*Students Ken Flowers and Calvin Wiersma at Oakdale Christian School—See Page 5, Principals' Perspective*

# christian educators journal

**MAY 1973**

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CHRISTIAN EDUCATORS JOURNAL, Volume 12, Number 4, May, 1973. A medium of expression for the Calvinist school movement in the United States and Canada.
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The Christian Educators Journal Association, composed of several member or sponsoring organizations, publishes the Journal as a channel of communication for all educators committed to the idea of parentally controlled Christian schools, whether at the elementary, secondary, or college level. The general purpose of the Journal is to foster the continuing improvement of educational theory and practice in Christian schools. Therefore, its pages are an open forum for significant articles and studies by Christian educators on Christian teaching. Editorial policy favors those contributions that are normative and evaluative rather than merely descriptive of existing trends and practices in American education. All articles and editorials appearing in it are to be regarded as the expression of the viewpoint of the writers and not as the official position of the Christian Educators Journal Association or its member organizations.

## BUSINESS MATTERS

Business correspondence concerning subscriptions to the Journal or membership in the Association should be sent to the Business Manager. Subscription price is $3.00 per year for those who are members of supporting organizations and $3.50 per year for individual subscriptions. Issues are published in the months of November, January, March and May. Correspondence concerning articles or book reviews should be addressed to the editor of the appropriate department or to the Managing Editor.



Announcements and advertisements are accepted according to the following policy:

1. Placement is restricted to those publishers, colleges, or private parties whose product or service is of direct benefit to the educational process and profession. All advertisements and notices must be of value to educators, and should provide assistance to them in finances, building and facilities, curriculum, and opportunity for professional advancement.
2. Announcements should reflect both the interest of and the same philosophy and standards as the Christian education movement. All entries must be designed by the advertiser prior to being submitted, but are subject to modification.
3. The Managing Editor reserves the right to reject submitted ads and announcements. A schedule of fees is available from the Business Manager.

# Contents



## ANNOUNCEMENT OF CONFERENCE

A Fine Arts Conference, sponsored by the English and Art departments of Calvin College and the Fine Arts Fellowship, will be held the evening of Friday, June 8th and the morning and afternoon of June 9th at the Calvin College Commons.

The Conference, which is open to the public, will feature, at the Friday "Recognition" dinner, Dr. Nick Wolterstorff as keynote speaker. Readings in poetry will be given by several Calvin students; Robert Swets, Dr. Oldenburg, chairman of the English department of Grand Valley College, the Reverend Eugene Rubinh, Dr. Rod Jellema of the University of Maryland and Luci Shaw of Wheaton.

Several workshops in the written and visual arts have been scheduled for Saturday morning and will be conducted by Dr. Oldenburg, Dr. Glenn Meeter, Professor of English at Northern Illinois University, Helen Bonzelaar, Robin Jensen and Chris Overvoorde. Workshops in poetry anf fiction will be based on manuscripts sent in by May 15th. Best-of-conference awards will be presented at the Saturday Awards lunch to writers of the best submitted manuscripts. Dr. Meeter will conclude the Conference with readings from his more recent fiction.

Reservation blanks may be obtained by contacting Conference Director, Marie J. Post, 2105 E. Shiawassee Dr., S.E., Grand Rapids, Michigan 49506.

# Pedagogue Polder's Problem


Pedagogue Polder is a forty-fivish social studies teacher at Omni Christian Junior High. He teaches, among other things, a class in civics to ninth graders.

He himself is a third generation transplant from a country where his name has special geographic significance, which he knows but tries to forget. His teenage students think his name odd, but so are some of theirs, particularly those numerous "Vander's" as prefixes and "sma's" as suffixes. Polder is thirty years, one generation, and several country miles removed from his students. And it all comes to a head in his civics class.

Polder, as a third generation transplant teaching a fourth, studied in college under first and second generation people, so his present insights about the role of a Christian, as citizens, in American society are shaped by four generations of eyes. Being professionally responsible he tries to be tuned in equally to both his elders and his juniors, however radically different the wave lengths of these two major sectors of the Christian academic community might be.

While some of these differences appear in all classes, some surface mainly in the civics class, where there is systematic attention to government and social organization of its citizens.

From his elders Polder learned, both in college and in the religious literature, that the goal of Christians is to transform their culture, changing its laws and structures where needed to make it more clearly reflect the will of God for human interaction. In this view the Christian sees government as the tool for improving society, and there is great interest in voting, in lobbying, and in political action groups. It was this vision which made student Peter Polder want to become Mr. Polder the civics teacher, so that even if he could not run for political office, he might inspire some of it in others.

His problem is that his adolescent students are shaped by two other more powerful, and fairly contradictory, views of culture and the Christian citizen. The one, a minority view among students, is that politics is a dirty business and that Christians had best steer clear of it as much as possible. In this view voting is a necessary evil, and the choices offered in an election are not good, better, and best, but bad, worse, and worst. Government and social organization is seen as at worst hostile to the dedicated Christian and at best a neutral factor in shaping society. This fiercely anti-culture view separates life into the sacred and the secular, with all social and political action being the latter, and thus really tangential to a Christian's concern with church work and missions.

While Polder is uncomfortable with this attitude in his students, he recognizes the theology of the antithesis which lies behind it, however little the adolescent proponents of it fail to verbalize such theology. Besides that, the holders of this view are not fully consistent. A number of them believed that the Vietnam war was just, because the government supported it and since governments are ordained by God, so are the wars that these governments undertake. A more fully consistent position might be that all activities of government ought to be ignored, if not actively resisted. The only fully consistent Christians that Polder knew of were the Amish.

What is more baffling to poor Polder is the majority view of his students, who are in turn reflecting the majority view of the parent constituency. The majority of his students have been so assimilated into their culture that they readily accept the platitude that this is a Christian nation and therefore whatever practices and social policies are present must be Christian. Not only are government policies accepted uncritically, but an entire life style that goes with being American. Is stock car racing a popular sport? Then it must be all right. Is a lottery or other forms of legalized gambling present? Then it must be acceptable as a Christian pursuit. Does the government engage in wiretapping? Then it must be legitimate and worthy of approval by Christians. Whatever is endorsed by the majority and legalized is therefore right.

The students are as baffled by Polder as Polder is with them. Polder's view, which is that a Christian critique of all social practices and legislation is what civics is all about, is overwhelmed by both the minority isolationist view and the majority integrationist stance of his students. And the students are underwhelmed by Polder's persistent attempts to get the majority involved in *assessing* the mainstream of American life, and the minority in *involving* themselves in it.

Fortunately pedagogue Polder thrives on pedagogical problems, but a problem it is.

**—D.O.**

## *Principals' Perspective...*

# CHRISTIAN EDUCATION: Opportunities For The Future

**by C. Mulder***

Christian education as it is promoted in the Christian day school is increasingly coming under attack. Interestingly enough, the attack is from within more than from without. It comes in all forms. The criticisms most often heard are these: (1) It's too expensive. We are pricing ourselves out of the market. (2) I don't see any difference between the Christian and public schools. (3) The Christian school is a protected environment. I want my children to interact with children of various cultural, ethnic, and religious backgrounds.

To substantiate objectively or to disprove these criticisms would be difficult. This article makes no attempt to do so. We shall, however, take a new look at Christian education, what it is, its purposes and practices. This article will also present some practical challenges for Christian school leaders and supporters.

Literature is replete with philosophies of Christian education and much of it is excellent. This article will focus on purposes and practices of Christian education rather than on evaluation of philosophies. And here it appears to me that we often confuse the process with the product. There are continuous attempts at finding a Christian interpretation of math and a Christian approach to the teaching of history. The emphasis actually must be on helping and assisting the student in becoming a Christian person with an understanding of, and commitment to living the Christian life in this world. Although subject matter and skill teaching receive fully as much emphasis with this approach, how one interacts with others and what one does with his knowledge are of at least equal importance.

These ideas can be rephrased in this way. Children learn by doing, by being involved. If we wish to teach them basic reading skills, we give them opportunity to practice such skills. If we wish to teach them to think critically, we help them develop tools to do so and present them with situations which demand critical thinking. The same holds true in areas of understanding and respecting others. If one of our goals is to teach children to respect students who are culturally, racially, and ethnically different from them, we must encourage

*The column entitled "Theory-Administration-Practice" in the March, 1973 issue was erroneously attributed to the column editor, but was in fact the work of Mr. James Kool, Principal and Teacher of Ada, Michigan Christian School. Our apologies to Mr. Kool.*

*This column, under the editorial eye of Warren Otte, gives the administrator's view of Christian schools. This one is by Carl Mulder, Principal of Oakdale Christian School, Grand Rapids, Michigan.

opportunities for interaction with these students.

It appears to me that many Christian schools have the unique, challenging and enriching opportunity to provide such experiences for children and the larger community. We have some very precise answers and some very common agreements on the nature of man, what constitutes a good society, and the purposes of life. Christian education in the Christian day school provides a growing Christian environment where students learn from day to day how to live the Christian life in the community. Every possible opportunity must be provided to make the Christian school somewhat representative of the community. Together these children learn, work, play and interact as they grow in Christian knowledge, morality, and values.

Oakdale Christian School in Grand Rapids, Michigan is one of several schools which is beginning to see this new opportunity and challenge for Christian education in the school community. The School Board and parents are saying that Christian education is desirable, it is necessary, but it is important that it be available for all Christians in the community. They are saying that it is an enriching experience for children to interact daily with children of various ethnic and racial groups.

Geographically, Oakdale Christian School is ideally located for providing daily interaction of children from various ethnic and racial groups. At a time when integration prone leaders are imposing artificial integration through one-way or cross-busing, integration at Oakdale Christian is a natural outgrowth of present housing patterns. Children who attend school together, live together in the same general neighborhood. Located among several Christian Reformed churches, in an integrated neighborhood, Oakdale Christian School is facing the test of the viability of Christian education in a developing urban society.

To experience the new life at Oakdale Christian is both interesting and exciting. There is a greater and more intense search for a truly Christian education. In an attempt to meet the educational needs of each individual, the Learning Center has been established. Here Oakdale and Calvin College cooperate to provide remedial and enrichment programs for individual students. Each semester ten Calvin students under the direction of Dr. G. Besselsen of Calvin College and Miss P. Vander Kooi, Learning Center Director, work individually with students.

Another innovation is the experiment in which ninth grade students work on a one-to-one basis with younger students. Presently, fifteen students are involved in this program. Ten mothers contribute one-half day per week as library aides. Here is Christianity in action. Students helping students and mothers helping children.

The Christian school also has an opportunity and an obligation to serve the community. The easy way out is to say that the cost is prohibitive. Yet, if we are committed to the goal, there are ways in which Christian schools can offer service to the community. One such area is pre-school education. Today it is receiving much attention. Christian school leaders will explore ways to make Christian education available to the community if Christian school leaders and supporters believe that Christian education has some answers to community problems and needs. Presently, the Oakdale Christian School Board has taken leadership in this area by establishing a Co-operative Pre-School program. It is operated by a Cooperative Board, under the supervision of the Oakdale Christian School Board, and is financially self-supporting. Staffed by a Christian teacher, the program began February 12, 1973. Christian schools must play a greater role in providing service for the greater community.

Opportunities and challenges continue to face us. Academically, Oakdale is exploring the possibility of providing personalized programs in math and reading. There is continued need for providing a greater variety of programs and courses for students. More playground space and better gym facilities are needed. Plans for a media center are presently being drawn. There is continued need for parent and community involvement in the school and a pressing demand for the school to provide greater services for the community. Readers of this article are encouraged to share information concerning any of these services or programs which they are providing. We need and invite the input and participation of the entire Christian constituency.

Evangelism Thrust is upon us. Perhaps this is one of the greatest challenges and opportunities which the Christian Church has ever faced in this century. One of the great opportunities for an urban ministry is providing Christian education for the children of the community. Here, in a Christian environment, with Christian teachers, children can prepare for and learn the Christian life. In addition, all children who participate in this learning environment find it beneficial. Is this your opportunity for service? Is this your challenge? The Christian schools involved in this program need finances, they need volunteers as tutors and aides to teach enrichment courses and to help provide spiritual direction. They need your prayers and your continued support.

# Compulsory Taxation or Freedom of Choice?

**by Jack Zondag***

The year 1972 was another year of big political promises, raised hopes, but also another inevitable let-down. It appeared that finally all the chips would fall into place and relief for our Christian schools would be won. President Nixon spoke out in favor of a tax credit in Philadelphia; Senator George McGovern stated in a Chicago campaign rally that he favored tax credits if they were found to be constitutional; the House Ways and Means Committee chairman, Mr. Mills, was for tax relief; and U.S. Rep. Gerald Ford was also an advocate of tax relief. With all this power we were led to believe that help was just around the corner. Certainly House Bill H.R. 16141 seemed to bring us some justice by providing us with a $200.00 tax credit for every child in a nonpublic school unless one's income were too high. However, Campaign '72 produced a lot of rhetoric but very little in the way of concrete results.

The time has come to stop begging and pleading for handouts and charity. We must recognize that our system of government does not respond to the requests of a minority, no matter how valid their claim may be, if such requests are politically suicidal. For many of our politicians, the name of the game is political survival above all else. Why would a politician wish to provoke the wrath of the taxpayer by giving more than token relief for nonpublic school supporters? The average taxpayer complains that property taxes are already too high. There is no hope of finding a sympathetic ear among the average taxpaying public school supporter today. Is there then some hope for justice in the U.S. Supreme Court? Not as long as each case that comes before it is one that challenges some direct or indirect transfer of public funds to the nonpublic schools. A person does not have to be a political scientist to realize that aid of any type is considered unconstitutional and will always remain so. With political inaction, public hostility and judicial rejection, it would seem that there is very little to be hopeful for in 1973.

There is, however, one big ray of hope for the future if we care to go back and read the works of two of our Founding Fathers, Jefferson and Madison. To understand the issue they fought for and won, we must look at the background situation. For more than a millenium, the state and church had worked hand in hand in Europe, demanding compulsory support of the official state religion and often demanding compulsory attendance as well. Then came the Reformation which destroyed this union in much of Northern Europe. Nevertheless, some religions were considered more tolerable than others and as a result, many people came to America to find religious freedom.

Unfortunately, the tragedy of religious tolerance did not end when these people settled in America, for no sooner had the Puritans established themselves, then they set up their own state-supported religion which all settlers in the colony had to support. In Virginia, the Anglican church was supported by the state; other states had their own favorites. There was freedom to establish a church

* Mr. Zondag is a social studies teacher at Sylvan Christian Junior High, Grand Rapids, Michigan.

other than the official one, but it meant that the dissenter still had to support the official state church.

In 1925 the U.S. Supreme Court recognized the rights of parents to establish nonpublic schools in the famous *Pierce* case, but it did not exempt these parents from their duty to financially support public education. This is still true today, and thus we are dealing with a situation comparable to that in Massachusetts and Virginia.

Prior to the Declaration of Independence in 1776, some states had disestablished their churches and recognized all Christian religions as equal, and therefore, taxed everyone for the support of these churches.

In Virginia, James and Patrick Henry wished to do just this, that is, declare all Christian Churches as established churches and levy taxes for the support of them all on an impartial basis. This proposal was completely unacceptable to Thomas Jefferson and as a result he introduced his own "Bill for Religious Freedom." In it he states:

> Whereas Almighty God hath created the mind free . . . to compel a man to furnish contributions of money for the propagation of opinions which he disbelieves is sinful and tyrannical: that even the forcing him to support this or that teacher of his own persuasion, is depriving him of the comfortable liberty of giving his contribution to the particular pastor whose morals he would make his pattern. . . .

This is heady material. A man must be free to choose how he wants to be instructed; no one can compel him to support or attend the propagation of opinions which he believes are wrong. Where have we Christian school teachers and supporters been all this time? Are we really sold on our schools and do we really protest our compulsory support of public education, or do we meekly acquiesce and then vainly hope for a handout?

In 1785 James Madison wrote his famous "Memorial and Remonstrance" in support of Thomas Jefferson. In it Madison spoke out against the evils of compulsory religion, compulsory taxing for any religion, compulsory attendance at church services, and coercion of any type when it involves the conscience and conviction of any man and the manner of discharging it.

Thomas Jefferson's "Bill for Religious Freedom" became law and Madison's writings became the basis for the First Amendment to the U.S. Constitution in 1791.

Since that time public schools have grown from struggling one-room centers of education, haphazardly supported, to the monolith of today, unresponsive, controlled by the state legislatures, the U.S. Congress, the U.S. Supreme Court, and financed by the compulsory taxation of all. The freedom which Jefferson and Madison fought for has been subverted, and the intolerance of James and Patrick Henry has become the law of the land.

Madison did not deny that Christianity was good or desirable, but he denied the principle of establishing Christianity because of the fearsome consequences. Thus he avoided the consequences by denying the principle. He wrote:

> That same authority which can force a citizen to contribute 3 pence only of his property for the support of any one establishment may force him to conform to any other establishment in all cases whatsoever.

One hundred years ago the public school was basically a Protestant school, and when compulsory tax support was introduced our ancestors did not raise any objections. They were too shortsighted! One man was not. The great Princeton theologian, the Reverend Doctor A. A. Hodge predicted that the U.S. public school system would eventually become

> the most efficient instrument for the propagation of atheism the world has ever seen. If every party in the state has the right of excluding from the public schools whatever he does not believe to be true, then he that believes most must give way to him that believes least, and he that believes least must give way to him that believes absolutely nothing, no matter how small a minority the atheists and agnostics may be.

This is the situation that the public schools find themselves in today, and we still support this system after all that has been written by Jefferson, Madison, and Hodge. When will we wake up?

The time has come for Christian school supporters to unite and withold that part of their property taxes which goes for public education. In the event that the state switches to a state educational income tax, we must then withhold that part. The time has come to deny the principle of universal public support for public education. Thomas Jefferson so long ago declared compulsory support to be tyrannical and the years since then have proved his views to be correct. The time for looking to Washington for charity or handouts is over. Only by united action can we get anywhere. We must declare that each man has the right to choose which type of opinion he wishes to support with his contributions. Let those who desire public education support that system, let those who desire another type support their own system. Let us make 1973 the year in which we finally resolved to work for justice and equity in education and to do something constructive for our schools.

## Sociologist Si Says:

# Reader Response

Dear Si:

Our friends in the sociology department perform a good service when they report their findings which compare Christian school *children* with public school *children.* I just wish you would not leave the impression that they are comparing Christian *schools* with public *schools.*

I would invite you to answer the following questions:

1. What "percentage" of the influences which form our opinions-attitudes-beliefs come from the school? the home? the church? the mass media? the neighborhood?

2. Which of the studies you have reported was actually a comparison of *schools* (as distinguished from *children*)?

3. Is it not possible that a study which did control for home-neighborhood factors, and found a very slight difference between public and Christian school children, might be interpreted to say that a school was exceedingly effective? The sanguinary goings-on among Coleman, Jencks, Moynihan, Pettigrew, Armor suggest that even the "best" sociologists might arrive at such a conclusion.

4. The church aside, is it possible that the most consistently *Christian* influence on the child's life might be the Christian school, but that its best efforts are washed out by more potent socializing influences?

5. My point is simply this: Ought you not to direct your guns at the Christian *community*— homes, schools, churches, etc.? The steady barrage leveled at the Christian school by implication (*CEJ* is used to report) may be unjust, misleading, and demoralizing to those who are perhaps least deserving of such treatment.

So I would encourage you, not to put your guns away, but to broaden the target and allow no one to be complacent. If schools account for 10% of the variance in opinions-attitudes-beliefs, then put nine articles in the *Banner* or *Christian Home and School* for every one you put in the *CEJ.*

Good Shooting!

M. Snapper
Calvin College

We are happy for the opportunity to respond to Dr. Snapper's communication. Anyone writing in the CEJ appreciates reactions, and so we are complimented by his letter. While there is a strain of constructive criticism running through Dr. Snapper's letter, the overall affect could be interpreted as one of defensiveness and defeatism. Is Dr. Snapper saying — look, we know the type of school system doesn't make any difference on the product (student); stop picking on us. Or is he saying — listen, people who go to a Christian school would be much different if there were no Christian school system for them to attend; the schools are doing a service that the home, community and church either can't do or may be undoing. If the first is the issue, there is a good deal of empirical support for it; if the second is the real issue, just asserting it does not provide verification for it. Again we would ask for Dr. Snapper to give an empirical defense for those assertions.

In empirical research one makes some basic assumptions that anyone can disagree with. The assumption made in much research about Christian schools reported in this column was that Christian education should be defensible in light of the effect it has on it's students, and the effect should be measured in the student's attitudes and behavior. If one wishes not to accept that assumption, as Dr. Snapper seems unwilling to do, then certainly data indicating little difference between Christian and public school students can be dismissed as the result of poor research methods, or the result of some spurious relationship.

Snapper does raise five important questions that deserve answering. Our response to his questions are:

1. The percentage of the influence is exactly what we have been trying to determine. Join us in the task!
2. We have reported research on students, teachers, and parents. We did not report on research of size of buildings, neatness of landscaping, number of busses, etc. We are not aware that any of that makes a difference. The massive Coleman Report would indicate that it does not make much of a difference. Do you have information that we do not have? We always thought the difference was in the personnel and their philosophy and Christ oriented lives.
3. Such a study would be effective in nothing at all important enough to justify a separate school system. That is, if Dr. Snapper is using

the term 'control' as it usually is used in research, in that all variables are held constant except one, the school system.

4. Yes, but then one would expect to find even more "washed out" Christians who did not attend Christian schools, and such evidence is not abundant.
5. We are amazed that our few articles could have the powerful impact you refer to in this question. We certainly do not want to be unjust, misleading, nor demoralizing to others. We thought that we were indeed just, truthful, and engaging in a legitimate academic exercise; that is a dialogue in a scholarly journal.

Finally, in your last paragraph, how did you arrive at the 10% of variance? Maybe it is 20% or 49%. We have complete confidence that dedicated Christian school teachers by their teaching and life style have a significant impact on their student populations. That confidence though does not qualify as evidence. It is evidence which we are looking for, and we are not certain that Snapper has aided us in that respect. We are doing research which we hope will provide that type of evidence. If we thought Christian education were useless we would not be devoting our lives to it.

We wish, as you do, to have the products of the Christian school be a distinctly different type of individual than that produced by the humanistic public school. We would like to believe that this product of a Christ centered education would go through the world in such a way that people would wonder why he is so different; and that people then would say, "Well he went to the Christian School and comes from a Christian family." To bring that about we are willing, as are so many others, to pay a high financial cost in keeping the Christian schools viable.

Our friends in the Education Department would do us a good service if they would report their findings which empirically document the distinctive results of Christ centered education. Hence we have a few questions for Dr. Snapper:

1. Should we argue principal issues in an empirical vacuum?
2. What empirical evidence can educationists produce in regard to the differences between public and Christian school students?

Unaccustomed as we are to metaphors of violence, instead of "Good Shooting" we wish him "Shalom."

H. Holstege
G. DeBlaey

## Language Arts

**DON CORAY,** *Editor*

# Poetry and Life

**by Don Coray***

> *Any time you accept what God has given, you got it made.*
>
> —Pearl Bailey

Chesterton, looking for the first time at the duck-billed platypus, was convinced that God has a sense of humor. Perhaps a teacher of literature, especially a teacher of poetry, can learn something from this. "Poems sound so queer, so fake," wrote two of my sophomore students recently in a cleverly jocular denunciation of poetry as the textbook and I had been attempting to lay it on them. Marilyn and Beth† (a mild shock, my discovery that the message had come from two girls and not, as I had surmised, from guys!) felt that most of the poets in our book were simply drunk on their own artifice. It is an old complaint. Poets, many students feel, are perversely indirect, stubbornly quirky. Poets try to fake you out.

Poetry-lovers and poetry-suspectors alike can claim ancient traditions, and there are numerous schools of each. The poets exiled from Plato's Republic would, I guess, have found hard faring in Augustine's Civitas Dei, even as converts, though Augustine was more ambivalent than Plato on the question of poetry's worth. In this regard, as in many others, a Christian teacher may do well to imitate Augustine's ambivalence. To champion poetry is a dangerous game, though there is even more peril in championing poets—it gets you in trouble. Defending all skillful poets is just a little like defending all adroit politicians, and I don't know too many English teachers who would attempt the latter.

Still, let me invite trouble by saying of poetry-reading what Henry Zylstra said of novel-reading. It gives you more to be Christian with. But I would go further about poetry, and say with Emerson that "all men are poets at heart"—all girls, too,

*Mr. Coray, teacher of English at Eastern Christian High, North Haledon, New Jersey, is the Editor of this Department.

†Their exchange with me appeared on pp. 23-26 of the March *CEJ*.

including my students Marilyn and Beth. As a Christian teacher, I would be joyfully militant rather than condescending in pushing this point in the classroom. My contention is that few of the students, probably none, really hate poetry. Teachers of poetry should have enough humility to admit that the "treatments" and "approaches" in the classroom may often throw up a smokescreen between the student and the poet, but what we should be working at, I think, is a Christian introduction to poetry. This introduction, however we individually and variously conceive our ways of presenting it, should, I believe, focus on poetry as both *divine gift* and *human need.*

Most students may be brought to *see* what they *already feel,* and if poetry both answers and expresses a human need, students are capable of grasping this. They may be singularly unimpressed with Congreve's statement of the point—"Poetry, the eldest sister of all the arts, and parent of most"—but they may be more attuned to respond to Carlyle's description of poetry as "Musical Thought," especially if the teacher makes classroom use of music in a broader sense than that denoted by Carlyle. Try using Simon and Garfunkel's "Richard Cory" as an introduction to E. A. Robinson's original—or *vice versa.* Or you may use Joni Mitchell's "The Circle Game" as a way of gliding into Wordsworth's *Ode.* The use of this pop music need not be meretricious; it may be a good way of showing that poetic artifice is not despicable simply because "people don't really talk that way." The same point could be made in a different way by appealing to the work of that magnificent light versifier Dr. Seuss—say, to his *The Lorax,* with its conservationist ethical wisdom bolstered by those charming illustrations. The "approaches" abound for the teacher who wishes to exploit them. One of my own favorites is the classroom study of *dream experience.* Literature is organized experience, and a poem is, after all, a controlled day-dream. Even Poe's somewhat wayward disclosure, "With me poetry has not been a purpose, but a passion," has its truthful relevance here. For the point is that students have no glandular hatred for the elements of poetry, even if the culture (including the school?) fails to encourage the literary study of poetry. No student I have ever known has had an in-built contempt for all human feeling and desire, though a constricted education may have taught some to be fearful and suspicious of both.

Poetry is a kind of language, and this is the heart of the matter. Christian teachers must find ways of clarifying this for the young. And one of the main aspects they must clarify is the *centrality of metaphor in human understanding.* In a Christian school, I believe, this is the crux. And the crux is, both literally and figuratively, the Cross. We need poetry because we need metaphor. The Christian teacher must guard against being overbearingly moralistic about this, surely; to be indifferent to my classroom is, for my students, not the same thing as to be indifferent to Jesus. Still, we must somehow say that we need metaphor because the Bible tells us so. We find that metaphor is basic to the Christian revelation, not simply because we discover Psalms and poetic drama in the Bible, but because the teachings of Jesus Himself are shot through with it. Jesus is the ultimate poet because He is the eternal Metaphor, the Word made flesh who dwells among us. Our understanding of Jesus' teachings depends on our understanding of His metaphors. Christian students can readily grasp this. Ask them which is more understandable, more alive: the abstraction "God accepts the penitent sinner" or the story of the Prodigal Son?

Percy Shelley was largely wrong, I think, in making the judgment he expressed in a letter to Thomas Peacock: "I consider poetry very subordinate to moral and political science." If I am right in averring that the essence of poetry is mainly found in metaphor, then metaphor may be seen as essential to our understanding of all of life. We resort to metaphor in expressing our simplest perceptions, like the little girl who invented her own simile to describe the sensation in her elevated foot; adults would have used the oldie "asleep," but she said, "My foot feels like ginger ale." Scientists (I was told when I was a kid) have spoken of light as wave or particle. But the basis of our Christian introduction to poetry may lie in the way Jesus expressed the central truth of our faith, the Truth about Himself. No one understood this more keenly than St. Augustine. The same Augustine who denounced poetry as "the Devil's wine" could not avoid it even in the way he denounced it. For he knew in his heart that there was a poetry that would call to account the Ovids of this world. It is this recognition that should guide us, spiritally and concretely, as we teach poetry. Augustine's biblical paradoxes and metaphors said it all:

> When the Maker of time, the Word of the Father, was made flesh, He gave us His birthday in time; and He without whose divine bidding no day runs its course, in His Incarnation reserved one day for Himself. He Himself with the Father precedes all spans of time; but on this day, issuing from His mother, He stepped into the tide of years.

Man's Maker was made man, that He, Ruler of the stars, might nurse at His mother's breasts; that the Bread might be hungry, the Fountain thirst, the Light sleep, the Way be tried from the journey; that the Truth might be accused by false witnesses, the Judge of all the living and the dead be judged by a mortal judge, Justice be sentenced by the unjust, the Teacher be beaten with whips, the Vine be crowned with thorns, the Foundation be suspended on wood; that Strength might be made weak, that He who makes well might be wounded, that Life might die. He was made man to suffer these and similar undeserved things for us, that He might free us who were undeserving.

# What About Educational Theatre?

**by Thomas Day***

As students in college, most young people come a long way in finding out just who they are and what they would like to make of themselves. I found this sense of direction mainly through participation in the theatre group at Calvin College. Despondent about the fact that it took me until after I was well into college before I found what I wanted to do in life, I often asked the question, "Why couldn't we have studied theatre in high school?" That our students should have the opportunity to study theatre before getting to college is the contention I will try to support in this article.

### Educational Theatre

To begin, I should define just what it is I think we ought to integrate into our educational system. What *is* educational theatre? To put it into acceptable educational jargon, I would say that educational theatre is theatrical production within an educational institution—theatre designed to contribute to the educational objectives of that institution.

Whenever anyone thinks of theatre in relation to education, the theatre is usually thought of as being a part of a speech department or a course in public speaking. This association is a valid one, for theatre does provide excellent training in voice production. However, this speech aspect may be just one wave in the sea of experiences which the realm of theatre can offer.

Before going any farther, perhaps I would be wise if I went back a step and defined what theatre is. First of all, theatre is a liberal art which offers a wide range of exposure to an extensive body of literature. There are a number of play-wrights whose works are included on the lists of outstanding literature. In a person's contact with fine literature, one cannot help but confront such men as Shakespeare, Shaw, and Eliot, whose works were of course originally intended for the sge.

Theatre is a fine art. In it exist the processes of creativity and interpretation which identify any discipline qualified as a fine art. Creativity can be found in any area of the theatre, from an actor's development of a characterization to the scene designer's conception of a set. This creativity arises from the interpretation of the original creation, the playwright's script.

A closer look at a theatrical production reveals that theatre is more than just another of the arts; it is one of the most complex of all the arts. Although the art of theatre is essentially literary, there are many more areas of the arts which get involved in producing a play: the elements involved in architectural design play an important part for the scenic designer and the set constructionists; music and dance are frequently intertwined within the structure of a play, and a knowledge of these arts is also essential in creating an effective interpretation; costuming and lighting require a good deal of knowledge in the effects of line, texture, and color, giving the designers the need to create certain expressions in much the same way a painter draws on his resources in painting a picture. Thus, in looking at theatre as an art, we find that theatre involves not only creative writers but also an intricate combination of all the arts.

Theatre is communication. It has grown up with speech itself until now it offers one of the most forceful available means of getting a message across. Also, as I have implied, theatre is historical.

* Mr. Day is a speech and English Teacher at Dakota Christian High, New Holland, South Dakota.

A survey of a civilization's theatrical achievements can reveal a most candid picture of the evolution of a given culture or age.

In the light of all this, the answer to the basic question—what is theatre?—would claim that theatre is much more than an art. Theatre extends to the very root of man's existence, that is, man's need to express himself.

But what is *educational* theatre? As I have suggested educational theatre justifies its existence on the basis of its educational contributions; therefore, it is not just theatre sponsored by a school. Certainly it takes on the commercial responsibilities of putting on plays which will draw audiences, as well as the recreational responsibility of producing plays which will provide entertainment for the community it serves, but educational theatre's chief fulfillment is in achieving educational objectives which are set by the school within which it exists: objectives such as speech training, personality development, exposure to fine literature, or creating a desire to develop a perspective on life. Theatre is a complex art, and educational theatre is the use of this art in an educational institution toward fulfilling its established goals.

### Why Have Educational Theatre?

Jacques Maritain has described education as the "shaping of a man," averring that this must occur through the transmission of acquired knowledge. That is, man must learn from the records of the thought and experiences which have gone on before him. This view of education is held by all those who are thought to be among the traditionalists in education. Classical thought is held to be the richest and most profitable material available for educating the youth of today.

John Dewey, on the other hand, claims that education must take place in an atmosphere of disciplined experience with an equal emphasis on the subjective (the student and his needs) and the objective (the curriculum) elements in education. He would like to see a balanced interaction between these two elements allowing the students to learn from the experiences of others through experiences of their own.

N. H. Beversluis articulates his Christian perspective and suggests a combination of experience and curriculum "reoriented under a Christian vision of human calling." This view, I think all Christian educators would agree, embraces all of Christian education, and in light of the question at hand I think that theatre affords an impressive potential for fulfilling Beversluis' suggestion.

Dramatic literature is unique in that it has been written with the expressed purpose of being re-enacted in a theatre. When a student is given the opportunity to participate in this re-enactment, he is given the benefit of the author's experiences or thoughts found in the script and the added benefit of a personal experience in whatever phase of the production he participates in.

Theatre, offers artistic training both in the art of acting and in each of the other arts connected with theatrical production. It offers motivation to undertake a detailed study of dramatic works in literature within the medium for which it was intended. This motivation will be awakened in everyone involved in the production, not just in the actor, for in order to become a part of a unified effort to portray an interpretation, each person must recognize what it is the playwright is trying to say. As I have said speech training is a part of educational theatre, but speech is mainly the bailiwick of the actor. To realize what other educational objectives theatre can fulfill, the opportunity for activity in the areas beside acting must be given to the students.

The wealth of dramatic literature available today gives evidence of the variety of uses the playwrights have found in the medium of theatre. Some have used drama to portray an event or series of events in history. Others have analyzed or portrayed the distinguishing features of a certain culture. Still others have sought to outline a philosophy of life, whether it be a religious outlook or a sociological perspective written in the hope of stimulating social reform. Playwrights reveal their thoughts through their drama, and when students are given the chance to study a dramatic work a great stimulus is provided for forming their own outlook on life. It seems to me that theatre then offers great possibilities to Christian education. Many have argued that Christian education should prepare one for living the Christian life. Dramatic works, both Christian and non-Christian, embody their authors' opinions on how life should be lived. Dwelling on this aspect of a dramatic work is a remarkably apt instrument in defining a Christian perspective for life.

Educational theatre then carries with it both the intellectual values which are stressed by those educators who demand strict attention to curriculum, as well as the value of actual experience related to learning, the value which is stressed by those educators concerned with child-centered learning, the whole enterprise all the while conducive to orienting the education which builds toward Christian life.

### Using Educational Theatre

It is a truism that during the years of junior and senior high school, students go through an extensive period of emotional and physical changes which are significant in forming their life-styles. It is here that, it seems to me, theatre could be very useful, and it is also here that the lack of theatre in our educational system becomes most obvious. Teachers throughout the primary grades find many opportunities to involve the students in theatrical activities. The children participate in such exercises as acting out stories in reading books or Bible stories. However, it seems that from seventh grade up until college, the only contact with drama is a reading of one or two Shakespearian plays and, of course, the senior play. A lot of time is devoted to music appreciation or arts and crafts, while the possibilities which theatre offers are often ignored.

Theatre ignores neither musical appreciation nor the skills acquired in the arts and crafts. It rather promotes a cumulative expression involving *all the arts* to produce a unified expression. How should this be done in education? I would like to see theatre make a formal appearance in the curriculum at the junior high school level. A theatre history course could be given in correlation to the history or religion courses being taught on the same level, or in correspondence with the literature courses being taught. However theatre history is integrated within a junior high curriculum, this history would give its students an excellent foundation for participating in a theatre program in high school, in addition to the broadened outlook on the history of mankind which a study of theatre history gives.

At the high school level, I would suggest that the school offer a theatre program in much the same way it now offers participation in choir or band. Students interested in theatre (and there would be many of them as a result of the program in junior high) could select it as an elective and recieve credit for this study, as those who are in choir or band receive credit for their participation. The course would be patterned much in the same way a theatre program is fashioned on the college level, with an emphasis on acting experience and a working knowledge of the processes involved in dramatic production.

To conclude, I would say that educational theatre is an extremely useful means for fulfilling the commitment made by each person connected with Christian education. In an age in which there are many who are not only looking for direction but crying for it, educational theatre can be a very satisfying answer.

## Social Studies

**JAMES VANDER MEULEN, Editor**

## Books

# THE ART OF TEACHING Christianity

*The Art of Teaching Christianity: Enabling the Loving Revolution,* by Wayne R. Rood. Nashville & New York: The Abingdon Press, 1968. 221 pp., $2.50. Reviewed by Lillian V. Grissen, English teacher, Denver Christian Intermediate School, Denver, Colorado.

Would you like to start a faculty argument — a profitable discussion, that is? What is the difference between "knowledge of" and "knowledge about?" How is teaching Christianity not unlike teaching anything else, and also different from teaching anything else? What is the purpose of teaching Christianity: persuasion, conversion, neither, or both? Do teachers have the right to decide what is to be taught? (p. 21)

These questions are only teasers. Dr. Rood has written an easily read, yet extremely provocative, book which, in my opinion, asks that it be read by every Christian teacher. Although the book is entitled *The Art of Teaching Christianity,* it becomes obvious that the writer is convinced that Christianity is caught rather than taught, and thus he reaches into several subject areas of the curriculum.

The book is divided into five chapters, each of

which is developed logically. The divisions are such that a reader can return easily to any one section to pick up tid-bits that have inspired and assisted him.

In the first chapter Dr. Rood discusses the peculiar character of Christianity and the teaching of it. "Revelation means that God wants to be known – not known about or even known of." (p. 19) Because of this the very "nature of the teaching and learning roles is altered." (p. 21) He stresses the importance of dialogue, meaningful dialogue, through the use of words that convey genuine messages, words that have not become meaningless or mere jargonese. What is a person? An experience? An encounter? Movement?

The author carefully analyzes the involved process of preparing for teaching. "Dissatisfaction," he says, "is a significant element of spiritual learning." In a day when Christian school teachers face children born in an age of affluence, satiated with the plenty in which we live, and not only familiar with but accustomed to every novelty the commercial mass media places in our living room, we have looked upon ennui as our enemy. Yet Dr. Rood maintains ". . . divinely implanted discontent is, perhaps, one of the strongest incentives to response that man knows about." Have we overlooked an ever-present asset?

In chapter three, Dr. Rood reviews the various methods of teaching. Many traditional teachers will quickly and gladly feel vindicated when he says "Lecturing is the method, par excellence, of formal education." (p. 81) But he adds the blow: if it is not effective, it is simply that the lecturer has been inept. He continues by explaining lecturing, its advantages and disadvantages. Because this claim alone can evoke vigorous debate, the book is worth reading. Group activities, dramatics and role playing – all of which increasingly take dominance in the repertoire of the innovative teacher – are discussed clearly, and again will stimulate creative discussion among any group of teachers.

A section of the book is devoted to "teaching with a vision." Dr. Rood in speaking of teaching the Bible says:

> The Bible will be taught in the conviction that included in its pages is an ancient sacred history still at work. From a vast store of the experiences of a people peculiarly sensitive to the divine address, certain episodes have been selected, worked over, and tied together for the purpose of presenting a record of the relationship between God and man. Some of it is factual and some of it is mythical. It is important, wherever possible, to distinguish between them and to identify the work of the various writers and editors. . . . (p. 167)

If one tears these words from context they may disturb the Christian teacher, but in no way should this particular viewpoint detract from the value of the book in its entirety.

The book concludes with an emphasis on the continuing education of teachers. If there is a complaint about mediocre teachers (and who of us hasn't been subject to this accusation) then, according to Dr. Rood, our colleges must share in the blame for

> The evidence from all teacher-training programs is almost unanimous about two points:
>
> (1) teachers tend to teach most naturally in the same manner in which they were themselves taught;
>
> (2) they tend to teach at their own best while they themselves are being taught. (p. 205)

With his first point, I feel, many teachers would disagree violently! How many of us have sat through endless, dry, boring education *and other* courses in college, and have left with the vow, "I will NEVER teach that way!"

But he does not blame only the college! The teacher, to remain effective, must be a lifelong student. Yet it is extremely difficult today to even remain afloat in the unceasing, torrential cloudburst of knowledge, ideas, methods, and aids being published.

Dr. Rood's book is indeed "unique," as its blurb asserts, "because its sheer simplicity and easy informatlity belie its great depth." Although a plethora of publications overwhelms the already busy teacher, this book, it seems to me, could provide a positive constructive basis for much profitable discussion among any group of Christian teachers who desire earnestly to "enable the loving revolution."

Books

# MEDIA AND VALUE EDUCATION

*Media in Value Education* by Jeffrey Schrank. Reviewed by Sandy Liesveld, drama teacher, Denver Christian High.

Mass Media has been hailed as "the cure-all for contemporary education's ills" by its enthusiastic proponents. More conservatively based observers, however, see all these lightbulbs, tapes, and tubes as "a threat to the sacred realm of "readin', 'ritin', and 'rithmetic'." Jeffrey Schrank's *Media in Value Education* isn't as fanatical in extolling the virtues of media as other books I've read, but his use of phrases like "tools for revolution" seem to indicate his belief that some changes must be made in educational techniques. Schrank discusses the use of electronics and other media (primarily film) as necessary to provide the student with the educational experiences he needs to survive in the future. The book is written "to assist teachers in religious education but its context has been purposely widened to be useful in other fields of education."

In a provocative first chapter, a lá *Future Shock,* Schrank relates changes wrought upon society to the move from a world of print domination to one of electronic extension. "Today's young person is aware that his learning experiences come from a vast number of sources. He grows up in an electrically configured world. He is used to and needs more than the classified information which the printed word gives him."

True, one surety of the future is that a multiplicity of life-styles will exist, and the more sources of information the student has at his disposal, the better equipped he will be to survive. But, even before the electronic age, there were those who questioned the nature of man, his struggles, his decisions. I would hope that Mr. Schrank is not dismissing a wealth of "printed material" as irrelevant and worthless. Certainly Shakespeare, Tolstoy, Twain, and Dickens can help students determine what their values are as well as the Beatles, Fellini, and Simon and Garfunkle.

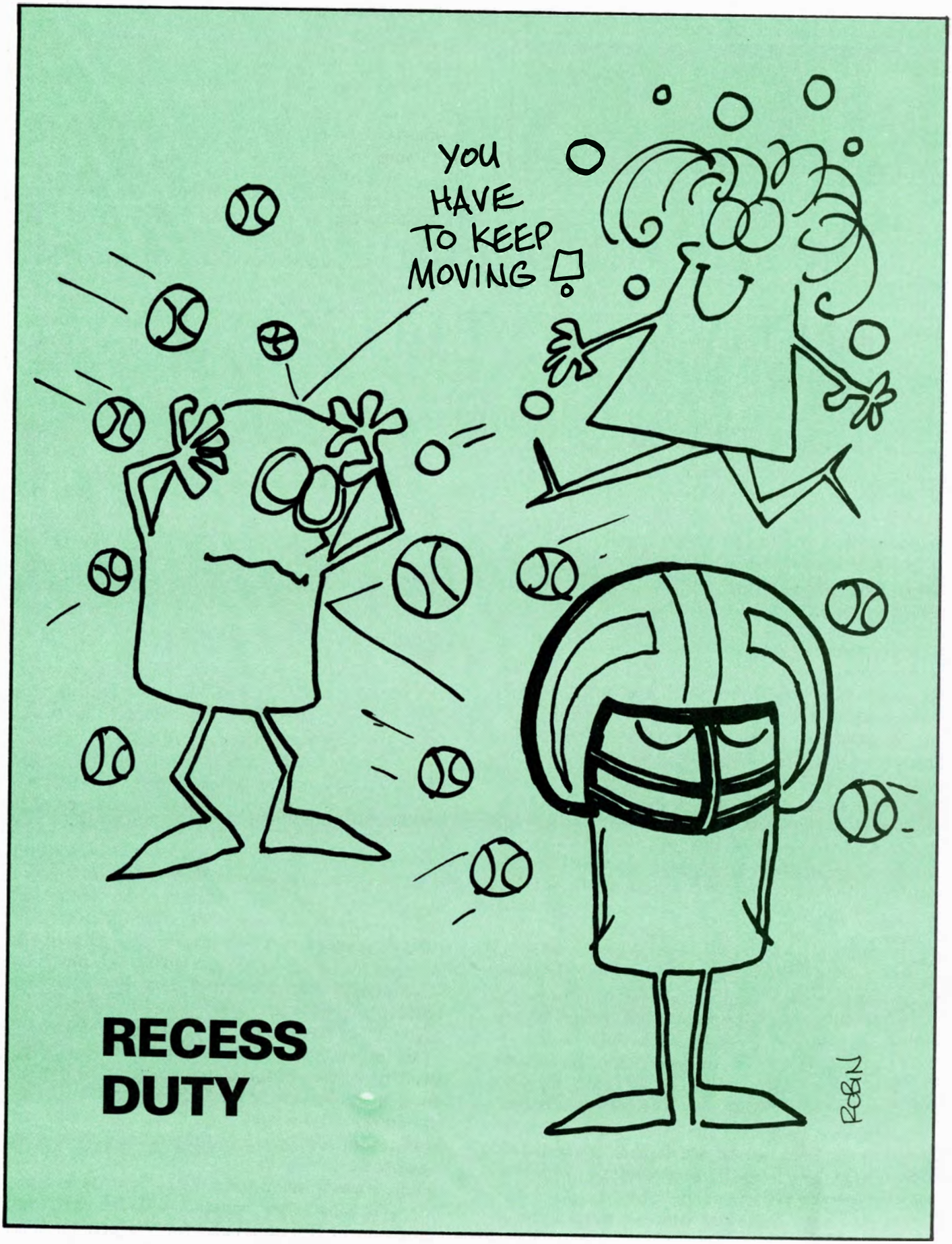
A large section of the book contains reviews of 75 films the author feels would be especially valuable to religious educators. The reviews are preceded by an index, a keyed guide to sources, and a price comparison list. Such practical considerations are refreshing from a film advocate. Too often suggestions for film rental and purchasing assume unlimited budgets.

The films selected present visually the problems of values clarification; most could not be found in a "religious film" catalog. I would heartily agree with Mr. Schrank's wry observations that "the religious educational value of a film varies inversely in proportion to the degree that it was intended to be a film for religious education." Anyone who has suffered through a slurpy, piety-labeled "religious film" has an idea why the best films for religious educators are often made without a thought of religious education.

The reviews are brief but masterful summaries. Neat discussion guides, which are designed to involve the students emotionally, follow. The films, covering a variety of subjects, explore such topics as: communications, violence, urban problems, human relations, war. The films could be effective for any number of disciplines, especially in psychology, English, history, political science, and humanities courses.

Schrank doesn't do as thorough a job in succeeding chapters. A rather limited list of records, (popular music) tapes, and filmstrips is offered. Although not comprehensive, some imaginative suggestions for electronic media use could stimulate a wary beginner. An annotated guide is also provided to help readers locate other sources and pertinent material for classroom use.

Its impossible to say what skills a person will need to survive in the future. The best we can do for our students is to help them understand more about themselves and how they function in relation to other people and the world as a whole. We can use all that available, printed material as well as media, to help them to be more aware of who they are and what they value. This book can be of assistance in that important and challenging job.


YOU HAVE TO KEEP MOVING
RECESS DUTY
ROBIN

College Forum
DR. NORMAN DE JONG
*Editor*

# Introducing... COVENANT COLLEGE

**by Richard Steensma***

Covenant College was founded in 1955 by one branch of what is now the Reformed Presbyterian Church, Evangelical Synod. The school's first year was spent at Pasadena, California, while the board of trustees looked for a permanent suitable property. In 1956 the college moved to a 27-acre property in west suburban St. Louis. At the same time, Covenant Theological Seminary opened for its first year on the same campus.

By 1963, growth of both institutions made the St. Louis facilities inadequate, and in 1964 the college opened its doors in a former luxury hotel on the crest of Lookout Mountain which overlooks the city of Chattanooga, Tennessee. From its 2400-ft. elevation, the college is a landmark building visible for miles around. The location is noted for its great natural beauty and historic interest dating back to the Civil War. More than a million tourists visit the area each year.

### Statement of Purpose

The religious orientation of the college can best be understood by excerpts from its Statement of Purpose:

"Covenant College is a liberal-arts institution of higher education, operated by a board of trustees elected by the General Synod of the Reformed Presbyterian Church, Evangelical Synod. The college accepts the Bible as the Word of God written, and interprets it in the light of the summary contained in the Westminster Confession of Faith and Catechisms.

"The purpose of Covenant College is stated in its motto— 'That in all things Christ might have the preeminence' (Colossians 1:18). We serve this purpose as a college dedicated to academic excellence and to the education of the whole man, and we believe that we have the responsibility of working out the implications of Christ's preeminence in every activity of the college, whether in the classroom or not.

"Specifically, we acknowledge Christ preeminent as the creator of all things, as the redeemer of men fallen into sin, as the touchstone of all truth, and as the sovereign ruler over all areas of life. It is in the light of these concepts that we define the general aims of our instructional program."

### Enrollment and Campus

Covenant College has a growth goal of 1000 students. The college wants to retain the advantages which stem from an institution of smaller size. At the time it moved to Lookout Mountain in 1964 enrollment was 145 students. In September of 1973 this figure had increased to 472, up from 394 the previous year. About half the students come from Reformed Presbyterian churches; the remainder come from Orthodox Presbyterian, Southern Presbyterian, and other Protestant religious affiliations. Students come from some 38 states, with California, Florida, Georgia, Maryland, New Jersey, Pennsylvania and Tennessee contributing the most. Foreign countries are represented by 13 students.

The original campus of Covenant College included the 24 acres on which the structure was located just across the state line in Georgia. Acqui-

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sitions have since been made to acquire contiguous land, and today the campus extends over 70 acres of choice mountaintop property with a view that on clear days reaches to several surrounding states. The college also has the distinction of having the largest athletic field in the state of Georgia, no mean accomplishment in an area where level ground is almost non-existent.

In addition to the above property, the college has also been the recipient of several land gifts during the past several years, one of these being a 150-acre farm about 10 miles south of the college and the other being a large wooded tract which includes valuable "grow" property. All of this adds up to some 750 acres, a substantial asset in an area that is expected to develop substantially in the years ahead.

### Buildings and Library Facilities

Shortly after the college moved to Lookout Mountain, the board of trustees and the president began work on a master campus plan that would provide for orderly growth to the goal of 1000 students. Architectural planning for buildings was begun in 1968 after commitments were received from the Department of Health, Education, and Welfare for a library-classroom building and a physical education center. Later, a commitment was received from the Department of Housing and Urban Development for a men's residence to house 100 students. This unit will be the first section of a men's dormitory complex.

Funding of the above buildings was provided by grants and long-term, low-interest loans. The college has provided some $600,000 as its share of the funds to be raised. The buildings were dedicated on November 10, 1972 and are now in use. Speaker at the dedication was Dr. Roger J. Voskuil, Executive Director, Council for the Advancement of Small Colleges. Also present were Mr. and Mrs. Stanley S. Kresge to participate in the dedication of the Anna Emma Kresge Memorial Library, after Mr. Kresge's mother, and in the dedication of the Stanley S. and Dorothy McVittie Kresge Collections for Christian Learning.

The Kresge Collection for Christian Learning is a collection of books and other media gathered to meet the needs of Christian students for information on the doctrine, organization, and history of the Church up to the present day. The collection also includes within its scope writings on the persons, institutions, religions, philosophies, scientific developments, and movements that have had a major influence on Christianity in the past or are of particular concern at present.

The collection seeks to provide a resource to help Covenant students develop a Christian perspective in their studies. Included will be complete works of prominent Christian thinkers throughout the history of the Church and writers who comment on those men and their works. Besides meeting current needs, the collection will be directed to amass materials for future scholarly reference use, hopefully to acquire in a short time a degree of maturity usually acquired over the years. Some of the first items acquired include: a 1578 copy of Foxe's *Book of Martyrs,* a 1644 copy of Samuel Rutherford's *Lex Rex* which was written while he attended the Westminster Assembly, a 1650 copy of the essay "Justification and Holiness" by John Witherspoon, a Scotch Presbyterian descendant of John Knox who was President of the College of New Jersey and a signer of the Declaration of Independence.

The Kresge Collection and the T. Stanley Soltau collection of books in Bible and missions come on top of a vigorous program of library development that has been going on for the past several years. The program includes the latest in microfiche resouce material. The librarian is Mr. Gary B. Huisman, graduate of Calvin College and Western Michigan State University.

### Educational Program

Covenant College is fully accredited, having been elected as a member of the Southern Association of Colleges and Schools on December 1, 1971. This achievement has been the goal of Covenant's president, Dr. Marion D. Barnes, shortly after he assumed these responsibilities in 1965. Dr. Barnes is a graduate of Columbia University and the University of Arkansas. He has taught Chemistry at Wheaton College and Columbia University. Later, he was Assistant Research Director for Monsanto Chemical Corporation and then became Director of Industrial Research for Sulphur Institute in Washington, D.C., where he worked with many universities on research projects. Dr. Barnes is very active in civic affairs in Chattanooga where he has been chairman of the Air Pollution Control Commission and a member of the Chamber of Commerce.

Covenant College has a faculty of 33 people. Dean of the faculty is Dr. Nicholas P. Barker, a graduate of the University of Minnesota and Princeton University. Covenant's curriculum is organized under six departments: Bible, Missions, and Philosophy; History and Social Sciences; Languages and Literature; Music; Natural Sciences and Mathematics; Psychology and Education. In addi-

tion, a special committee supervises the Inter-Disciplinary Studies.

*Major Programs* – Bible and Missions, Philosophy, History, English, Music, Applied Music, Music Education, Biology, Chemistry, Natural Science (with concentration in biology, chemistry, mathematics, or physics), Medical Technology, Psychology, and Inter-Discipliniary Studies.

*Minor Programs* – Bible and Missions, Philosophy, History, Sociology, English, Music, Biology, Chemistry, Mathematics, Physics, Psychology, Education, Physical Education

Additional courses are offered in French, German and Greek.

*Pre-Professional Programs* – Medical Technology, Nursing Education, Pre-Ministerial, Teacher Education, Pre-Medicine, Pre-Law, Pre-Engineering (with Georgia Tech). Under consideration: Business Administration, Paramedic.

Covenant's Teacher Education Program consists of four core courses and a professional semester of student teaching. This arrangement is modeled after the recommendations of the American Association of Colleges for Teacher Education. This program received certification by the state of Georgia in 1972. Director of Teacher Education is Mrs. Geraldine Steensma, a graduate of Columbia University and Slippery Rock State College. The Teacher Education Department finds special opportunities for service in southeastern United States where the Christian school movement has been growing very rapidly. An increasing number of requests for workshops are being received from Christian schools here looking for a solidly Scriptural and reformed basis for their instruction. There is a steady demand for Covenant graduates from these schools.

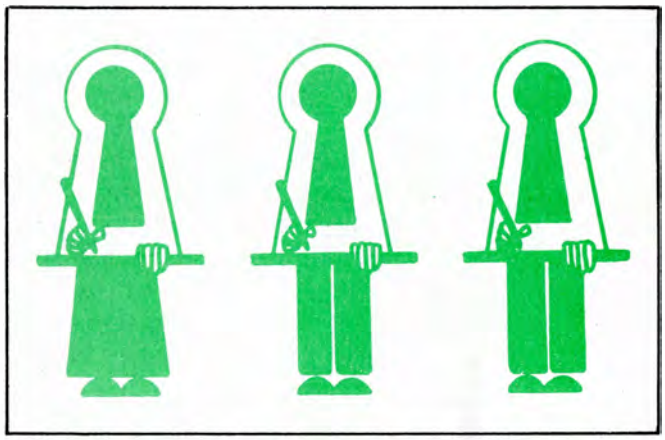
Compared to most liberal arts colleges, Covenant is very young and there are not yet many alumni. However, this is changing as the enrollment grows. A recent study indicated that some 70% had earned or were working toward an advanced degree. The vocational distribution was: Education 25%, Religious Work 19%, Business and the Professions 26%, Graduate Work 17%, Miscellaneous 13%.

### Finance and Development

Most private liberal arts colleges have had a financial struggle, and Covenant College is no exception. The Reformed Presbyterian denomination is small, and the college in its early years had to look elsewhere for much of the support needed, above that coming from student tuition and fees, and for capital gifts. Through its president, Dr. Barnes, the college has developed excellent rapport with both the Lookout Mountain community as well as the city of Chattanooga. This rapport has been reflected in many substantial contributions coming from individuals, business enterprises, and foundations in the area. Covenant students, too, are known for their participation in the work of the inner city, the juvenile detention center, children's homes, and for their reliability in the many part-time jobs that come their way. All of these activities have made Covenant College a welcome and respected member in the greater Chattanooga area.

During the past year or two, denominational support has increased substantially, due both to denominational growth and to an intensive campaign of presenting the college to the churches by the Development Department. Also, the college was able to float a $300,000 bond issue several years ago from its small constituency for improvements to the original building. In addition the college paid off ahead of schedule a $125,000 mortgage on the original building incurred in 1964. These monies were in addition to the annual operating funds raised and to the matching $600,000 raised for the new construction. This has required an active development effort, good cost control and faithful stewardship of funds received.

As we look back, we marvel at the providential provision our great God has made for us. So often the way seemed impossible, and from our limited point of view, it was impossible to proceed. But with God nothing is impossible, and it is with that great principle in mind that we look ahead. We are convinced that we are doing a most important task, namely, preparing young men and women for leadership in God's church and His world. We feel honored that He has called us to do it. We believe it is His work, and He will see it through to completion.



# art in open education

**by Mabel Kaufman***

I would like to start by quoting from George Bernard Shaw: He said, "I am simply calling attention to the fact that fine art is the only teacher except torture." To a large measure many of our educational reformers who are so deeply concerned with humanizing schooling would agree with this sentiment as I do. I also suspect that most teachers, whatever their personal teaching styles, also recognize, at least to some degree, the inherently liberating educational qualities natural to the arts. Most certainly, open education accepts and welcomes the basically vital role art plays in education.

This non-torturous role, given the opportunity, plays itself out on all levels of education. In recent years it has been most evident on the elementary level, especially in the early childhood programs. Joseph Featherstone notes, for example, that in the British Infant Schools (for many people the model for open education) children initiate and develop many of their fundamental learning experiences through the arts, particularly visual art.

In my own teaching at City College in New York I am primarily involved in teacher education in common branches, I find that again, given an open opportunity, students will quite naturally seek learning through the arts, instinctively circumventing a more agonizing road. I do not believe this is to avoid coping with learning tasks, but rather to enhance and intensify them.

For example, in a recent undergraduate workshop I conducted with student teachers practicing in open classrooms, the topic under examination was how best to elicit language, oral or written, from young children. I had brought in some prickly horse chestnuts I had found on my way across campus for the students to see and feel. They contributed to the discussion additional observations drawn from a pleasant, informative science walk they had recently taken as a group. I then asked them to concentrate on specific sensory aspects of their observations and comments. One student innocently wondered how the chestnuts would taste and asked if they were edible. Another attributed magical qualities to the chestnuts. Some noted the visual properties of various clusters of trees, while others spoke of the sounds moving through the leaves. Though this was not an art class and I am not an art teacher, I asked the students to express their personal feelings, to explore their understandings, and to communicate on a more precise and deeper level. I made available a variety of materials which they could use at their own discretion to record their reactions, but the final product had to be verbal. I was pleased to find that many of the students chose first to explore and represent their feelings and understandings using clay, play dough, crayons, paper, a Polaroid camera, drawing pens, magic markers, and a tape recorder. Most worked out a visual response first. Having used one approach to learning, they then felt freer to explore their thoughts in another way, and verbal interpretation, including creative writing and poetry, followed.

I cite this incident to illustrate that art is a

* Mabel Kaufman is an assistant professor in the School of Education, the City College of the City University of New York, New York. This article is reprinted with permission from the December, 1972 issue of *Art Education*.

natural ally in the open class, on any level, and that it personalizes learning, investing it with an imaginative dimension and a humane significance. However, such learning is largely dependent upon sympathetic and sensitive teaching. Even the art teacher may be cast as the school villain as Jonathan Kozol does in *Death at an Early Age.* This art teacher is depicted as confining and doctrinaire, even vicious, reflecting an authoritarian school context which cancels out the liberating qualities of art experiences.

Art educators, on the whole, have long understood the pedagogical value of sensory motivation and the human urge to make expressive forms within nurturing surroundings. They have realized that uncoerced education can proceed effectively as child curiosity is sparked and permitted to unfold through the exploration of feelings and ideas and the manipulation of materials. The provocative interplay among these various facets of learning, whether directed toward aesthetic or more academic ends, establishes a stimulating environment which is characteristic of the best kind of art education. Kenneth Koch, the poet, who has been influential in sparking a fresh approach toward creative writing for children, credits his own insights and success with teaching children to his observations of sensitive art teachers. It would seem that art teachers have a natural affinity to open education which also seeks to liberate the imagination of the child and that there is a positive rapport between teaching art and general teaching based upon shared values.

With the gradual but persistent expansion of open education in its many ramifications, teaching is approaching, on a practical level, opportunities for realizing principles and aims long cherished by educators, especially those in the arts. Within the emerging philosophy which expounds teacher-guided integration of thinking and feeling with child-initiated activity, the role of the arts in the elementary school becomes even more basic. It becomes more relevant to child life and child learning rather than the prize to be won, as has often been the case in traditional education, after all the important work is done. Nor can art any longer be designated as a second-rate outlet for those children who cannot work in the accepted, prestigious academic modes. Art becomes legitimate; art becomes central; and in a general acceptance of such an attitude, learning may then proceed through the many appropriate varieties of avenues open to children.

The concept of open education is basically one of attitude rather than prescription. It reflects society's altered vision of acceptable and desirable relationships among children and between children and adults. A greater respect is accorded to all participants in the school life, and this life is valued as significant *now,* not merely as it affects the future lives of the children. These attitudes find their expressions in expectations and in action. As a result open education may be characterized loosely, though briefly, by the following tentative list of qualities:

- An expanded, experientially based curriculum which is sensitive to the varied ways individual children learn.
- An informal classrom climate which respects the individual, the unique and idiosyncratic responses of children, leading to further intensity and involvement in learning.
- A broader teacher view of what is acceptable child involvement, including child-initiated activites.
- Emphasis on mutual trust between teachers and children, affording children more opportunities for self direction and responsibility.
- A flexible approach toward school structure and classroom organization.
- A more fluent relationship between in-school and out-of-school learning.
- The identification and teaching of skills enabling children to cope with content and to further the acquisition of knowledge.
- Encounters with novel situations challenging children to resolve relatively complex problems.
- Formulation of alternative symbolic modes to include the forms associated with the arts, language, and mathematics so as to communicate effectively the full range of learning.
- Awareness of local conditions which influence the life style of the child and provide the context within which learning occurs, a base point from which education may grow and flourish.

Most of the qualities inherent in open education are not radically new. The ideas have been prevalent in educational literature and "teaching folklore" for many years. Some have been implemented, at least partially, in particular schools for brief or extended periods of time. In the United States, for example, we had many experiments with progressive education which included some of the characteristics listed above. For me, however, the significant overall thrust of open education is an attitudinal one of trust, honesty, and respect based upon a teacher's self awareness, sensitivity, and intelligence, and also a moving into the broader public school systems.

Open education does not have a monolithic

design and cannot be exactly replicated. On the contrary, as you walk from one open classroom to another, you will observe many differences in organization and in curriculum which reflect the varying styles and needs of the different pupils and teachers in the room. Nevertheless, application of some of the philosophic underpinings are evident and lend to the class the special tone of many children actively engaged in significant endeavors. The sense of school seems different, as working, playing, and learning go on in a less formal manner. Within this refashioned school world there is, however, an increased need for the art teacher or the art supervisor who can become part of the new enterprise and contribute to the expressive needs, the artistic development, and the aesthetic understandings and explorations which are part of learning and maturing.

Molly Brearly of the Froebel Educational Institute in London, for instance, explores the relation ship between art and the intellectual and emotional development of children. She finds, among other things, certain developmental sequences of which teachers should be aware: that discovery of oneself and the surrounding world is enhanced through expressive experiences, that actual learning occurs as the child interprets his world through form, and that a child's significant artistic and intellectual development is dependent upon high standards in art education as against easily reduced methods and standardized forms. Of course, American art educators have also explored the nature of imagery, representation, and expression in relation to the cognitive and affective development of the child. However, the implementation of their findings, we must admit, would seem to have been imposed upon the curriculum rather than integrated into it. What is implicit in the British experience, is the acceptance of art as a way of knowing and the natural place given art (both in terms of production and aesthetic appreciation) in the school day beyond what I feel to be normal in our own more traditional schools.

There is an implied shift of emphasis away from the rigid, sequential language skills orientation still existing in most of our schools and, perhaps in most of British schools too, which values and gives priority to the study of reading and writing skills far above all others. However, in Britain, in parts of Canada, and in the United States where open education exists, art is thriving, operating in close relationship with, and not diminishing, the effectiveness of other academic areas.

The more recent shift toward art as worthwhile study may perhaps have been influenced and reinforced by the contributions of several major thinkers, one of whom is Susanne Langer. Langer, a philosopher, has developed a theory recognizing art as a symbolic mode which expresses ideas about feelings. That is, works of art may be said to embody inner states of being and emotional valuing in concrete and communicable forms. The theory is premised on the supposition that all human symbolism divides into two modes: the presentational, which includes all the arts, and the discursive, which gives rise to language (grammar) and the sciences. Formerly it had been held that art grows out of intuition or irrational thought and that language and science grow out of rational thought. Art was thus placed somewhat in limbo and its value as a school subject was suspect. Langer's theory, however, undoes this dichotomy. She posits and defends a point of view which holds that both modes are rational, both draw upon intuition, and both are capable of expressing intelligent symbolism. The presentational mode, however, expresses the idea of feeling most effectively. Since children in open education are strongly encouraged to express feelings as well as to engage in more scientifically structured activities, the arts become necessary for normal expression and the full realization of self.

Rudolf Arnheim complements Langer in clarifying the role of perception in knowing. He indicates that there is a unity of perception and thought. The unraveling of relations and the understanding of structure involves thinking in visual terms, a kind of image making that makes sense of the world. Art is a fundamental means of orientation which schools must provide for children.

Piaget, the child psychologist, has also been a strong influence in the changing character, particularly of British schools. His studies of the intellectual development of the child, describing specific and sequential stages of development, have had impact on school curriculum and organization, and, in terms of the arts, have given added impetus to the use of varied concrete materials and to individualization and personalization of instruction. The ability to manipulate materials, to arrange and to order them, helps clarify thinking, according to Piaget, and makes schooling more in tune to the needs of childhood. He has also underscored the need for children to progress at their own rates, a concept germaine to art education theory.

Recognition must also be given to the deep and lasting influence of John Dewey. As has been noted by others, the British primary schools have

been more successful in building upon Dewey's theories than have the American public schools, at least to date. Children in British open classes have been learning by doing; they have been developing curriculum out of experiences, and, with the assistance of their teachers, peers, and other adults, have been extending and deepening their learning through the development and use of resources of every description. Thus theory evolves into practice.

The excitement and change allowing for much more child involvement and decision making is now spreading more and more into our schools. Parents are becoming interested in examining open classes; some administrators are becoming more supportive; teachers are being trained or retrained; and funds for continued exploration and development have become available (though in trickles, not avalanches). The role of the art teacher or those not normally a part of school supplies. The art teacher will need to be prepared for these perhaps unusual, but educationally sound demands. Much of the instruction to aid children in such a project will need to be individual and in small groups, allowing for diverse but simultaneous activities. Though the bridge project was a by-product of a whole-class study, the particular in-depth study represented the real interest of a specific group of children who were permitted to make choices. Trusting children to make sensible decisions is part of the concept of open education. The project was necessarily involved with inter-disciplinary learning. Art, geography, writing, reading, mathematics, political science, among others, were touched upon reflecting the lack of barriers among the various disciplines and activities. A similar openness existed in terms of time, allowing the children to work as long as they needed to. These children, working in this open manner, were quite independent and cooperative as they were learning in a responsive educational atmosphere.

There are many traditional structures which need to be reexamined and modified in moving toward open education. For instance, the time blocks which have existed in the past and continue to exist in traditional elementary schools become obsolete and the usual fifty-minute art class per week may no longer be effective. In an open classroom there may be some children engaged in art activities at any time of the school day, and they may well need a sensitive and knowledgeable adult to help them move from one level of understanding to the next, to help them see the problem and a possible solution when the moment is right. Timing of learning is individual, which suggests that the availability of guidance in art needs to be more flexible and appropriate to particular situations.

Within the open classroom, experimentation with many modes of learning is encouraged. Even within the realm of the arts alone, where funds are available, use of many diverse media may be extensive throughout the year or even within a day. For example, in a given class you may find one child weaving, several building a stageset, others exploring photograms, and perhaps several painting or drawing illustrations for a class book. All, or some, may be in need of technical advice, encouragement, or means of arriving at aesthetic understandings and initial judgments. The art teacher thus will need to work with individual children and with small groups to a far greater extent than previously. The whole classroom becomes a workshop and thus feels more like an art studio.

As you investigate and participate in different open classrooms, you will become quite aware of the abundance and variety of concrete materials in use, teacher-made, pupil-made, and commercial. As noted before, Piaget's contributions to the understandings of cognitive development in children, especially during the concrete operational stage of development, are having significant impact in the schools. In the past the art room provided one of the rare opportunities for school children to handle and investigate the qualities of materials. There the children could work (or as those in early childhood education prefer to say "play") with clay, paint, papier mache, collage, wire, and other materials. The concrete, as opposed to the abstract, was the accepted learning mode. Now, in open classes, you will find Cuisinier rods, Dienes blocks, balance scales, pets, plants, microscopes, listening centers, as well as art materials, puppet stages, and child-made structures and objects. Children are being taught to manipulate materials and to observe supervisor may need to be redefined to give added support to the emerging structures. Your skills and expertise are required, and you must determine how this can best be done.

What are some of the changes, both practical and theoretical which may be seen, and what are the possible implications for the teaching of art?

As has been noted, open education seeks to provide varieties of appropriate experiences for children which are fundamental to sound educational theory and practice. These experiences, however, must also be sequential and must relate to one another in a logical manner. The related and cumulative quality of experience helps develop a deeper understanding of phenomena on the part of children. Using this intensified understanding and

an enriched range of images, children will elaborate upon their visual representations so as to depict the cognitive and express the affective qualities of the experiences.

This brings to mind a small group of six-and seven-year-old children I observed over a period of time in a school in New York. They, and their class, were studying Manhattan and the fact that it is an island. To strengthen the understanding of this fairly difficult concept, the class took trips off the island, studying their routes and locating them on large and small maps. One such trip took them over the Verrazano Bridge to Staten Island and then on to the ferry back to Manhattan. The size of the bridge and its construction made a very strong impression on some of the children. After returning some children started to write about the trip and about the bridge; they were particularly impressed with the cables. Several painted a very colorful mural. One small group, the most involved, constructed a remarkably fine and grand bridge. They used lumber which they measured and cut, cables they wove themselves, blocks of different sizes and shapes, and cement they mixed and used to anchor the cables. They had water and boats under the bridge, cars and trucks on it. They built an apartment house, a service station, and roads. The construction of the bridge and the research done to make it right were all-absorbing. To top it off, however, and to illustrate the affective aspects and the children's respect for that bridge, a formal opening was enacted with a child-governor making a speech and cutting the ceremonial red ribbon at the approach to the bridge. The entire process, which lasted four weeks, was also conscientiously recorded in a class book with illustrations for others to see and read.

This kind of in-depth study which required the guidance of the classroom teacher, the art teacher, and any adult who would help with the reading of some difficult, technical material on bridges becomes possible only in certain open situations. These situations which exemplify some of the common practices in open education, might require several of the following qualitative elements. (These would apply equally, in my estimation, to teaching done by the art teacher or by the classroom teacher.) For activities such as the bridge project, space would have to be divided in a flexible manner and would have to provide areas to remain undisturbed for the duration of the study. Thus open education, especially in relation to art, requires nonpredetermined spatial arrangements functioning in a multi-purpose fashion. Children will require freedom to move from one area to another, perhaps from one classroom to another, or one part of the building to another, in order to locate and use needed resources. For the bridge project, the varieities of materials used included phenomena. All this has implications for the art teacher. For example, in exploring math concepts, children talk about shape, color, and size. They explore balance and symmetry. They learn to find and to create patterns. They look for repetition and for relationships. The vocabulary and language of one mode of learning become relevant to another, and the child has opportunities for continuous rather than disjointed learning experiences.

This continuity of learning experiences is not intended to be synonomous with integration in the sense that having discovered repetition in the number line, the child must now do a repeat pattern in art. Quite the contrary. Art can well stand on its own and provide experiences and skills intrinsic to its own mode. As the art teacher emphasizes the making and understanding of art as worthy ends in themselves, the general milieu of the school and its curriculum become more hospitable to the arts, and opportunities for related learnings should also increase.

The art teacher in the open classroom, the open corridor, or the open school will find opportunities for assuming many different roles. In some instances this role will be supportive, supporting art activities undertaken under the guidance of the classroom teacher or initiated by a child or a group of children. Such teaching need not include the whole class. Supportive teaching may also include conducting workshops for teachers, parents, and paraprofessionals. Since these adults also work with children, their own aesthetic awareness and art skills may well need the specialist's assistance and encouragement.

The art teacher may from time to time find it appropriate to provide a full-class lesson in art either in the classroom or the art room and to follow this up with several in-depth experiences. In such instances the classroom teacher would be a participant, learning in order to teach, and perhaps also assisting the art teacher. Such instruction might include a range of artistic experiences, including straight studio work, trips to local areas which might lend themselves to *plein* air painting, creating a happening, or perhaps a visit to an art gallery or museum to heighten critical awareness.

The art teacher, aware of the local scene, might also take the lead in inviting local artists into the school. The various artists might spark new ideas and also give children opportunities to ask questions about both art and artists. Where a school has

funds, such artists may stay in residence for whatever period is appropriate.

The art teacher in an open school might also become the model and support for particular children who have an exceptional interest in art. He might have to function as an agent arranging for additional space so that some children may work on unusually large projects. The art teacher might also be required to function as a liaison between a school and such other institutions as museums, community centers, and other centers of cultural and artistic interest. In addition the art teacher will need to provide continuity and encouragement for the special interest of a child particularly commited to art.

It may be said in conclusion, that open education is very congenial to art in the schools. Open education welcomes art as an integral and necessary aspect of learning particularly apt for children. It recognizes the dual role art plays in the classroom, that of sensitizing children's awareness to form and expression as aesthetic values and also that of clarifying and enriching all comprehension which may evolve from visual thinking. Thus art education is seen as establishing a base for visual literacy, critical thinking, and the intrinsic appreciation of beauty.

The art teacher in the open classroom cannot be bound to any predetermined curriculum but must be free to initiate and respond as the open and immediate act of teaching suggests and as it relates to children, art, and general learning. Though there may be a paradoxical array of roles for art teachers to play in an open situation, they must assume a flexible stance and the responsibilities that go along with instructional freedom. The art teacher thus will be to children a guide yet a model, a friend yet an adult, a source of knowledge yet a provoker of fancy, one who sees the world as an artist yet permits the child his own vision.

# Radioactivity and Ages Of Things

**by Clarence Menninga***

As you undoubtedly know, nearly all of the matter in the universe consists of tiny particles called atoms. Each atom consists of a nucleus, which has a positive electrical charge, is found near the center of the atom, and accounts for nearly all the weight of the atom although it occupies only a very small fraction of the total volume or space occupied by the whole atom. Around this nucleus we find electrons, each of which has a negative electrical charge and a very small weight. A neutral atom would have as much negative electrical charge due to its electrons as it has positive charge on its nucleus.

The chemical characteristics of an atom are due to its electronic structure, and we classify atoms on the basis of their chemical properties. Those that are chemically identical are all atoms of what we call an *element,* and we have been able to recognize and separate 104 chemically different elements. Some of these are familiar to you, like oxygen and neon and iron and copper and gold. Some you may never have heard of, like ruthenium and yttrium and gadolinium and protactinium.

Atoms of some elements may combine with atoms of other elements to form molecules and compounds. For example, water is a compound of hydrogen and oxygen and table salt is a compound of sodium and chlorine. Most of the materials we use and see every day are compounds, although a few, such as the metals iron and copper mentioned above, consist of elements.

We characterize each element by a number which is proportional to the amount of electrical charge on the nucleus of the atoms of that elements. This number is the same for all the atoms of a given element, and is different for the atoms of different elements. This number is called the *atomic number* and ranges from 1 for the element hydrogen to 104 for the most recently discovered, man-made element. Thus, carbon has atomic number 6, iron has atomic number 26, uranium has atomic number 92. Since each element has a unique atomic number and a unique name, giving either the name or the atomic number specifies the element you are talking about.

Each element of the 104 elements known has atoms which are chemically identical, but have different weights (or different masses, since weight is proportional to mass). We call these different kinds of atoms *isotopes,* and we label them with numbers which are nearly proportional to their weights. Thus we speak of uranium-235 and uranium-238 and cobalt-60 and carbon-14.

Every element known as several isotopes. For example, the element oxygen has the following known isotopes: oxygen-13, 14, . . . , 19, 20. Of these, oxygen-16-17, and -18 are stable and are found in the air which we breathe, but oxygen-13, -14, -15, and oxygen-19, -20, are radioactive. For the elements with atomic number 1=83 (except #43, techneticum, and #61, promethium) at least one isotope is stable, while one or more radioactive isotopes are also known. Elements with atomic

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*The matters discussed in this article are not matters of life or death. Salvation is found in Jesus Christ, and not in your acceptance or rejection of the ideas presented here as the outcome of scientific study. However, the question of the age of the rocks and of the earth has arisen in connection with discussions of the meaning of some passages in the Bible, and I think that we teachers would benefit from being well-informed on such matters. This article is presented as a very brief explanation of radioactivity as the basis for our estimates of the ages of various things. The intent is to help us teachers to a better understanding so that we in turn can help our students to a better understanding.*

number larger than 83, such as uranium, #92, plutonium, #94, and radium, #88, have no suitable isotopes – all of them are radioactive.

When we say that some isotope of some element is radioactive, we mean that it spontaneously changes into something different. This process of change is called *radioactive decay.* The change takes place in the nucleus of the atom, and is accomplished by emitting (i.e., giving off) particles of matter, either "alpha" particles or "beta" particles, or by capturing an electron from outside the nucleus. Such a change is often accompanied by the emission of high energy radiation such as X-rays or "gamma" rays. These particles and rays can be detected in various ways, like with a Geiger counter, and they enable us to locate and study radioactive materials. Furthermore, since the particles emitted or captured are electrically charged, the change produces a nucleus with a different electrical charge, hence an atom of a different element. The original radioactive isotope is called the *parent*, and the isotope produced is called the *daughter.* The daugher of a decay process is stable in some cases, and is radioactive in other cases. The process will continue, step by step, until the daughter of the last decay in a series is a stable isotope.

Since the discovery of radioactivity in 1896, the radioactive decay of many hundreds of isotopes has been studied by thousands of investigators. In every case the rate at which the process occurs can be described by the relationship

**decay rate of a sample**
**= (decay constant) x**
**number of atoms of the radioactive isotope in the sample**

The decay rate is measured as the number of decays per minute, or per second, or per year. The number of atoms of an isotope in a particular sample is proportional to its mass (or weight). The decay constant is a number which is always the same for a particular isotope, but may be different for different isotopes. For a given number of atoms in the sample being studied, then, some isotopes decay more rapidly than others.

For decay processes which are described by this rate law, it is convenient to define a number called the *half-life.* The half-life is the amount of time required for half the number of atoms in the sample of a particular isotope to decay. This amount of time is the same regardless of the number of atoms of the radioactive isotope being considered. To illustrate, if we begin with a sample of 1,000,000 atoms, 500,000 will decay during one half-life, leaving 500,000 unchanged; for a sample of 500,000 atoms, 250,000 will decay during one half-life, etc. Obviously, the half-life of a given isotope is related to the decay constant of that isotope since both define the rate of decay. Therefore, the half-lives of different isotopes will be different if their decay constants are different. The half-lives of known isotopes range from a small fraction of a second for some isotopes to more than 50 billion years for others. Figure 1 is a graph showing the relationship between the amount of radioactive isotope in a sample and time. The shape of the decay curve is the same for all radioactive materials, but the amount of time in a half-life would be different for different isotopes.

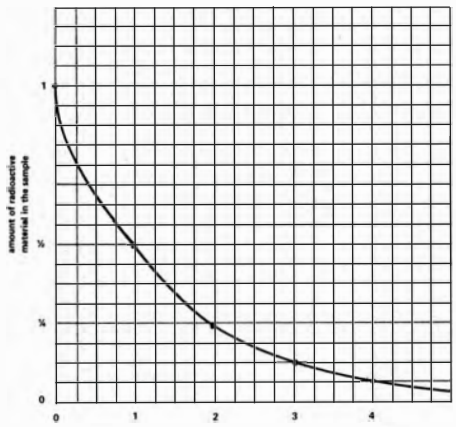


Figure 1. Decay curve of a radioactive sample.

Many attempts have been made to change the half-lives of radioactive materials. For those that decay by emitting alpha particles or beta particles, no change in the half-life has ever been observed. The largest change produced in an isotope decaying by electron capture was .07 of one percent (for beryllium-7, whose half-life is 53 days). Our knowledge of the physics involved in radioactive decay leads to the conclusion that no physical or chemical conditions conceivably existing on earth at any time in its history could change half-lives of radioactive materials appreciably from what they are today.

Well, since radioactive decay is a time-dependent process, we can use it as a time-keeping device — a nuclear clock. I'd like to discuss just two ways in which we use such techniques to determine the ages of things. Several others are also used, but the ideas on which they are based are essentially the same.

Carbon-14 is produced in the upper part of the earth's atmosphere, and eventually becomes incorporated into all living organisms, both plant and animal. Now, while that organism is alive, it continues to ingest and excrete carbon-containing materials, and a certain fraction of the carbon in that organism is carbon-14. We can readily obtain samples of living specimens and do straightforward measurements to determine what fraction of the total carbon is carbon-14. When such an organism dies and ceases to ingest carbon compounds from its environment, the carbon-14 in its structure will decay with a half-life of 5730 years, and the fraction of carbon-14 in the carbon of any preserved part of its remains will decrease at the same rate. Measurement of the amount of carbon-14 in bones, wood, parchment, charcoal, leather, rope, cloth, and similar items which were once part of a living system enables us to determine the age of that item (actually, we determine how long ago the death of the living organism occurred).

In ten half-lives, 57,300 years, the amount of carbon-14 left is one thousandth of that in the organism at the time of its death, and our present instruments and techniques are not good enough for us to use carbon-14 to determine the ages of things more than about 40,000 years old. Using this technique, we have found that the Dead Sea scrolls are 2000 years old, a pair of rope sandals found at an ancient Indian campsite in Oregon is 8000 years old, the frozen remains of some of the woolly mammoths found imbedded in ice in northern Siberia are 35,000 years old, bones of giant sloths and sabre-toothed tigers found in the le Brea tar pits in California range up to 21,000 years old, and campsites in Europe, Asia and Africa were occupied by man 40,000 or more years ago.

For materials much older, as well as for materials which do not contain carbon, other techniques are used. Many rock-forming minerals contain uranium as a minor constituent, and the uranium-lead dating procedure can be used to determine how long ago the rock was formed. Uranium-238 has a half-life of 4.5 billion years, and it decays through a series of steps to lead-206. To determine the age of a rock we must know how much U-238 was in the rock when it was formed and how much is there today. It's not hard to measure how much is there today, and we find out how much was there when the rock was formed in the following way. When molten material is cooled to form rock, the uranium is concentrated in certain animals, and lead is concentrated in others. By comparing the two, we can find out how much lead-206 there was in the uranium-containing mineral when the rock was formed. Any additional lead-206 is attributed to the decay of U-238 in that mineral crystal since the rock solidified. Since every atom of U-238 that decays produces one atom of lead-206, the number of atoms of U-238 present in that mineral crystal when the rock was formed must be the sum of the number present now plus the number of atoms of lead-206 produced by the decay of U-238 in that mineral cyrstal. Then, knowing the amount of U-238 present in that mineral crystal now, the amount present when the rock solidified, and the half-life of U-238, we can compute the age of the rock.

Similar procedures are based on the decay of potassium-40 (half-life = 1.3 billion years) to argon-40 or of uranium-235 (half-life = 713. million years) to lead-207 or of thorium-232 (half-life = 13.9 billion years) to lead-208, or of rubidium-87 (half-life = 52 billion years) to strontium-87. A new technique showing promise of being useful is based on the fact that a small fraction of the decays of uranium-238 go by spontaneous fission, and the fission fragments leave observable tracks in various minerals. These procedures are outlined in more detail in the references listed at the end of this paper.

These methods, separately and in combination, have been applied to determining the ages of many rocks and mineral samples. The ages of rocks in the crust of the earth range from very young in areas of recent volcanic action to somewhat more than 3 billion years in the continental shield areas of the continents of the world. We know, for example, that the gold mining areas of Colorado occur where

young granites, about 70 million years old, have intruded into much older granite rocks. We have also applied these methods to determining the age of meteorites. While some meteorites give results indicating a younger age, a number of meteorites and the earth as a whole are found to be 4.6 billion years old.

Wherever possible, rocks that are found throughout the geologic column have been dated, and the ages of the layered rocks in which we find abundant fossils have been found to be in the same relative order as had earlier been reported by the geologists. Fossils consisting of the hard parts of animal skeletons are found in rocks as old as 600 million years. The impressions of soft-bodied organisms are found in rocks older than that. Coral reefs are found in rocks more than 400 million years old. The ages of rocks containing fossils of dinosaurs range from 225 million years to 65 million years. The Columbia Basin basalt in Washington, Oregon, and Idaho was formed in successive layers by volcanic activity which began about 50 million years ago and ended about 10 million years ago. The volcanic peaks of the Cascade Mountains, Mounts Rainier, Hood, Baker, and others, have been built over the past 10 million years.

Since our personal experience is limited to about threesocre years and ten, it is difficult to imagine such large spans of time. Although the age of the earth is great, it is finite and should not be confused with eternity. The study of geology and the measurement of the ages of things has given us an expanded view of God's patience and glory in the immensity of time in the history of the universe, just as astronomy has given us an expanded view of God's greatness and glory in the immensity of the space which that universe occupies.

Additional reading:

1. "Nuclear Clocks," a pamphlet available free from the U.S. Atomic Energy Commission, P. O. Box 62, Oak Ridge, Tennessee 37830.
2. "Ages of Rocks, Planets, and Stars," Henry Faul, 1966, McGraw Hill.
3. "Radiocarbon Dating," Willard F. Libby, 1955 (revised ed.) University of Chicago Press.

Books

# THE HUMAN QUEST

THE HUMAN QUEST: *A New Look At Science and Christian Faith,* by Richard H. Bube, Inc. Word, 1971, 262 pp., $5.95.

Reviewed by Case Vande Ree, Teacher-Librarian at Pella, Iowa Christian High School.

A professing Christian and a physical science professor (Materials Science and Electrical Engineering at Stanford), Dr. Bube in an interesting presentation attempts to describe the interaction between science and Christian faith. The author is exasperated with those who delight in denigrating science ("scientists are atheists") and vigorously asserts that real science is indeed compatible with Christian faith.

Taking a middle-of-the-road position, Bube recognizes that while it is true that science cannot be the savior of the world, it is also true that science is not the villain responsible for many of the world's ills. Neither of these is science's role. Rather, science, in interaction with Christian faith, has both the *potential* and the *imperative* to serve the ultimate purpose of that faith ("When science in service to mankind is viewed as a redemptive instrument on the natural levels in the hands of men committed to Christ, the purpose and practice of science is established in the content where it belongs.")

*The Human Quest* is a well-structured work, consisting of ten compact and lucid chapters. The author admits at the outset that science has limitations, the chief of which is that science does not provide a fully satisfactory answer to certain basic questions, questions such as: What Can I Know?; Who Am I?; and What Is the Cause of Evil and Suffering? These fundamental questions can only be answered by those who know God the Creator, and who have a faith commitment to Jesus Christ.

Bube, the *Christian* scientist, then answers the arguments offered by those who object to the

Christian faith. Most of the age-old questions repeatedly raised by detractors are of a theological nature, Bube argues, and can be responded to only out of an existing relationship between an individual and God. Another set of questions raised by detractors and answered by Bube deals with the interaction between God and the world, and with apparent conflicts between scientific and theological explanations for the same events.

To answer these kinds of questions, the author introduces two theses: (1) The interaction between God and the world can be understood only on the basis of a moment-by-moment dependence on God for its very existence, and (2) Any event in the world can be described in terms of the categories of a number of different levels, and description on one level does not eliminate the need for description on other levels.

After defining terms and stating his position, Bube traces the trends and historical influences of science and discusses the significance of such theologians, philosophers, and scientists as Barth, Thielicke, Kant, Hume, Teilhard de Chardin, Newton, Galileo, and Darwin—all of whom have made a profound impact on the way man views the relationship between God, the world, and himself.

Having dispelled the modern myth that science has made religious faith impossible, Bube then devotes three chapters to an examination of science ("Christians cannot dismiss science as being unreliable and irrelevant") and Christian faith ("Both science and theology are systems for interpreting data provided by revelation, the scientist dealing with natural revelation and the theologian dealing with special revelation provided by God's inspirational activity in the authors of the Bible"). Bube culminates his examination by emphasizing the striking similarities and correlations between science and Christian faith, while, of course, also stressing the radical differences. Science and Christian faith, he concludes, have so many points of similarity that their differences must be considered to be of degree rather than kind. Furthermore, science has not destroyed the traditional values of Christian faith, but what it has destroyed are those impostors, caricatures, and wooden idols of Christian faith which men have made for themselves and substituted for the real thing.

When discussing concepts such as Determinism, Indeterminism, and Evolution, Bube makes a few statements which might disturb some readers. But he unashamedly sticks to the basic assumption that God, indeed, did create the earth, and that man is not a complex machine but a creature of God with freedom of choice. Concerning evolution, Bube states that the point at which evolutionary thinking must be opposed and attacked from a Christian perspective is the point when it ceases to be concerned with the biological development of living creatures and becomes instead a life-directing religious faith. Let's face it, Bube says, evolutionism is a religion; it is a religion that fails to understand both the wonder of man as a creature made in the image of God the Creator and the dilemma of man separated from his Creator by his willful choice of self-interest.

Dr. Bube rounds out his book with a thought-provoking disucssion of pressing contemporary issues. If ever there were days with the signs of the biblical "final days" stamped upon them, we are in them, he avers. How so? Because practices of behaviour and development that have been appropriate for thousands of years must now be changed. Our attitude toward the earth, toward population growth, toward utilization of natural resources, toward war, etc. are being called into question. Christians must relate their faith to science and become involved in social decision making. Moreover, Christians involved in science are in a wonderful position to bridge the gap between the Christian community and the scientific community. ("If the Christian scientist does not assume the role of reconciling these two communities, there is no one else able to do it.")

*The Human Quest* is not only exciting reading, but it is the kind of book that one can enjoy by perusing isolated topics. In addition to well-captioned topics, each chapter consists of a summary and "Topics for Discussion". There "added features" obviously make the book feasible for classroom use.

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