a very fine symbol of a first-class Navy.

We have, of course, our ASW helicopter ships which category both fixed wing and S2 and SH3 helicopters, and we hope to put the S3 on those.

What our final carrier force is going to be out of the current budget is a big question, but we like the concept we have had in the past, which is if you are going to operate aircraft at sea you buy a great big flat piece of real estate, and we have gone to that and we have been very successful with it. This would be a very nice ship to have.

When you take those ships and put them altogether you begin to see that they have a pretty good arsenal and then you ask about the people, the quality of the individuals themselves, and we are kind of impressed with the Russian sailor. Originally, five years ago, they were the harassing type and kind of rude and crude and arrogant. They have now gotten to be very professional, and as I indicated . . . they will fly the international flag hoist.

If you send them a signal you are too close, please open up, they do it right away. They are very good about it. But for anybody to get the idea that they are a bunch of Johnny-come-latelies. Here is a Russian destroyer coming up to take a look at you. And we do not see this any more. This is in the Med.

QUESTION. In the Med?

MILLER. In the Med. The crew is standing right there. We really got close. Here is an American sailor saluting him. And that is just about as close a look as you want to get. And he pulls away and everybody waves to everybody and away you go. But they are pros. They go out on the deployment and they stay on the ships and they go to the anchorages in the Med and there have not been any big liberty parties. We do not know what their retention problem is or morale.

QUESTION. Their retention system has to be better than ours.

MILLER. I think their retention system is better than ours.

QUESTION. On a little different scale?

MILLER. Yes. Again remembering in their country that their defense establishment, their military brass, is a very, very significant part of their whole world and their politicians get along with the brass. Khrushchev had to, Brezhnev had to. If you look at the pictures of their views of May Day reviews of their faces you always see the big colleagues of brass up there and then you see the big colleagues of politicians.

In this country, in our country, that would probably be with the Chairman of the Joint Chiefs, but it is symbolic of the difference the two countries have taken to military preparedness. But there is not any question that they have developed now a pretty fine arsenal, as you can see.

Let us take a look at numbers to finish up on this, by types of ships. Starting off with our attack carriers and nuclear attack carriers where we have, as I stated to you, 15. They have none that we can really put in that category. In the ASW carriers, we have four and they have really none. But when we get into the helicopter, straight helicopter carrier, where we have some landing amphibious ships, putting all of those together we have 18 ships of that category, and they could use the Moskva and Leningrad for amphibious purposes. But we have only seen it so far in ASW role. So in the whole area this is where our big spread is.

Now, when we get down into the conventional heavy cruisers and the light cruisers and then our guided-missile cruisers that we have of various categories, we run about ten ships of that category and they run 19 or 21. So they have got quite a few more in that vein there and then you get into the destroyers of all kinds and destroyer escorts and patrol craft. If you put all of this together here we have more in some vein until you get down in the patrol craft business, and they have a big border and they have an awful lot of area to patrol, so they have a lot more in this category here.

We have more in this category but these are primarily old World War II ships.

So then you get down in the submarine business and here is your nuclear Polaris type where we have the 41 we discussed before and they have 21 of that category, not all Yankees, but 21 nuclear boats of that category. And then in other types of ballistic missile launchers they have quite a few. They have diesel-powered jobs that have shorter-range deployment in their inventory.

QUESTION. We have some more than the 41, do we not?

MILLER. Yes, of nuclear power. . . . We have quite a few. In total nuclear-powered ships at the moment we have a slight edge on them. Submarines, rather, we have a slight edge. But they are building some which I will discuss in a minute which are considerably different.

If you take all of their submarines and put them together, and they run about 350 as opposed to about 455 for us, and that is the margin, we will talk about that in a little bit more. Taking their amphibious ships, mine warfare and all the other staff and put it together they have an awful lot of that stuff and we have quite a bit too.

If you add up numbers of ships today, we run about 749-750 ships and they run about 1,600 or 1,700.

NAVY ARSENAL IN BRIEF

In capsule form, this is the current arsenal of weapons as provided by Adm. Miller's office:

Type ship	United States	Soviet
CVA attack carrier	15	0
Antisubmarine carrier	4	0
Major amphibian ships	18	2
Cruisers	10	21
Destroyers	176	78
Destroyer escorts	61	107
Patrol boats	8	407
Ballistic missile submarines	41	46
Guided missile submarines	0	62
Attack subs	113	239

Addenda: Of the 41 U.S. ballistic missile submarines, all are nuclear; of the 46 Soviet ballistic missile submarines, 21 are nuclear, and 35 of the 62 Soviet guided missile submarines are nuclear. In the attack submarine listing, 44 of the 113 United States are nuclear powered and 22 of the 239 Soviets. The patrol boats and destroyer escorts sometimes both carry medium range (up to 50 miles) surface-to-surface missiles.

Now, this I would ask you to be a little careful with in exact numbers because this is juggled every day around here. But what

we have grease-pencilled on here is the way it looks like we are going in the '72 budget. We are coming down. We have to come down and we are talking about five attack carriers until the '72 budget is in front of the President.

But to give you an indicator by way of background so you will recollect what our concern is, we are talking in terms of cutting out of here and coming out with five and getting down to ten and two of the ASW for a total of 12. We had 19 about two years ago. The cruisers, we will probably take about four of these out and this does not take a hell of a lot away from us. About 100 of these destroyers, all the World War II types, are up for grabs right now.

Then we get down in the submarines, conventional-powered. A good many of those come out and a lot of this stuff here. So we are talking in terms of a 500, 550-ship Navy as opposed to what they have.

So if you put it on straight numbers, there isn't any question they have more ships than we have. They need more in a lot of ways for their size. But when you look then of more significance is the quality and the type of ship because that starts to give you an indicator of what they are trying to do and you can see they are moving out. When I show you some of the worldwide operation you will see they are starting to move out and get global. They are no longer a coastal defense operation and they are building ships which are in this category right here, which are multipurpose, which are different against our Navy. The surface-to-surface missile program, surface-to-air missile program and emphasis on ASW.

QUESTION. You are replacing a lot of these you are taking out with new vessels?

MILLER. Well, not a lot. That is what Mr. Rivers (Rep. L. Mendell Rivers, Chairman, House Armed Services Committee) is trying to do, you see, is get more to replace a lot of old stuff here. And the only thing we have got when we contract in recent years is the 30-963s. That is it.

QUESTION. Can you give us some evaluation of the significance of the fact that we have the carrier strength and they do not? They may outclass us in some other ship types but—

MILLER. The carrier program that we have is the big equalizer, and it is the one thing that still enables us to maintain a good control of the seas. In the decision-making process after the war of what kind of weapons systems are we going to go for, how are we going to get a long-range gun than the other guy, we relied heavily on tactical air, on aircraft carriers at sea.

We learned a lot about it in World War II. We were convinced it was the way to go. We deemphasized battleships and guns and conventional type and we decided to put our weapons on airplanes and that is how we get the additional distance.

The Soviets have seen that as a threat and they have developed the surface-to-surface missile as their extended gun to go against our carriers and our surface Navy. And so you have the two guns that are now in opposition are their surface-to-surface missile and our tactical air. And the way that we avoided their surface-to-surface missile system is to stay outside of the range. Theoretically 450 nautical miles, as I indicated earlier, probably realistically is not much over 225-250 we would have to worry about. Our tactical aircraft that we built to carry the weapons, like the A7E and A6, and things of that nature, have a much longer range than their surface-to-surface missile, and this is the gun that we built. And this is the one that we have concentrated on and we have developed the capability with bigger carriers and nuclear-powered carriers, longer range aircraft and day and night

operations and all weather operations with an early warning system to go with it. This is the weapons system that we have that we have put out that enables us to maintain superiority in that area.

So the significance of the carrier is that it is the gun that we have that enables us to stay on the seas and the opposition to it is their surface-to-surface missile. So that is the threat. So we are concerned how do you knock out the platform? How do you detect it in a submarine? How do you kill it before it launches? That is where we have the program for more carrier, more carrier aircraft and more ASW forces to go after their submarines.

QUESTION. We have one Nimitz class carrier about to be launched within the next—

MILLER. We have one under construction and we have the second one funded with the keel hopefully to be authorized for laying very soon and the third one is the CVA 70, which is there, so is much debate on the Hill.

QUESTION. Why do we need another carrier of that class?

MILLER. We need them to replace the old ones is the primary reason. A lot of people say you need it to extend the range. Sure we do need that. We need more capability. We need more space. We need more speed with it. We need the advantages of the nuclear power we have been able to develop in the last 20 years. But the real thing we need it for is to replace the aging inventory of old carriers that we have.

QUESTION. What is the length of the flight deck on them?

MILLER. About a thousand feet.

QUESTION. That would be longer than the Essex?

MILLER. The Essex class, yes. We actually are out of the Essex and into the Hancock class now. But it is basically the same type.

QUESTION. Now, are these type of carriers necessary because of the new type and longer range aircraft that you are getting?

MILLER. Correct. We are operating with heavier aircraft that carry bigger loads. We burn more gasoline. We can carry more ammunition. So we can expend more ammunition we need the storage space in the ships and we operate in rougher weather and under all weather conditions and so we need the extra length and extra size to do that.

On the concept of a lot of smaller aircraft carriers. I think you have got about as excellent a lesson as we can ever give you in the one movie where you saw the 600-foot 18,000-ton ship rolling around at sea. That is a piece of cake to take on with those conditions with the Enterprise today.

QUESTION. Isn't it the Navy's argument that these floating airfields are much better than the land-based airfield which can be knocked out or we lose them as we did in Spain?

MILLER. As we did in Libya. We just moved out of Wheelus, which was such a valuable field, we're all through, and you saw in the paper yesterday they just moved in a bunch of Russian tanks in to Wheelus.

QUESTION. In other words, the carriers they cannot take away from us?

MILLER. You own real estate. It is a piece of America and the country of Turkey would not allow you to operate combat aircraft out of their fields. If Greece is in a sensitive situation and people will not let you operate out of there and North African continent will not let you come aboard there, how else are you going to get aircraft into the Middle East? And it is going to be a pretty good fight to do that with all of those countries being pro-Arab. There just is not any other way to do it.

QUESTION. The carrier, particularly the third nuclear that we talked about, is obviously a vital element in our future Navy's capacity?

MILLER. We think so given all of the evidence you are seeing here, very definitely.

QUESTION. What about the cost?

MILLER. The cost is high. There is no question about it.

QUESTION. The last figure was \$640 million that I saw.

MILLER. It will run, depending on how much you include in it and how much of the aircraft aboard and so forth, the estimates will run anywhere in the 550-650 category.

QUESTION. 640 did not include—

MILLER. That is about right. I am used to thinking in terms of starting at about 425 and I have gone up over the years to 525 and 550 and 600. But it depends on how much they are including in it. But that is about the right figure.

QUESTION. Any chance of it going up in view of present-day costs of shipbuilding, from that statement?

MILLER. It is kept up. It has been going up ever since we laid out the design of it and got to talking about it. I think this is all a function of the economy of the country, labor costs and things of that nature. But we have to rely on the economists over on the Hill and around the country to give us an indicator on that. But we have put an awful lot of attention on keeping the cost down because we recognize that is a very vulnerable point in getting the thing approved. But we do not want to buy off on something that is really less capable. There is absolutely no sense in buying a smaller ship. You might as well go to some other kind of weapons systems.

QUESTION. What is your opposition to the CVA70?

MILLER. The opposition, primary opposition that we have to it right now is centered in certain sections in the Senate, certain numbers of Senators. They are the primary opposition to it.

QUESTION. Senator Case and Senator—

MILLER. Mondale. They are the principal opponents who lead a group in the Senate against the carrier.

QUESTION. Why are they opposed to it?

MILLER. They are opposed to it for cost purposes, and they have some concern about vulnerability.

QUESTION. How vulnerable is the carrier?

MILLER. Well, again, that is a question that is always hard to answer because it depends so much on the circumstances under which you want to address the particular operation in which the carrier is involved. It must be vulnerable to some degree because we put lifejackets on it.

So it has got to have some kind of vulnerability. But most of the cases used against the carrier when they address vulnerability they start off with the carrier in a fixed body of water in a known position and they launch a pretty formidable armada against it and under that kind of a situation if the enemy knew where I was and it was a good weather program, and I was somewhat confined in what I could do. I think I would go get my lifejacket when I went up to the bridge.

QUESTION. The aircraft's own planes are some protection from the air?

MILLER. I want to start back. If I am running a carrier task force or the commanding officer of the carrier and I am getting ready to engage the opposition, I want to have the ability to employ all of the military tricks that I have been taught over the years. I want to capitalize on surprise, I want to capitalize on silence and things of that nature to improve my vulnerability.

QUESTION. How about submarines?

MILLER. The submarine problem is most difficult to handle. After I exploited surprise

and silence, which since the French and Indian War, those have been good military tactics and you do the same thing when you are operating your aircraft carrier, that is one reason why this aircraft is important. It enables you to stay silent and exploit surprise. But after I have lost those advantages, and I am now exposed, then I have to go in and fight myself, fight for awhile against the threat, against the air that would be coming overhead. We have our own interceptors and our own missile in the force to combat that.

As I indicated before, we will take care of the Bear and Badgers, that doesn't particularly bother us, and their tactical air. They don't have sufficient capability and range to get near us if we stay far enough over their shores. We have to worry about the surface ships with the surface missile. We have the range with the tactical air to keep them inactive. We do not have to sink them. All we have to do is destroy the top-side control system and missile batteries themselves.

That gets us to the submarine, the real threat, which we worry about the most, and that is why you will find us concentrating a great deal on ASW forces and the need for ASW capability to detect those submarines and be able to knock them out. But to fire a surface-to-surface missile they must surface, to get the big one out, the long-range one out, and we have some capability in that regard.

QUESTION. You are talking about their submarine?

MILLER. Yes. We have some capability to detect them and stay with them and then even after the missile is airborne we have the capability to defend against that. But while it is in flight after launch, and as it arrives close to the target, so we have some capabilities against them. But make no mistake that there is a real threat there and we are not running around and saying it is a piece of cake, it is not, by any means, but compare it to other weapons systems that can be employed . . . it is really relatively far less vulnerable and that is what we always try to put forward . . . If that carrier cannot hack it, we can hang it up right there.

QUESTION. What do you think our chances are of getting the CV70?

MILLER. Well, we do not count ourselves out ever on this program. I think our ability to get useful needed weapon system—

QUESTION. You have a hang-up on the 69, haven't you?

MILLER. Not really, not anymore. Our ability to get through on a lot of these systems depends an awful lot on the understanding of people involved and on the funding problems and the degree of the threat and also on the national policy, which way are we going to go. If we have a big reversal in national policy where we decided that we do not need the seas anymore and we are going to back-off, then it would be in tough shape. But I do not really see that. I think the leaders of this country and even the college students who study history these days are well aware of the fact the economy of most countries of the world have been based on trading and going to sea, and if you are going to do that you need a merchant marine; and if you are going to have a merchant marine to guarantee it is there, you have to have troops to protect.

And if you are going to have commitments overseas you have to be able to guarantee and they have to have a force to go to sea to do that. And if we do not get the CAA in '70, this year, we will get it some time. There is bound to come a time when the aircraft carrier will be replaced. There has never been a weapons system yet developed that has not been replaced. But to think that it is going to stop with CAA-69, I do not see that at all. It is too early in history yet for that.

A TRUE AMERICAN

HON. O. C. FISHER

OF TEXAS

IN THE HOUSE OF REPRESENTATIVES

Thursday, August 6, 1970

Mr. FISHER. Mr. Speaker, under leave to extend my remarks in the RECORD I include a letter addressed to an editor from a student attending Texas A. & I. University in Kingsville, Tex. This letter presents a viewpoint concerning the military action in Cambodia. It is my understanding that following the incident referred to in the student's letter, a petition commending the President's Cambodian action was signed by 3,000 students and sent to Mr. Nixon.

The letter follows:

A TRUE AMERICAN

(By Roger O. Jarvis)

EDITOR: As an interested student on this campus and as a person who believes in the American way of life, I would like to inform my fellow students on an event that took place last Monday night at the regularly scheduled Student Council meeting.

A member of the Student Council, Mr. Chuck Orr, stood up at the close of the meeting and read a motion that condemned our United States President for his ordering American troops into Cambodia, he further stated that we the council feel this is to be a crime and that we the council should stand with all the other Universities in the country in saying that we are against Nixon's actions! The motion passed by a vote of 13 to 11. It just so happens that this motion was kept until the end of the three hour meeting when several council members had left the meeting and then presented the motion and it passed! Does this passed motion represent your full views? Are these your feelings?

These are not my feelings at all. Some of us have stayed in the background too long. I'm sick of seeing black arm bands and demonstrators, and posters which degrade our country and its leaders. There were even two ROTC cadets present at the meeting and their two votes were in favor of the motion! These two men will soon be wearing the uniform of an American officer and I sure wouldn't want to be anywhere near them when their men find out what type of guys they really are. How do the rest of you ROTC men feel about this? Would you like to serve in an outfit with these two "Americans?"

Well, as it stands students, you all have been branded as anti-American and pro-peace by 13 members of a one sided student council. I sat through this meeting and heard our country degraded to an extent that it made me sick to my stomach! When are we going to stand up and let these long-haired, radical, hypocrites know where we stand! The motion that passed will be looked upon as our views, not the council's. I personally commend President Nixon on his decision and it will no doubt save many American lives.

I also commend our ROTC dept. here at A&I and say that I am proud of these men for what they are doing and for what they stand for. It is alright for a person to voice his opinion but when he goes to the extent to degrade our country and her leaders, that's where I draw the line. Be it as it may, the motion was passed and I want everyone to know that it was passed by 13 of your fellow students. I am against this type of representation and I sincerely hope that someone else besides me raises hell about it!!

We elected these individuals to represent

our views and so far this semester only a small minority of the student council has truly done this. Still, these idiotic and stupid bills continue to be passed by a group of persons who would tear down everything that the United States has ever done if they could. As for myself, I love my country, and I will continue to stand up for her and fight if necessary to keep our way of life as it is. So you silent majority who for so long have laid silent, awaken to a new day—voice your opinion so others may profit. Someone will listen.

SOUTH KOREA MUST REMAIN BASTION OF ASIAN LIBERTY

HON. STROM THURMOND

OF SOUTH CAROLINA

IN THE SENATE OF THE UNITED STATES

Friday, August 7, 1970

Mr. THURMOND. Mr. President, it is disturbing to note proposals being made to reduce U.S. Armed Forces in South Korea. I am inclined to doubt the wisdom of such proposals at this time in view of the expanding Communist threat and increasing provocations throughout the world. Such proposals must be considered with great caution.

It is agreed that our allies must carry a larger share of the load to help maintain their own security. However, I am not convinced the timing is right since the 48,000 South Korean troops fighting in South Vietnam will be needed there for some time. It is my understanding the timetable for the withdrawal of any of our troops from South Korea is negotiable, which is good to know. In my judgment, the proposal probably should not receive serious consideration until South Vietnam is capable of holding its own and South Korea's forces can be released for the defense of their own country.

Mr. President, North Korean aggressiveness has increased in recent years. North Korea's Soviet-supplied air force is considered stronger than that of the South. A reduction of U.S. forces at this time would be interpreted by the Communists as a weakening of the American commitment to defend South Korea.

It is not immediately evident where a quick reinforcement from the United States would come from since Japan and Okinawa are doubtful staging areas for political reasons. Then too, the C-5A, if it survives the current controversy, is still not in sufficient production for rapid overseas reinforcement. For these reasons, I suggest consideration be given to the deferment of any firm plans to withdraw one of the two U.S. infantry divisions from South Korea until a later date.

Mr. President, it is worthwhile for my distinguished colleagues to note a similar evaluation of the Korean withdrawal proposal. In this regard, I invite attention to an editorial entitled, "South Korea Must Remain Bastion of Asian Liberty," published in the State newspaper of Columbia, S.C., on July 28, 1970. I congratulate the State for its astute editorial.

Mr. President, I ask unanimous consent

that the editorial be printed in the Extensions of Remarks.

There being no objection, the editorial was ordered to be printed in the RECORD, as follows:

SOUTH KOREA MUST REMAIN BASTION OF ASIAN LIBERTY

One danger (among many) of a too-hasty withdrawal of United States forces from South Vietnam is the possibility that something of a psychological momentum may develop in Washington to withdraw U.S. forces from South Korea as well.

The inclination to do so already is evident in congressional and executive circles alike, but, thus far, steps in that direction have been tentative and cautious. And well they should be, for the American stake in the independence and security of South Korea is even more important than that of South Vietnam.

South Korea is the northern anchor of what is hoped ultimately to become an armed ring around the eastern rim of Asia—a ring aimed at containing Communist aggression within the present Bamboo curtain.

It is the aim, not only of the Nixon administration but of the free nations of Asia as well, that the Pacific countries eventually will be able to provide their own defenses against encroachment of threat from the allies. But this is a goal, not a reality, and the U.S., presence in South Korea is essential for reasons of morale as well as military security.

Last week's conference between U.S. and South Korean officials at Honolulu left undetermined, or at least unannounced, any timetable for reducing the U.S. contingent of more than 60,000 troops now in Korea. Constructive agreements were disclosed which contemplate beefing up South Korean defense capabilities (including production of defense hardware) and the stationing of additional U.S. aircraft on the peninsula.

South Koreans have strong ties with the United States, for it was U.S. military strength which really made possible the salvation of their land from Communist domination and U.S. fiscal aid which underwrote the development of much of their steadily growing economy.

And Americans should never forget that, of all the Asian friends and pseudo-friends of the United States, only Korea provided armed assistance of any consequence to the U.S. effort in South Vietnam. Some 50,000 South Korean troops have performed valiantly and well in South Vietnam for the last several years.

But gestures of mutual appreciation are overshadowed by practical considerations at maintaining an effective U.S. presence in Asia until free Asians can insure their own safety.

South Korea is all the more important as a bastion of U.S. strategy in the Far East now that Okinawa is to revert to Japanese control. And since Japan shows little inclination to develop a defense capability equal to task of deterring further Chi-Com aggression, it is questionable just how much reliance the U.S. can place upon the Japanese in terms of defending the North Pacific.

No such doubt exists with respect to the South Koreans. They have lived through the trial and torment of Communist domination and know how hard and sacrificial a struggle must be made to oust Red invaders. Furthermore, they know that Premier Kim Il Sung stands ready to "re-unify" all of Korea by force and under Communist dictation once he sees a chance of success.

As one of the few footholds of freedom on the continent of Asia, South Korea deserves the continuing support of the United States—and of free men everywhere.

TOWARD A THEORY OF MULTIPLE USE

HON. LAURENCE J. BURTON

OF UTAH

IN THE HOUSE OF REPRESENTATIVES

Thursday, August 6, 1970

Mr. BURTON of Utah. Mr. Speaker, in response to the growing need for reliable criteria for deciding among alternative patterns of resource use, this is the fourth in the series of articles I am calling to the attention of my colleagues. The article follows:

TOWARD A THEORY OF MULTIPLE USE: THE CASE OF RECREATION VERSUS AGRICULTURE

(By Peter H. Pearset, associate professor of economics, University of British Columbia, Vancouver, Canada)

I. INTRODUCTION

Multiple use is often extolled as a means of mitigating growing pressures on our natural resources. Any principle of management that has this potential deserves careful study, for it is certain that demands on our resource base will continue to increase, and that conflicts between uses will become ever more frequent and intense.

The idea of multiple use has great appeal. It is perhaps not surprising that it is accepted and expounded by so many harried resource managers and public spokesmen as a panacea for their problems. But any attempt to interpret or apply the concept where uses are more or less conflicting is met with great difficulty. Should two or more uses of a resource be served simply because it is technically possible to do so? Under what circumstances can we say it is desirable to accommodate one group of users when this necessitates a compromise in the resource's capacity to serve others? And when multiple use is desirable, how much of one use should be sacrificed for another?

William Howard Taft is reported to have said that there are a great many people in favor of conservation, no matter what it means. Perhaps the same can be said today of multiple use. A perusal of some of the basic literature in the natural resource sciences reveals that multiple use (like "conservation") while frequently alluded to, is a conspicuously vague idea. Standard texts on the management of forests, wildlife and ranges stress full use in terms of maximum physical yields. They also stress the necessity of accommodating all possible uses, given the imperative of preserving the resource base. But the critical issue of compromising conflicting demands is not rigorously dealt with. Economics, concerned as it is with social choices among products and alternative ways of producing them, probably comes closest to providing the required analytical concepts in the established theory of the multi-product firm. However, that problem is not strictly analogous because the resource inputs are all assumed to be variable and are dealt with entirely in terms of their total costs.¹ Economists have also demonstrated the mechanics of dealing with multiple demands in the context of benefit-cost analysis as it applies to the planning and evaluation of water resource projects.²

At another level, modern mathematical techniques and large-scale computers have greatly facilitated the development and use of systems analysis and the construction of complex models to investigate complicated interrelationships. Ecologists have employed these tools to study population dynamics, interrelationships among species in an eco-

system, predator-prey relationships and other phenomena.³ Economists are using them in problems of resource planning.⁴ These techniques can help to demonstrate the implications of various processes within fixed constraints, and hence offer promise for analyzing multiple simultaneous demands on a fixed resource base at a highly sophisticated level. Such developments intensify the need for a basic theoretical demonstration of the factors underlying the optimum combination of users of a resource base.

In response to this growing need for reliable criteria for deciding among alternative patterns of resource use, a small number of articles have recently appeared in journals of quite different disciplines, all of which have employed the same basic concepts of production theory to analyze the multiple-use problem.⁵ This article is an extension of that discussion. It begins by demonstrating the economic principles underlying the optimum combination of two (or more) competitive uses of a fixed resource. In order to provide some context for the discussion, we choose the example of competing demands of deer and cattle on a parcel of rangeland, although the principles are general enough to apply to a wide range of situations. This particular example permits a subsequent discussion of the nature of recreational values in contrast to commercially valued products.

II. OPTIMIZING THE INTENSITY OF COMPETITIVE USES

Let us consider a hypothetical parcel of rangeland capable of supporting domestic livestock (henceforth "cattle") or a species of big game animal (henceforth "deer") or various combinations of the two. The area is such that it encloses a range which provides the limiting constraint on the size of identifiable populations of deer or cattle.⁶ The assumed objective is to maximize the value generated by the range under either or both of the two products.

Use of rangeland by deer and cattle conflict in various ways. The degree of conflict depends on the intensity of use of the range by each.⁷ While the two typically have different preference patterns for forage, they will utilize the same vegetation at high intensities of use. They also have different requirements with respect to continuity of habitat, cover, topographical features, and the works of man.

Considering first the range in its natural state, it will have an average long-run capacity to support a population of deer of a particular size in the absence of any competition from cattle. In Figure 1, this population is depicted by the distance OB on the horizontal axis. Conversely, in the absence of any competition from deer, the maximum population of cattle that could be continuously supported is represented by the distance OA on the vertical axis.

Between these two extremes, various combinations of cattle and deer can be supported. Each combination is depicted by a point in the quadrant. Joining all the points which represent combinations that will fully utilize the capacity of the range will yield a curve in the form AB.⁸ This boundary of attainable combinations is the "production possibilities" curve (or transformation curve) of economic theory. Several features of the curve should be noted:

1. Its curvature reflects the degree of competition between the two populations. If they were perfectly competitive, in the sense that they had precisely the same requirements, OA would take the form of a straight line. This would indicate that more of one could be carried at the cost of less of the other in constant proportion (such would be the case, for example, if the two populations were very similar species of cattle). At the other extreme, if they were in no way competitive, the curve would take the form of a right angle with projections to the axes.⁹

2. Any point inside the curve represents a possible combination, but one which will not fully utilize the range.

3. Any improvements to the range will shift the curve, but probably not symmetrically. A change that increases the carrying capacity for cattle will increase the distance OA, but this might increase or decrease its ability to support deer. On the other hand, any deterioration of the range will shift the curve inward toward the origin.

The technical relationships underlying the production-possibilities curve provide the necessary information relating to the potentialities of the resource base, but they do not offer a criterion for choosing the best combination. For this purpose we need additional information relating to the value of the two outputs. Assume that the value of both a head of cattle and of deer is known (we return to the problem of evaluation below), and that there are no costs involved in producing either, other than providing range capacity.¹⁰ We can then depict the relative value of deer and cattle in Figure 1 [not printed in the Record] by the slope of an exchange line. The base P₀ of the small triangle, represents the number of deer that is equal in value to a quantity of cattle measured by P₁. The slope of the hypotenuse and its projection—the line MN—indicates the rate of exchange (more precisely the social marginal rate of substitution) between cattle and deer.¹¹

We now adjust the vertical position of the exchange line to discover the point at which the production-possibilities curve is parallel to it—the point of tangency E. This is the point on the production-possibilities curve that represents the optimum combination—OY cattle and OX deer—since no other point will yield so high a total value. To the left of E, the production-possibilities curve has a more gradual slope than the exchange line, which means that additional increments of deer are worth more than the associated sacrifice in cattle. To the right of E, total value can be increased by sacrificing game for cattle. Thus, on the logic that more of one product should be produced as long as it is worth more than the value sacrificed in terms of the other product, the best use of the resource is represented by the point at which the trade-off in physical possibilities is just equal to the trade-off in value between the two products. It is therefore impossible to increase the value of total output by any shift away from the point at which the two curves are parallel—at E.

III. SOME EXTENSIONS OF THE THEORETICAL SOLUTION

Because the slope of the exchange line reflects the relative value of the two products, its intercepts indicate the value of the combined output in terms of the equivalent value of each product separately. Thus the optimum combination of OY cattle and OX deer is equal to the value of A cattle (or of BN deer), because this is the excess over the maximum quantity (OA) of cattle that could be produced alone (or the maximum quantity, OB, of deer).

If the potentialities for multiple use involved three products, we would require another axis, at right angles to the other two in Figure 1. The production-possibilities curve would become a three-dimensional curved surface, and the exchange line a sloping plane. Again the point of tangency would depict the optimum combination of outputs. For four or more products the expositor must have recourse to simultaneous equations.¹²

This presentation also permits an illustration of situations in which multiple use is possible but not advantageous. The technical possibility of producing two products is indicated by any production-possibilities curve that extends outward from both axes. But the slope of this relationship might not be

Footnotes at end of article.

equal to that of the exchange line at any point within the quadrant. The curves will touch at one of the axes (at whichever end of the production-possibilities curve that has a slope nearest that of the exchange line), indicating that the highest use of the resource is the production of the product measured on that axis alone. To take an extreme example, if the value of deer above was zero, the exchange line would be horizontal, and the optimum output would be OA cattle.

IV. INVESTMENT IN RESOURCE IMPROVEMENT

We have hitherto discussed technical production possibilities assuming that the resource base is in a fixed state of development, namely in its unimproved natural condition. Various kinds of investment in the range (drift-fencing, vegetation control, fertilization, etc.) might be undertaken to improve its capabilities, and any such improvement will result in a new production-possibilities curve. An investment in resource improvement is justified whenever its cost is less than the increase in value of the combined products produced.

In the right hand quadrant of Figure 2 [not printed in the RECORD] the earlier production-possibilities curve AB and exchange line MN are reproduced. The value of the optimum combination of products is converted to dollars in the left hand quadrant with the aid of a "cattle price line," the slope of which reflects the value of cattle. This line relates any quantity of cattle (or combinations of deer and cattle measured in cattle-equivalents) on the vertical axis with its dollar value on the horizontal axis. The optimum combination of cattle and game identified at point E is equivalent in value to OM cattle which is shown in the left hand quadrant to be equal to OV dollars (the conversion could alternatively be made, of course, from the deer-equivalents measured on the horizontal axis).

Now consider an investment that will improve the range for cattle but reduce its quality for deer. This would yield a new production-possibilities curve of the form A'B'. The curve is now tangent to the exchange line MN' at a point further away from the origin. This indicates that the total value of output is increased even though the quantity of deer produced at the new optimum combination is reduced (i.e. E' is to the left of E). The increase in total value produced is equivalent to MM' cattle, which is VV' dollars. This gain, and information relating to the cost of the change, provide the data for a benefit-cost evaluation of the investment in range improvement. The investment is justified if its cost is less than VV'.¹⁴

Not all changes that increase the resource's capacity to produce one product will increase the value of the total output (let alone pass the test of economic feasibility). An improvement to increase the capacity for deer might produce a production-possibilities curve such as A''B''. Although more deer can be produced with this change, the maximum value of total output is below that which can be attained in the original situation. The reduction in maximum potential output is indicated by the tangency of the new curve with a lower exchange line (not drawn in the diagram), the projection of which would indicate a value for the combined product of less than OV. It should be noted that if deer were valued more highly, the exchange line would be steeper and this improvement would then yield greater values.

Various other results from improvements can be illustrated, such as an increase in carrying capacity for both products resulting in an outward shift in the frontier of

attainable combinations over the whole range, and a reduction in competition between the two outputs which increases the curvature of the frontier. These results can be expressed in terms of their total economic effect in the left hand quadrant. This in turn permits an evaluation of the efficiency of alternative forms of investment in resource improvement.¹⁴

V. DATA REQUIREMENTS

Application of the above analysis to real situations of competitive demands on a resource raises formidable problems for data collection. Nevertheless, the theoretical solution serves the useful purpose of concentrating attention on the kinds of data that are necessary for dealing with these problems.

The solution obviously involves marginal analysis. The determination of the optimum combination of outputs depends not on the total potential quantity or value of each product that can be produced, but on the implications of having a little more of one at the expense of another. It is a confrontation of the trade-off in physical quantities at the margin with their relative values on the other that enables the analyst to prescribe the appropriate direction of adjustment.

The data required consist of the purely technical relationships which lie behind the production-possibilities curve, and the economic information which lies behind the exchange line. Much biological research appears to have been done on the food requirements of different animal species. However, this research is of limited usefulness for the purposes of the present problem because it concentrates on forage preferences and protein intake rather than on the nature and degree of inter-species competition at different intensities of use of the range. Determination of the production-possibilities relationship described above for any particular type of range requires experimental control of the species mix on specific areas of land to determine the various combinations that will fully utilize its carrying capacity, allowing each species to adjust its forage intake and behaviour in the face of competition.

The economic data required consist of the value of each of the products. The two products in the example chosen above yield benefits in different forms. Competitive market prices are typically available to provide a guide to the value of cattle.¹⁵ The evaluation of deer is a much more complex problem. It is not the game *per se* that is valued by consumers, but rather the recreation that it provides for hunters. The relationship between the available game and the quantity and quality of recreation it affords is largely an unexplored area of enquiry.

In attempting to develop a theoretical approach to the evaluation of a recreational resource such as deer, we should first recognize two quite separate issues. One issue is the evaluation of a unit of nonmarketed recreation, and the other issue is the relationship between the physical availability of a recreational resource and the amount of recreation it generates. The evaluation of free outdoor recreation is discussed further below. In order to proceed with an examination of the relationship between recreation and the capacity of recreational resources, let us simply assume that we can ascribe reliable values to units of recreational experience, which in the present example are measured in hunter-days (hereinafter "hunts").¹⁶

VI. RECREATIONAL BENEFITS AND THE CAPACITY OF RECREATIONAL RESOURCES

An increment of deer population can increase the value of recreation produced in either or both of two ways. First, the game can accommodate more hunters and if the quality of hunting remains the same, the

total value of hunting is raised in the same proportion as the increase in the number of hunts. Secondly, if the number of deer is increased but the number of hunters remains the same, the quality of hunting (and hence the value of a hunt) is raised. Both effects might be felt, in which case the increase in hunting activity would partly offset the rise in hunting quality.

Let us characterize hunting quality in terms of hunting success. There are many possible definitions of hunting success. Indeed, there are many factors that can contribute to a hunter's evaluation of the "success" of his hunt. But here, we are interested in the implications of different quantities of deer, and the most relevant measure of hunting success (S) is the number of animals killed (K) expressed as a ratio of the number of hunts (N). We can expect, other things remaining constant, that the index of hunting success will be directly related to the quantity of game available (G), and inversely related to the number of hunts. In summary,

$$S = \frac{K}{N} \\ = f\left(G, \frac{1}{N}\right)$$

In the right quadrant of Figure 3 [not printed in the RECORD] the curve S_h represents a "high" level of hunting success. It traces the relationship between the quantity of deer and the number of hunters that can be accommodated at that level of success. Curve S_l traces the same relationship for a "low" index of success. S_l is higher at all points than S_h, because for any quantity of deer, more hunters can be accommodated at a lower level of success. Of course, in reality, there are more than two symmetrical success curves, each relating to a higher level of success than the one above it. The shape of these curves in Figure 3 is based on a guess as to their real form.

In the left quadrant the number of hunts is related to the total value generated by the game resource. Consistent with the assumption that hunting quality is a function of hunting success, the value of a hunt is assumed to depend on hunting success. Thus hunts with a certain level of hunting success are worth a specific amount; and the more hunts, the greater the total value generated in constant proportion. The straight line S_h in this way shows the relationship between total value and number of hunts for our "high" level of success. Since "low" success means a lower value per hunt, S_l lies above S_h so that total value increases at a slower rate relative to the number of hunts.

According to Figure 3, a given number of deer (Q') could accommodate N_h' hunts at the "high" level of success, and these would be worth in total V_h'. If, on the other hand, a "low level of success" was maintained, the same amount of game would permit N_l' hunts. But these low-quality hunts are worth sufficiently less so that their lower individual value offsets their larger number, and their total value V_l' is less than V_h'. Maintenance of the higher level of success therefore, makes more valuable use of the game in this case. This result, of course, depends upon the shape of the curves.

We can now examine the effect on deer values of a change in the quantity of deer from Q' to Q''. At the same "high" level of success the number of hunts can increase to N_h'' and the total value will rise from V_h' to V_h''. This is the value of an increment of deer which, with the value of cattle, provides the data for establishing the exchange line for the two products.¹⁷

It should be noted that if the relationships are similar to those drawn in Figure 3, we experience diminishing returns from game.

Footnotes at end of article.

As successive equal increments are added, the associated increases in both hunts and value get smaller.¹⁸

Again, we are dealing with technical relationships on the one hand and economic relationships on the other. The relation between game and hunting success is a technical one, and can be determined by careful statistical observations and controlled experiments. The curve for a particular level of hunting success might be shifted upward by measures designed to make the game more accessible or obtain a better distribution of hunting activity.

The left quadrant in Figure 3 involves a simple economic relationship between the number of hunts (N) sold at a specified value per hunt (v) and total value (V), where

$$V = v(N).$$

The value of a hunt therefore becomes the critical economic variable, and deserves further analysis.

VII. EVALUATION OF RECREATION

Sometimes hunting opportunities are purchased on a normal market basis, and the prices paid for these opportunities indicate their value. This analytically simple case is unfortunately rare in North America: the usual situation being one of free access to any hunting area within a given public jurisdiction on payment of a nominal license fee. When hunting is not marketed, the nature of the benefits accruing to the people of the jurisdiction on payment of a nominal license fee. When hunting is not marketed, the nature of the benefits accruing to the people of the jurisdiction in whose interests the resources are managed depends upon whether the users are part of this same political group. Insofar as the users are not members of the population in whose interests the resources are managed, the benefits take the form of any direct or indirect enhancement of incomes enjoyed by the resource-owning group as a result of the recreational activity of outsiders. Measurement of this benefit involves, in large part, estimating the purchases of outsiders from the resource-owning group, and subtracting the costs the latter incur in supplying the visitors with the goods and services they buy.¹⁹ The net benefits typically take the form of private profits to entrepreneurs serving the visiting recreationists, government revenues from license sales and taxes, and economic rents.

When the recreationists are members of the community for whom the resources are managed, there is an additional benefit to be considered, namely the unpaid-for satisfaction which accrues to the consumer as "consumer surplus." This is the amount that consumers would be prepared to pay for something in excess of what they do pay, rather than go without it.²⁰

The measurement of consumer surplus has attracted a good deal of attention from economists recently, especially in connection with outdoor recreation.²¹ This is not the place to review or analyze the different methods of evaluation that are being developed. But it is probably not inaccurate to say that the increasing sophistication in techniques of evaluating non-priced resources already permits estimates of value that are as precise as those used regularly in other kinds of investment decisions.

We have hitherto ignored all benefits of game that accrue to nonhunters. First, there are the less consumptive users of the resource—photographers and tourists—whose benefits involve an evaluation problem similar to those of hunters, though the "product" they consume differs. Secondly, the wild resources may have scientific value which is not reflected in any form of observable human behaviour.²² Finally, individuals may value

wild resources even though they never seek them out, but merely derive satisfaction from the knowledge that they are there. This explains the real concern of nature groups about the despoliation of natural phenomena that they have never seen nor are likely to see. A related kind of value has been termed "option value." This term refers to the willingness of some people to pay something to retain the option of enjoying some activity even though they might not foresee actually doing so.²³ These latter values are exceedingly difficult to measure. They become important when the resources under consideration are unique, and where decisions affecting them may be irreversible.

VIII. CONCLUDING SUMMARY

This article has addressed the problem of simultaneous and conflicting uses of a natural resource. The assumed objective has been one of maximizing the contribution of the resource to the welfare of the social group in whose interest it is managed.

The highest value is found to be derived by a combination of uses specified by the confrontation of a set of purely technical relationships on the one hand with economic relationships on the other. The most valuable combination of cattle and deer is arrived at by sacrificing deer for cattle as long as the value lost in deer is exceeded by the corresponding marginal value gained in cattle and vice versa.

The particular geometric solution of the problem presented here also enables a demonstration of the relationships underlying an examination of the efficiency of investments in resource improvement by illustrating the relevance of changes in the value of combined output to benefit-cost criteria.

There are many difficult problems in determining both the technical and economic relationships required for the application of this theory. But while few studies have been made to establish the technically-possible combinations of different species on a range, the problems they raise do not appear more difficult than those encountered in more customary forage studies.

The most formidable economic problem lies in establishing the value of resources provided free to users. In these cases the market is prevented from supplying the usual indicators of consumer evaluations, and the unpaid-for benefits must be estimated from indirect evidence. Where unique phenomena of nature are being considered, additional and more difficult analytical problems are involved.

One of the purposes of this article has been to demonstrate the kind of information required to fix the socially-optimum combination of conflicting uses of a resource. As increasing demands are placed on rural resources, there will be more and more cases in which the most efficient management regime will involve providing for two or more uses at once. There appears, therefore, to be an urgent need to clarify the criteria for establishing optimum combinations of uses. This article has attempted to throw some light on the conceptual problems involved. These problems suggest a wide scope for interesting research bringing together the combined expertise of biologists and economists.

FOOTNOTES

¹ Set, e.g. G. Stigler, *The Theory of Price* 162-65 (3 ed. 1966).

² See, e.g., J. Krutilla & O. Eckstein, *Multiple Purpose River Development* (1958).

³ These innovations are well illustrated by the contributors in *Systems Analysis in Ecology* (Kenneth E. F. Watt ed. 1966).

⁴ See e.g., A. Maass, M. Hufschmidt, R. Dorfman, H. Thomas Jr., S. Marglin, & G. Fair, *Design of Water Resource Systems* (1966).

⁵ The nature of competition between do-

mestic and wild animals on a range was investigated by Cook, *Common Use of Summer Range by Sheep and Cattle*, 7 J. Range Mgt. 10-13 (1954); and the economic interpretation of Cook's findings appeared in Hopkin, *Economic Criteria for Determining Optimum Use of Summer Range by Sheep and Cattle*, 7 J. Range Mgt. 170-175 (1954). Hopkin's *Use of Economics in Making Decisions Relating to Range Use*, 48 J. Farm Econ. 1594-603 (1956), prompted Hall, *Product Quality and Public Land Management*, Land Econ. 59-66 (February 1964); See also Gregory, *An Economic Approach to Multiple Use*, 1 Forest Sci. 6-13 (1955); and Pearce, *An Economic Approach to the Problem of Range Competition Between Cattle and Game*, 33 E. African Forestry & Agric. J. Special Issue: Proceedings of the Wildlife Use Symposium, Nairobi, 1967, at 84-88 (1968).

⁶ But the range under consideration need not encompass the entire areas used by the two species. A common example is a winter range for game. While the game depends on the range only for a few critical winter months, its capacity is the major constraint on the wild populations, which often have surplus range for the rest of the year in adjoining (often high-elevation) areas. Similarly, cattle might use the range only for a few summer months, depending upon the regime of the farm enterprise.

⁷ There have been many scientific studies on the inter-relationships between wild and domestic animals. Particularly relevant examples include Julander, *Deer and Cattle Range Relations in Utah*, 1 Forest Sci. 130-139 (1955); Dasmann, *Deer-Livestock Forage Studies on the Interstate Winter Deer Range in California*, 2 J. Range Mgt. 206-212 (1949) Morris, *Elk and Livestock Competition*, 9 J. Range Mgt. 11-14 (1956); Pickford & Reid, *Competition of Elk and Domestic Livestock for Summer Range Forage*, 7 J. Wildlife Mgt. 328-38 (1954).

⁸ The author is aware of the considerable technical difficulties in identifying the points on this curve in any real situation. Cyclical fluctuations in wildlife populations change the relationship between population size and range capability over time. Weather conditions change the capacity of the range from year to year and affect different grazing species in different ways. Many ranges are in a state of long-run serial succession and so on.

⁹ Near the intercepts, the curve is drawn almost at right angles to the axes, suggesting that at low levels of use by one species that species can be increased at small sacrifice in terms of the other. Several investigators suggest that a little cattle grazing will sometimes improve the range for deer, and the converse is also possible. This would cause the curve to curl inward toward the intercepts. Moreover beneficial interactions may occur at other intensities of use, causing irregularities in the curve.

¹⁰ If there are non-range costs involved, the term "value," where it is used below, should be changed to read "value net of non-range costs." This point seems to have been neglected by Hall, Hopkin and Gregory who refer simply to product prices, *supra* note 5.

¹¹ The exchange line is straight providing only that the quantities of the two products that this range can produce are insufficient to affect their relative values.

¹² For an exposition of the mathematical counterpart of this geometric presentation, see Gregory, *supra* note 5.

¹³ The implications for evaluation of the time-pattern of costs and benefits will not be explored here. If the costs and resulting benefits are not incurred in the same immediate period, the appropriate comparison is between the discounted present worth of each.

¹⁴ Gregory, *supra* note 5, suggests that successive levels of management costs would

produce concentric contours of production-possibilities. From this he develops an expansion path of optimum output combinations (similar to that in traditional production theory) which is then translated into total cost and revenue curves to determine the level of management for maximum profit. In view of the indivisibility of most resource management activities and their varying effects on the different products involved, it seems unlikely that production-possibilities curves will be symmetrical and hence the expansion path smooth. This approach is probably less appropriate for this problem than for the traditional production problem of the firm facing opportunities to adjust inputs or outputs in a continuous way.

¹⁵ But any non-range costs involved in rearing and marketing must be subtracted to yield the measure of value required for this analysis. *Supra* note 10. In some cases, subsidies and market imperfections may prevent the real value of the product from being reflected in its price, which must therefore be corrected for these influences.

¹⁶ There may, of course, be benefits from the existence of game other than the recreation generated in the form of hunting; this sole benefit is assumed here for simplicity.

¹⁷ Depending on the shape of the curves, an increase in the quantity of game might change the level of success which maximizes value. With a change in game, therefore, a new analysis would be necessary to determine the value-maximizing level of hunting success.

¹⁸ Hopkin, *supra* note 5, attempts to deal with quality differences by changing the relative value of the two products (and hence the slope of the exchange line) for each production combination. This enables a neat general mathematical solution, but is likely to prove operationally cumbersome.

¹⁹ See Pearse, *An Economic Evaluation of Non-Resident Hunting and Guiding in the East Kootenay*, 16 *Can. J. of Agric. Econ.* 100-11 (1968).

²⁰ At least, this is one definition of consumer surplus. See J. R. Hicks, *A Revision of Demand Theory* (1956).

²¹ See, e.g., M. Clawson & J. Knetsch, *Economics of Outdoor Recreation* (1966); Crutchfield, *Valuation of Fishery Resources*, 38 *Land Econ.* 145-54 (1962); Davis, *The Value of Big Game Hunting in a Private Forest*, *Transactions of the 29th North American Wildlife and Natural Resources Conference, Wildlife Management Institute, Washington, D.C. 393-403* (1964); Pearse, *A New Approach to the Evaluation of Non-Priced Recreational Resources*, 44 *Land Econ.* 87-99 (1968); and *Outdoor Recreation Resources Review Commission, Economics Studies of Outdoor Recreation, Report No. 24* (1962).

²² Krutilla, *Some Environmental Effects of Economic Development*, *Daedalus* 1058-70 (Fall, 1967).

²³ See Kahn, *The Tyranny of Small Decisions: Market Failures, Imperfections, and the Limits of Economics*, 19 *Kyklos* 23-46 (1966); and Krutilla, *Conservation Reconsidered*, 57 *Am. Econ. Rev.* 777-86 (1967).

active citizens everywhere for the outstanding joint public service project they are sponsoring this year called Voter Registration 1970.

These two fine civic-minded organizations have joined together in Voter Registration 1970 to help promote the very same basic objective that we here in the U.S. House of Representatives, and our colleagues in the Senate, supported overwhelmingly when we adopted the historic new Federal Voting Rights Act of 1970—to allow 18-, 19-, and 20-year-old American citizens to vote in all elections after January 1, 1971.

By striving toward the congressional objective of expanding the voting electorate to include the largest number and broadest range of the citizenry possible, the California League of Women Voters and the California Jaycees, in their Voter Registration 1970 project, are making a significant contribution toward the achievement in the United States of a genuine participatory democracy—as a working reality, and not just a nice sounding slogan.

Our Nation takes pride in having created the idea of a modern democracy. Yet, every year millions of our citizens fail to exercise their right and obligation to vote.

In the United States the people are sovereign and hold the ultimate power and authority, and make the decisions which affect their lives. While they elect Presidents, Governors, and Congressmen to exercise a part of their power and to make some of their decisions, the people remain the final source of power.

In 1968, however, some 47 million Americans did not vote. Thus, 39 percent of our adult population had no voice, whatsoever, in their government. And these are not merely numbers, but people who live, work, and pay taxes, and have a vital stake in what happens to this country.

In my home State of California, alone, experts now estimate that some 3.5 million residents, who are otherwise eligible to vote, will not be able to exercise their franchise in 1970 because they are not registered to vote.

In fact, preliminary census information on California indicates that the percentage of unregistered adults in the Golden State is greater than at any time since 1944—more than a quarter of a century.

Because of this appalling situation, the good work of the California League of Women Voters and the California Jaycees in Voter Registration 1970—in offering their statewide assistance in facilitating the effort to seek out and register more California residents—is doubly important, and in fact, absolutely vital to the proper functioning of our American system of government.

As a specific example, Mr. Speaker, of how Voter Registration 1970 is working in the public interest, in a thoroughly nonpartisan and nonpolitical fashion, I would like to include in the CONGRESSIONAL RECORD at this point the verbatim text of a postal patron mailing I am sending to the residents of my 30th Dis-

trict in California, advising them of the valuable assistance they may obtain from officials of Voter Registration 1970 in helping them register to vote this year—so that they will be able to qualify to exercise the great privilege and duty of all citizens: to cast their ballot for the candidates of their choice in the important general elections this coming November.

The text follows:

POSTAL PATRON—LOCAL, 30TH CONGRESSIONAL DISTRICT, CALIFORNIA

DEAR CONSTITUENT: The act of voting is fundamental to a Democracy. But you can't vote, unless you are registered. If you, or anyone in your household are eligible to vote but are unregistered at this address, I urge you to register before September 10, so that you may vote in November.

To help you in this process, I am providing the attached card. If you are currently unregistered, please fill it out and return it to Voter Registration '70, a joint public service project of the California League of Women Voters and the California Jaycees. Voter Registration '70 officials will give it to an appropriate Deputy Registrar (guided by whichever party preference you may choose to indicate on the return card), and every effort will be made to register you to vote.

You are eligible to register to vote if by November 3; you will be 21 years of age, and have lived in California for 1 year and the County for 90 days.

If you have any questions, please call the County Registrar of Voters at 628-9211, ext. 63231, or the League of Women Voters at 938-3251, or Voter Registration '70 at 478-9701.

Sincerely,

EDWARD R. ROYBAL,
Your Congressman.

VOTER REGISTRATION 1970

(Sponsored by: California League of Women Voters and California Jaycees, Post Office Box #1765, Santa Monica, California.)

If you are not now registered to vote fill in and return.

(Note: filling out and returning this card does not register you to vote, but every effort will be made to have a Deputy Registrar contact you.)

To: Voter Registration '70

We are presently not registered to vote: (Please print)

Names: _____
Address: _____
City: _____
Phone: _____

Best time to contact:
In the Evening.
During the Day.
Call First.
Party preference:
Democratic.
Republican.
Peace and Freedom.
American Independent.
Other.
Decline To State.
Registration closes September 10.

Of course, Mr. Speaker, I am urging all California residents, if they have a chance to register personally, to by all means take advantage of the opportunity, and not wait for a deputy registrar to call on them.

In addition, I am also reminding citizens of the very timely warning adopted by Voter Registration 1970 for their public service advertising campaign: "You Can't Vote, if You Aren't Registered."

VOTER REGISTRATION 1970

HON. EDWARD R. ROYBAL

OF CALIFORNIA

IN THE HOUSE OF REPRESENTATIVES

Thursday, August 6, 1970

Mr. ROYBAL. Mr. Speaker, I believe that the California League of Women Voters and the California Jaycees deserve the highest commendation from

LUNAR SAMPLES

HON. OLIN E. TEAGUE

OF TEXAS

IN THE HOUSE OF REPRESENTATIVES

Thursday, August 6, 1970

Mr. TEAGUE of Texas. Mr. Speaker, the National Aeronautics and Space Administration has, over the last year, made available to a large cross section of the American public the results of our initial lunar exploration. One of the major results of this exploration has been the public display of lunar samples. The demands for exhibits of this type have far exceeded NASA's capability to furnish such samples, but an outstanding job has been done and NASA is increasing the number of exhibits which are available. I am including in the RECORD a letter to me from Dr. George M. Low, deputy administrator of NASA, which outlines in some detail the subject of public exhibition of lunar samples and how NASA is attempting to meet all of the demands for this type of exhibit. The letter follows:

NATIONAL AERONAUTICS AND SPACE
ADMINISTRATION,

Washington, D.C., July 24, 1970.

HON. OLIN E. TEAGUE,
Chairman, Special Ad Hoc Subcommittee,
Committee on Science and Astronautics,
House of Representatives, Washington,
D.C.

DEAR MR. CHAIRMAN: The recent hearing on H.R. 10771 of the Ad Hoc Subcommittee of the Committee on Science and Astronautics touched briefly on some aspects of the subject of public exhibit of lunar samples. I would like to take this opportunity to supplement my answers and attempt to give the subcommittee a more complete picture of what NASA has done and is doing to assure that as many Americans as possible have an opportunity to view the materials brought back from the moon by our astronauts and, hopefully, gain some appreciation of their significance.

The attached table indicates the samples that have been available for public display and how many people have seen them in the first year since the first lunar landing. Even with a reasonable allowance for overlap in our attendance figures for individuals who may have seen exhibits more than once, these figures indicate that over six and a half million people in the United States have seen a lunar sample. As a matter of policy—which we have adhered to with only a few unavoidable exceptions—every public display has been accompanied by an exhibit and supporting material which has sought to convey the significance of the sample and the values of lunar exploration so that the viewers do not regard the lunar material merely as a novelty but come away from the exhibit with some appreciation of its broader meaning. In this regard, we believe that the exhibits at 15 major science museums to date, with 41 more planned for the coming year, in addition to the exhibit accompanying the Apollo 11 capsule to all 50 state capitals and the Smithsonian exhibit are especially effective.

The area that has been most difficult for us has been the tremendous number of individual requests we have received for display of lunar samples at particular occasions. During the past year we have received over 1,300 such requests from individuals and

organizations all over the country and have been able to fill 74 of them to date. Obviously we cannot meet all of them. Many requests do not qualify under the basic criteria which we have to set as a responsible agency of the government. For example, we have had to reject requests associated with advertising, commercial, or fund-raising activities. We have also had to turn down requests where the sponsors were unable to provide adequate arrangements for the transfer, security, display, and return of samples. In some cases, of course, the scheduling of available samples and exhibits has made it impossible to have a sample available for a particular place on a particular date. Within these necessary constraints we have done our best to give favorable consideration to all requests received.

The question of occasions such as state and county fairs is especially difficult. In spite of good intentions, unacceptable commercial overtones are hard to avoid and the stringent security that must be provided to protect the samples is hard to maintain. Perhaps most importantly, it is our view that the samples should be presented so that the viewer receives full information on the scientific and engineering enterprise that is involved in lunar exploration, and does not regard the samples simply as curiosities. For these reasons, I believe we must consider each proposal of this nature on a case-by-case basis.

Several weeks ago, based on an assessment of our experience to date and the prospective availability for display of Apollo 12 samples, we decided to augment by six the number of samples and associated exhibits available. More recently we have decided on a further increase of two. Thus, as indicated in the attached table, the total number of samples with exhibits available for programmed and individual requests for displays will increase from 10 to 18 by about October 1.

I want to assure you and the Subcommittee that NASA fully appreciates the importance of making lunar samples available for display at every appropriate opportunity and that we will continue to make every effort to respond favorably to Congressional and other special requests.

Sincerely yours,

GEORGE M. LOW,
Deputy Administrator.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
PUBLIC DISPLAY OF LUNAR SAMPLES¹

	Number of samples	Number of viewers to July 1970
1. Programed exhibits:		
Major U.S. museums.....	5	2,660,000
Smithsonian Institution.....	1	1,905,000
Apollo 11 spacecraft tour to 50 State capitals.....	1	800,000
United Nations, New York.....	1	(?)
2. Presented by President to Governors.....	50	Unknown
3. Other:		
Samples and exhibits available for meeting approved individual requests for scientific meetings and public displays.....	* 2+8	1,440,000
Samples assigned to scientists at institutions throughout the United States which may from time to time be available for local public display.....	† 154

¹ Excludes USIA exhibits overseas and samples presented by President to foreign heads of state.

² Presented July 20, 1970.

³ 8 additional samples and exhibits will become available about Oct. 1, 1970.

⁴ Number of principal investigators.

READ AND COMPARE

HON. LEONOR K. SULLIVAN

OF MISSOURI

IN THE HOUSE OF REPRESENTATIVES

Thursday, August 6, 1970

Mrs. SULLIVAN. Mr. Speaker, the St. Louis public schools have lost an outstanding leader in the field of education when its superintendent, Dr. William A. Kottmeyer, resigned after 35 years with the public school system. Dr. Kottmeyer has chosen to spend his days in the future writing and in revising some of the 200 textbooks he has authored in the past.

The St. Louis Post-Dispatch has carried a series of two articles, based on an interview with Dr. Kottmeyer, in which he discusses the role of education in the past, the present, and what he anticipates for the future. I want to share his thoughts with my colleagues and to urge that they read and compare the changing patterns as Dr. Kottmeyer presents them:

KOTTMAYER MOURNS AN ALLIANCE'S END

(By Dana L. Spitzer)

William A. Kottmeyer, whose brilliant 35-year public schools career here ended in June when he resigned as superintendent of schools, never has believed that schools alone are the most important institutions in the education of a child.

In Kottmeyer's view schools rarely were effective except as part of a triangle that included the church and the family. When any part of the triangle collapsed, the effectiveness of schools diminished.

There was a time, Kottmeyer said, when that triangle was as solid as the face of a pyramid. But technology and urbanization have crippled the church and have torn the family, leaving the school, still operating as it did 50 years ago, all too often unsupported in the task of educating.

Almost everything that is wrong with urban schools stems from the breakdown of the triangle, Kottmeyer believes.

In St. Louis, as in many other major cities, the average intelligence score of school children is 93, seven points below the national average of 100. In reading, language and arithmetic, children in the city's schools average six months behind national norms.

For three hours on a recent afternoon in a quiet corner of the employes cafeteria at McGraw-Hill, Inc., a publishing firm in west St. Louis County where he is revising the textbooks he has written, Kottmeyer discussed the schools of St. Louis.

He dwelt on why, in his opinion, they probably would never again be as good as they once were. He touched on many education problems: finances, race, teachers, decentralization, curriculum. But, to Kottmeyer, none of these was so threatening to the future of public education as the disintegration of that alliance of church, home and school.

When Kottmeyer speaks about schools, the past is very much with him, lighting the way to a yesterday that he clearly wishes could be tomorrow.

"We must seriously consider the future of public education," he said. "What do we want from our schools? How can we get it and are we prepared to make the necessary commitments?"

Unfortunately, in his estimation, schools no longer command the respect they once

did from the home. That has meant a disinclination to support them financially, but probably just as important, less co-operation from parents and others.

Kottmeyer discussed the new problems confronting the schools when the massive Negro migration to the North began in the 1940s.

Using City Plan Commission statistics, the School Board says that from 1950 to 1970 the number of whites in the city decreased at the rate of 16,300 a year, while the numbers of blacks increased at the rate of 6800 annually.

A byproduct was two problems detrimental to schools, Kottmeyer said. They were higher divorce rates and lower family incomes.

Traditionally, Kottmeyer said, public schools "took the children of the European immigrants and made the Horatio Alger success story come true for many of them.

"In that little school down on Seventh street, those kids learned what it took to make it in the world. Respect. Hard work. Noise clean. Opportunity waited.

"Who do you think is living today out in Ladue?"

For blacks, he said, the success formula never worked, or at least it did not work as effectively as it had for those who had preceded them in the city schools. Discrimination in jobs and housing erased opportunity from the equation.

Thus-alienated, blacks never gave in their homes or their churches the kind of support to schools that European immigrants had given, Kottmeyer said.

Kottmeyer's own German Lutheran background fits well into his scenario of ethnic sons and daughters rising through the system through discipline and hard work. He is a native St. Louisan, Jesuit educated at St. Louis University, where he earned his doctor of philosophy degree.

As a college student, he says, he found most courses boring and took to reading library books when at dry lectures.

"Six a day was my usual quota," he said. "I learned more from those books than in any college course. Most learning is like that. It comes from interest."

Today, his reading pace continues. He devours pamphlets, books and journals at a rate of 900 words a minute.

Starting as a teacher in 1935, Kottmeyer advanced to assistant principal, principal, director of research, assistant superintendent, deputy superintendent, and in 1963 acting superintendent of instruction. He was named superintendent of schools in 1967.

He is regarded nationally as an authority on reading and spelling instruction and has written or coauthored about 200 textbooks and supplementary teaching manuals, some of which are in use here. He receives no royalties from those used here.

Kottmeyer is quick to concede that the old days, when he and other members of the St. Louis Philosophic Society sought to make the city the cultural center of the world, may not have been the best of times.

The important thing is that people thought they were, he said. The propaganda of home, church and school was so closely entwined, and so rarely challenged, that for most people illusion was reality.

"The church told Sonny to honor his mother and father. It told Papa to forget about chasing his neighbor's wife. Nobody pays any attention today. But they did then. They knew they would burn in hell, by God, if they didn't.

"You had the father then not separated from his family by divorce or business obligations, as is too often the case today. He gave stability to his home and earned the respect of his children.

"You listen to the teacher, son,' Papa

would say. I don't want to hear about trouble. Teacher knows what is good for you. You listen.'

"Parents don't care like that any more. Or if they do, it's usually on the side of the kids, rather than the teacher."

It was the teacher, preferably in Kottmeyer's mind the stereotypical spinster, who amalgamated the church, home and school. Through her, the dark-eyed little Italian boy and the freckled Irish lass learned that reading and writing and arithmetic had an auxiliary purpose; to create good American citizens. Schools transmitted society's political and social values to the young, thus preserving stability and consensus in the adult community.

A good American knew that as long as he operated within the bounds of patriotism and the Ten Commandments, things would work out. They had to. All that he had learned, through teacher and priest, mother and father, said they would.

The system worked, Kottmeyer believes, and perpetuated itself because, unlike today, few teachers questioned the precepts they had inherited. Their commitment was to their children, not to reforming the system.

"There is no one like her today," he remarked wistfully of that teacher of yesterday.

"That stern-faced Irish gal went into a crummy school down on Pestalozzi and taught those little immigrant children how to learn.

"No husband to attend to. No children of her own. She loved those children in her classroom. Night and day, she cared about them, helping them to do well. You can do it, Tony, she would say. You're a smart boy, Tony. You can do it."

When Tony made it, his success was the teacher's consecration. It is what hooks every good teacher, Kottmeyer believes.

"There is no greater inspiration on the face of this earth than to take the raw mind of a child and teach it how to learn."

The teacher Kottmeyer refers to "took \$100 a month for her job and was glad to get it. Those kids and their parents were her life. Devoted. How many teachers today have that kind of commitment?

"Today they try to do the job in six hours a day and want a larger pay check every year."

SKILL EMPHASIZED BY KOTTMAYER

(By Dana L. Spitzer)

William A. Kottmeyer concedes that he knows neither the full significance of some current trends in education nor the answers to some of the problems they create.

But in a recent interview Kottmeyer, who resigned as superintendent of schools in June, discussed some of these trends casting the light of his 35 years' experience on the shadow that haunts schools here.

Foremost, he believes, is the demand by teachers for a greater voice in school policy. Justified as they are, he says, teachers probably are alienating themselves even more from the community.

Teachers, he says, have not convinced others that they are as concerned with school children as they are with their own pay checks.

"School people wonder why taxpayers don't love them. But what have teachers ever done to show that they love those kids?

"We as educators have been most to blame for not opening contact with parents," he said.

This, he said, has created a latent hostility among parents that has been fueled by the laziness of bad teachers and, most unfortunately, the arrogance of good ones.

Kottmeyer has only lately come to appreciate what John Dewey suggested about 75 years ago, that is that "genius among teachers is as rare as genius in other realms of human activity. Education is, and forever will be, in the hands of ordinary men and women."

He remarks that "teachers have never been the brightest people in the world," citing studies showing the performance scores of education students to be among the lowest of all college students.

That view has been modified somewhat in the few short weeks since he retired, by his exposure to persons outside professional education.

"I was really quite appalled by some of them. So I suppose you could say that teachers are no dumber than most people."

The quality of teachers concerns Kottmeyer because he believes fervently that "there are no good schools or bad schools. Only good teachers and bad teachers."

There is little difference between Roosevelt High School and Country Day School, between Harvard and St. Louis University he says, except in the quality of students. Good teachers and bad teachers will be found in like numbers at all of them.

He ranks first among teachers' skills the ability to teach reading, which he defines as the skill of taking information from a printed page with pleasure. That should be the first learning objective of every child. All else stems from it, he said.

"Most of our education comes from our own reading," he noted, "and most of that is outside the classroom."

Unfortunately, too many teachers, maybe more than half, do not know how to teach reading effectively, Kottmeyer said. He would like to see more in-service training by experienced teachers to improve their ability to teach reading.

Remedial courses and smaller classrooms (such as his own brain child, Rooms of 20), can only help correct damage that should not have been inflicted in the first place, he said.

Kottmeyer aligns himself with a growing number of authorities, including psychologist Kenneth Clark, who contend that such labels as "culturally deprived" or "disadvantaged" for lower-class youngsters have been used too often by educators to hide their own incompetence.

Some children come to school better prepared than others, but he believes that if a teacher knows how to teach, has the right materials and believes the child can learn, then a so-called "disadvantaged" black child probably can be taught as effectively as anyone else.

Kottmeyer believes that teachers ultimately will come to have a powerful voice in school policy. It is an unfortunate fact of the American education system, he says, that policy-makers—principals and superintendents—have usually been the worst teachers.

"A guy found he didn't like the classroom and the pay was better as a principal, so he trotted off to summer school and picked up the necessary credits to become a principal," he said.

It is understandable that good teachers, left behind in the classrooms, have become fed up with many of the decisions of such administrators, he said.

The drive by teachers, however, is bound eventually to conflict with the decentralization or community-control movements by parents, Kottmeyer predicts.

"Both of them want to run the show and they are headed on a collision course. We've already seen it happen in New York City."

The effort to reduce the authority of central boards of education here and in other

