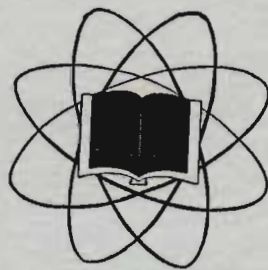


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The fear of the Lord is the beginning of wisdom. Psalm 111:10

Vol. 10

DECEMBER, 1958

No. 4

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Further Light on the Translation of Genesis 1:1

G. Douglas Young, Ph.D.

In this *journal*, volume 3 number 4, I proposed the following as a translation of Genesis 1:1-3: In the beginning when God had created the heaven and the earth, and the earth was without form and void, and darkness was upon the face of the deep, and the Spirit of God was moving upon the face of the waters, then God said, Let there be light: and there was light.

This translation assumes that these verses do not speak of the original, *ex nihilo*, creation. That which is expressly stated in John, chapter one, is here assumed as an accomplished fact. After the opening "when" clause we find here three circumstantial clauses setting forth three conditions existing at the time when God speaks and says, Let there be light. It assumes that the story of these seven days of God's working begins in a condition when the world already exists and is in a state without form and void, with darkness over the waters and God's Spirit moving over them.

An article by Dr. William La Sor in the *Gordon Review*, February 1956, concludes with the same general position based on the same line of reasoning from the Akkadian cognate. He observes for that language the transition from noun, to noun in genitive, to modified noun used as a "conjunction" or "preposition." The use of noun in construct with finite verbs is found, he states, in other Semitic languages also to introduce a dependent clause. No illustrations outside of the Akkadian are given and only 2 Samuel 7:7 *'ašer* is given for the Hebrew.

The syntactic point at issue is that when a noun in the construct state (somewhat analogous to our genitive) is in construct with a finite verb, the clause is a subordinate one. The result for Genesis 1:1 is: "In the beginning when he . . ." and not "In the beginning he . . ." In the earlier treatment I supported this by an appeal to a single case in the dialect of Moses, Deuteronomy 4:15, and by an appeal to a case in the cognate Arabic.

The original suggestion may now be strengthened by four additional instances from the dialect of the author of the Pentateuch and by several cases from later Biblical writers as well. Furthermore, the same syntactic item is found in Egyptian which indicates that this particular syntactic item is most probably primitive Hamito-semitic and thus very ancient. This evidence strengthens the original position that verse one of Genesis chapter one is a subordinate clause only, and not a full sentence as it is taken traditionally

in our English versions.

Preparatory to the presentation of this evidence it should be stated that there is in the Bible no case of *bārē'šit*, "in the beginning, (preposition plus definite article plus noun). In fact there are only five cases of *berē'šit*, "in beginning of" (preposition plus noun). That he could have used *bārē'šit* is likely from the use of a related form *lārē'šit* in Nehemiah 12:44. There is, however, evidence that the writer could have started his story with "In the beginning he . . ." had he wished to do so. In Genesis 13:4, and in a score of other places in the Bible, the writer uses a substitute *bārīšōnā* for "in the first." This he could have used in Genesis 1:1 had he chosen to make it clear that he was talking about the actual beginning. He did not use this form. We should therefore not gloss over the distinctive beginning of his first book by emending the text into a short declarative sentence. He wanted the subordinate idea, here probably temporal, and so wrote.

That a noun in the construct state preceding a finite verb is a subordinate clause we note in additional places in the dialect of Moses. The first is Exodus 4:13, "Send . . . by the hand of you will send." This is, "Send by the hand of whomever you will send," and is so recognized in our English versions. The "you will send" is a finite verb in the "imperfect tense." It is not a main clause, however. That which makes it the verb of a subordinate clause is the fact that it is preceded by a noun in the construct state, *šelaḥ-nā beyad tišlah*. It is the construct *yad* and not the absolute *yād*. Another case in point from the Pentateuch is Exodus 6:28. Here the subordinate clause is, like Genesis 1:1, a temporal one. Here, but not in Genesis 1:1, our English versions recognize it to be such. *beyōm dibber yhwḥ* is, literally, "in the day of he spoke God," and idiomatically, "in the day when God spoke." It is a subordinate clause constructed just like the opening words of Genesis 1:1 and the sentence noted in my first article from Deuteronomy 4:15. Here, too, we have preposition plus noun plus verb in the "perfect tense"—and the preposition so vocalized as to indicate that the noun is unaccented and so in the construct state.

In 2 Chronicles 29:27 we have another case of preposition plus noun plus verb in the "perfect tense" with the preposition indicating that the noun is in the construct state. Here too the clause is subordin-

ate, and here too it is recognized as such in our English versions. *becēt hēhēl hācōlā* is translated "when the burnt offering began . . ." but is literally "in the time of it began the burnt offering."

Another case is found in this same writer at chapter 24 verse 11. It is *becēt yābī* "at the time when he brought . . ." This particular preposition plus noun combination with a following finite verb is used temporarily in addition in at least the following places: Genesis 31:10, Deuteronomy 32:35, Job 6:7, 2 Chronicles 20:22, 24:11, 28:22 and 29:27.

As a transition to the Egyptian evidence it will be interesting to note that the subordinate clause, temporal as well as other, in Hebrew as in Egyptian may be expressed by the preposition, with or without noun, plus infinitive, just as LaSor indicated for the Akkadian also. This is probably the most usual manner of subordination in Hebrew. Jeremiah 31:31 is a case selected at random. *beyōm hehezīqī* is "in the day when he took me." Here we have preposition in the form to indicate that the noun is construct state, plus infinitive. This more common infinitival use does not detract from the fact that the same idea may be expressed by a finite verb after a preposition plus genitive noun.

It is common in Egyptian to find clauses subordinated by either the infinitive or a finite verb preceded by preposition or genitive, just as in Hebrew. In either case the clause may be introduced by a preposition or a genitive. In Egyptian the use of *šdm.f*, finite verb, after prepositions runs parallel, in almost every case, to preposition plus infinitive. Here we find a restrictive consideration that if it was necessary to express the subject they used the tense form but if it was not necessary to express the subject they used the infinitive after the preposition and noun. That distinction became lost in Hebrew before the Hebrew developed to its 15th century B.C. form.

Illustrations are provided. (References are to *Egyptian Grammar*, A. H. Gardiner, Second Edition, Oxford, 1950.)

gm.n.f sw hr prt m sbz n pr.f, "he found him under to go forth from the door of his house," that is, "he found him when he was going forth from the door of his house" (paragraph 304). This is infinitive after a preposition. A case of infinitive after a genitive (analogous to the Hebrew construct state) is found in paragraph 305, *grh pf n irt hskr* "on the night of

celebrating the *Hskr*- festival," that is, "on the night when he celebrated, etc."

But, as in Hebrew, and this is the item of significance in our consideration, the same can be done with the finite verb as the verbal element in the clause. *mdw.k hft wšd.f tw*, "You shall speak in front of he addresses you," that is, "you shall speak when he addresses you." (paragraph 155). This is a case of preposition plus finite verb like 2 Samuel 7:7 and the Akkadian cases. Two cases of genitive plus verb are noted in paragraph 191: *hrw n ms.s*, "on the day of she gives birth," that is, "on the day when she gives birth." *tr n wnn.k*, "in the time of thou shalt be," that is, "in the time when you live (as long as you live)."

In the same paragraph is found a case of the genitival adjective not preceded by a noun. It serves the same function. *ib.k n.k n wn.k tp ts* "thy heart is to thee of thou wast on earth," that is, "you have your heart as when you were on earth."

The inference from the Egyptian evidence is quite clear. A noun in the genitive relationship to an immediately following finite verb introduces a subordinate clause which, on occasion, can be temporal.

This syntactic item is, then, primitive Hamito-semitic, being found in several of the cognates, Arabic and Akkadian, and in the Hamitic group as well. It is an early syntactic item—preposition and noun in genitive plus finite verb introducing a temporal clause, just as in Genesis 1:1.

Thus the need for recognizing the first verse of Genesis as a subordinate temporal clause rather than as a complete declaratory sentence is required by the two considerations: the reluctance to emend the text, which should be characteristic of those who believe in verbal inspiration, and the clear evidence in the Hamito-semitic languages that supports this particular syntactic structure.

The implication, then, of the opening sentence of Genesis, verses one through three, is that the Genesis account starts with an already created material universe (John 1:3 requires an *ex nihilo* origin of this material universe). Genesis starts its account not so far back as does John but with darkness over the earth which was "without form and void" at the time under description. God's Spirit was moving "upon the face of the waters." When this was the earth's condition God makes His first declaration: "Let there be light."

A Consideration of Sociological And Psychological Principles Used in Alcoholics Anonymous

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There is a tendency among Evangelical Christians to view the alcoholic as an individual who is of his own volition and desire an alcoholic. Very few people realize that an alcoholic is one addicted to or taken over by alcohol, and unable to help himself.¹ To reach this type of person for Jesus Christ and to help him overcome this addiction is a physiological, psychological, and spiritual problem.² The Holy Spirit will lead this person into spiritual truth; however, we must be cognizant of the fact that the church and individual Christians can be helpful to the addicted person in the physiological and psychological areas.

After he becomes a Christian we can only expect the alcoholic to change as the Holy Spirit leads and convicts him. The fact that the new convert is an alcoholic means that he has certain psychological needs which must be met by means other than the use of alcohol. The use of alcohol in excess is usually a symptom indicating deep psychological needs.³ These needs do not change after the alcoholic becomes a Christian but the means of meeting these needs should change!

An alcoholic is generally considered to be mentally ill.⁴ It is this illness which may be considered to be the source of difficulty for him because he has certain basic psychological needs which are prevalent due to the sickness. Thus, after he becomes addicted to alcohol, his difficulty is twofold—psychological as well as physiological. The fundamental difficulty of course is his psychological needs which caused him to originally turn to alcohol.⁵ Thus, let us consider the basic personality factors of the alcoholic personality.

There are certain personality factors in the makeup of each of us which influence our actions and desires. This is true of the basic personality structure of the alcoholic. He is generally considered to be fixated⁶ in the oral period⁷ of personality development. Having little tolerance for feelings of depression, anxiety, and frustration, he resorts to taking into his body something that will give him

temporary relief. He is primarily a narcissistic⁸ individual who is still in the infantile oral stage—hunger-gratification.⁹ He is so dependent upon oral gratification that all else yields to this need. The alcoholic derives his pleasures chiefly through tactile sensations in the oral area and other cutaneous tissues. Because of his narcissism, dependency, and desire for gratification without giving anything in return, he has little capacity for loving others in a mature way.¹⁰

Realizing this type of personality we can understand that it is possible to be an alcoholic type and never be addicted to the spirits of alcohol.¹¹ There are many persons within the framework of the church who have the alcoholic type of personality, but they do not satisfy their oral needs as he does. These people do that which is more likely to be accepted such as eating food in excess, drinking large amounts of various beverages, gossiping, and using tobacco.

The purpose of this paper, therefore will be to enable us to realize the needs of the personality which is addicted to alcohol and how we may meet them after the alcoholic has become a Christian through application of the principles of Alcoholics Anonymous. This will mean applying certain sociological and psychological principles which are actually within the local church structure, but need to be augmented, emphasized, and practiced.

The local church gathering is often a very good example of group therapy in action as Christians assemble for worship and prayer. Man is a gregarious animal and therefore especially subject to many types of gregarine influences or associational attitudes. Every sort of familial or social group can be utilized advantageously for psychotherapeutic purpose. Every aspect of better socialization has its curative value in dealing with all forms of the neuroses and ever milder phases of psychoses. Even the hospitalization of a psychiatric patient has certain values from the standpoint of treatment in that it does away with his sometimes almost

complete isolation.

Alcoholics Anonymous, the recent movement having to do with reclaiming of alcoholics, is after all a form of group therapy. This organization served to illustrate the value of the assembling of persons who have common problems to solve, and who can be of mutual help in sharing experiences and providing for social encouragement and moral support. In the Church we have common problems of sin and a common enemy in Satan; however, we are not addicted to drug as the alcoholic. Thus this person needs special help when he becomes a Christian and this help can be given by the Church as it is aware of the problem and uses its influence and testimony in a therapeutic manner.

To realize the problem of the alcoholic in its proper perspective, we must examine his personality and his needs somewhat closer. These individuals are characterized by very marked emotional immaturity.¹² and there is nearly always a very definite ambivalence toward authority.¹³ They crave independence, earnestly desiring to be free from the maternal bondage which so irks them, but they are utterly unable to break away from the mother's domineering influence; and it is this ambivalent attitude, the commingled alternating love and hate for the mother, that accounts for the hidden frustration and the otherwise unrecognized mental and emotional conflict which so markedly characterizes them.

Many of these alcoholics were more or less serious problems at "weaning time". The majority of them were not weaned until the second year, sometimes well into the second year. It must be remembered that many of the infant's emotional troubles are almost instantly cured by nursing.¹⁴ As the youngster begins to suckle, his face flushes, he sometimes coos and gurgles while gently patting the mother's breast and many times, even before being fully satiated, falls asleep. It thus develops that milk (at least in association with the act of nursing) is in a way the baby's nervous or emotional anesthetic. That is, it does for the perturbed or nervously tense infant exactly what alcohol temporarily does for frustrated and nervously tense adults. Such fear-ridden and worry-harassed adults find in a bottle of alcohol exactly that surcease and relief from tension that an infant finds in a bottle of milk.

The alcoholic personality is an individual who demands quick relief from his troubles, and it must be admitted that, if such an unhappy and harassed personality is going to resort to drugs to obtain such relief, alcohol is the least psychologically dangerous.

It appears that very early in his experience the

alcoholic personality wants his liquor without solid food. He does not drink during meals; in fact, he tends much to hurt and neglect eating. He will, however, take alcohol along with liquid foods.¹⁵

Various writers who discuss alcoholic personalities differ as to their temperamental trends. Some agree with Strecker, who estimates that around 90% are introverts. If this is true, then their alcoholic episodes represent strenuous efforts to attempt to extravert, to compensate for their innate introversion.^{16 17}

We have found most alcoholics to have poorly organized personalities—delayed integration—rather than to present any evidence of defectiveness, but they are universally ambivalent and victims of chronic indecision. Alcoholics are also impatient. They are that type of person who "wants what he wants when he wants it". They suffer from general nervousness—that is, they are restless, always craving something, always facing some new trial. In general, they have kind dispositions and are cruel or sadistic only when extremely frustrated, but they do like to be humored and coddled.

Clinebell has found many of these alcoholic personalities to be good salesmen, especially if they can get jobs "on the road." The majority of them are willing to work hard all day in order to enjoy an evening with wine and friends, and they are sometimes passingly successful in the professions and in moderately responsible executive positions.¹⁸

Realizing fully the issues involved and by employing a few principles, we can better help the alcoholic after he has accepted Christ into his life. He has now come to the place where he realizes that he is completely unable to stop drinking in his own power, and as a result has accepted Christ as Savior and Lord. The alcoholic, however, if he truly is addicted to alcohol, will still probably have the desire to drink. It is at this point that we can well afford to investigate the practices of Alcoholics Anonymous and their methods of helping those who are addicted to alcohol.

Each member of A. A. is to be a living testimony of what A. A. is attempting to do. If at all possible, encourage Christians who have been addicted to alcohol to testify to the alcoholic. If he talks to someone who has had his experience, he feels that he is understood. A converted alcoholic will always be the best person to deal with the alcoholic because they have a common problem. It must be noted here that once a person has become an alcoholic, he always will be addicted to alcohol and at any time the convert may revert to his former way of life. In becoming a Christian his desire is only arrested, not removed. Thus, as the alcoholic is converted, his victory is found only in the power of

God at work in his life. However, those who have the same problems can be of mutual help in prayer for one another and in sharing experiences.

In A. A. when one member feels the urge to drink, he calls a fellow member who will usually come to his aid and attempt to keep him from drinking. This giving of aid satisfies the alcoholic's desire to be important, for every member is important in that he can give aid to other members. Thus, those A. A. members who help others are actually helping themselves. So it should be in the Church that the converted alcoholics should be able to depend upon one another and expect to receive help in times of need and temptation. However, this should be a learning situation in which the alcoholic does not become overly dependent upon his human helper but learns to trust in Christ and is pointed to Him as his never-failing, all-dependable Lord. But during this learning experience the Church can use its influence and membership to bear one another's burdens increasing the therapeutic value of the church group.

The A. A. meetings are usually meetings for testimonies of victory over alcohol. The Church should possibly encourage meetings especially for converted alcoholics and non-Christian alcoholics. These meetings in themselves would not only be evangelistic in nature but also would strengthen the faith of the Christians. Many of the A. A. meetings, held for alcoholics only, are especially held for those who are new members of A. A. At these meetings there are testimonies given by those who were so called hopeless alcoholics and as could be expected, an unbelievable amount of coffee is consumed. This consumption of coffee is obviously an attempt to satisfy the oral needs of the members with something other than alcohol. Also, after the formal portion of the meeting, there is a mingling of the members among the group and a constant exchange of social encouragement and moral support. This type of meeting could, we feel, easily be encouraged and sponsored by the Church. For although this type of meeting is only found in A. A. circles, we feel that it could be employed by Christians in pointing men to Jesus Christ as the Author and Finisher of our faith and through fellowship with those of like mind, encourage those who are young in the faith.

Although we may not be able to employ all of A. A.'s techniques in the Church, yet we can realize that there are many psychological and sociological principles which can be employed in the local church situation for the evangelization of the alcoholic and for the strengthening of the converted alcoholic's faith.

NOTES

1. Howard J. Clinebell Jr., *Understanding and Counseling the Alcoholic* (New York: Abingdon Press, 1956), p. 17.
2. Joseph L. Fetterman, *Practical Lessons In Psychiatry* (Springfield, Ill.: Charles C. Thomas Co., 1949), p. 232.
3. M. M. Brown and G. R. Fowler, *Psychodynamic Nursing* (Phil.: W. B. Saunders Co., 1954), p. 195.
4. Fritz Kant, *The Treatment of the Alcoholic* (Springfield, Ill.: Charles C. Thomas Co., 1954), p. 12.
5. Howard J. Clinebell Jr., *op. cit.*, p. 37.
6. Samuel W. Hartwell, *Practical Psychiatry and Mental Hygiene* (New York: McGraw-Hill Book Co., 1947), p. 162.
7. Fritz Kant, *op. cit.*, p. 55.
8. Howard J. Clinebell Jr., *op. cit.*, p. 38.
9. Carroll A. Wise, *Religion In Illness and Health* (New York: Harper and Brothers, 1942), p. 38.
10. Mental illness is used here to indicate deviation from mental health which is, "A state of being which is relative rather than absolute, in which a person has effected a reasonably satisfactory integration of his instinctual drives. His integration is acceptable to himself and to his social milieu as reflected in the satisfactory nature of his interpersonal relationships, his level of satisfaction in living, his actual achievement, his flexibility, and the level of emotional maturity he has attained", as quoted from *A Psychiatric Glossary* (Washington D. C.: American Psychiatric Association, 1957), p. 16.
11. Marty Mann, *Primer On Alcoholism* (New York: Rinehart Co., 1950), p. 1.
12. Fixation—"The arrest of the changes and stages which characterize the development of the psychological aspect of sexuality during the period from birth to adult life", as quoted from *A Psychiatric Glossary*, p. 18, 38.
13. Oral period—"Includes both the oral erotic and oral sadistic phases of infantile psychosexual development, lasting from birth to 12 months or longer. The oral erotic phase is the initial pleasurable experience of nursing. The oral sadistic phase is the subsequent aggressive (biting) phase. Both oral erotism and sadism normally continue in later life in disguised and sublimated forms," as quoted from *A Psychiatric Glossary*, p. 31, 32.
14. The term "narcissism", or self-love, was born of Freud's own preference for poetic euphemisms and mythological allusions (e.g., "Oedipus Complex"). Narcissus was a Greek god who fell so deeply in love with his image as reflected in a pool of water that he lost interest in all else.
15. Jules H. Masserman, *Principles of Dynamic Psychiatry* (Phil.: W. B. Saunders Co., 1946), p. 22.
16. Fritz Kant, *op. cit.*, p. 43.
17. Jules H. Masserman, *op. cit.*, p. 22.
18. "Case History of A Dry Drunk", (anonymous), *The A. A. Grapevine* August 1954, p. 8.
19. Fritz Kant, *op. cit.*, p. 21.
20. Howard J. Clinebell Jr., *op. cit.*, p. 49.
21. O. Spurgeon English and Gerald H. J. Pearson, *Emotional Problems of Living* (New York: W. W. Norton Co., 1955), p. 39.
22. Marty Mann, *op. cit.*, p. 19.
23. Introversion—"Preoccupation with oneself, with accompanying reduction of interest in the outside world. Roughly the reverse of extroversion, a state in which attention and energies are directed outward from the self" as quoted from *A Psychiatric Glossary*, p. 23, 17.
24. E. A. Strecker, *The Fundamentals of Psychiatry* (Phil.: J. B. Lippincott Co., 1944), p. 187.
25. Howard J. Clinebell Jr., *op. cit.*, p. 27.

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- Anonymous. "Case History Of A Dry Drunk," *The A. A. Grapevine*. August, 1954.

Addenda

Wittman made a study of alcoholism in Cook County Psychopathic Hospital and Elgin State Hospital, Elgin, Illinois. One hundred alcoholics from 25 to 30 years of age were studied in comparison with the control group of a like number. They were rated on the following points:

1. Sociological date.
2. Mother relationship.
3. Father relationship.
4. Sibling relationship.

5. Home life.
6. Religion and standards.
7. Sex development.
8. Love affairs.
9. Physical development.
10. Intellectual development.
11. Vocational adjustment.
12. Social adjustment.
13. Emotional adjustment.
14. Marital adjustment.
15. Miscellaneous.

The conclusions of this study are summarized as follows:

1. A domineering but idealized mother and a stern, autocratic father whom the patient somewhat feared as a child.
2. A marked degree of strict, unquestioning obedience demanded in family life, with little latitude and freedom allowed.
3. A sense of insecurity as evidenced by an insistent feeling of need for religious security and a strong sense of sin and guilt.
4. Marked interest in the opposite sex, with many love affairs but poor marital adjustment.
5. Lack of ability to get along with others and to be socially acceptable to them.
6. A keyed-up emotional level, resulting in work done under high nervous tension.
7. A definitely expressed and disproportionately greater love for the maternal parent than for the paternal.¹

¹ W. S. Sadler, *The Practice of Psychiatry* (St. Louis: C. V. Mosby Co., 1953), p. 139.

A Christian Looks at Science

Ronald H. Russell, B.S., B.Th.

There are many major matters about which people are not in total agreement. Sometimes these divergencies are mild and innocuous while in other instances these schisms are deep and fundamental. This diversity of opinion clearly manifests itself when individuals with shallow talk supported with equally shallow thinking affirm that a definite conflict exists between science and theology. Unfortunately we do have pseudo-scientists and pseudo-theologians, however, it is my belief that the true science is the handmaiden of true theology.

Let us consider for a moment the method of science, that is, the scientific method. John Dewey in a discussion of the scientific method envisioned every unit of thinking consisting of two parts; a perplexed, troubled, or confused situation at the beginning and a cleared-up, unified resolved situation at the close. Thus we see that the scientific method travels from perplexity to possible satisfaction, so indeed does theology but on a different and higher sphere.

The scientific road has five phases which Dewey calls Suggestion, Intellectualization, The Guiding Idea or Hypothesis, Reasoning in a Narrower Sense

and Testing and Verifying or Disproving the Hypothesis by Experimentation. Scientific knowledge is grounded in sensation. If a scientist had no sense receptors he would be forced out of the field of research.

Regarding the fifth step in the scientific method, namely the testing and Verifying or Disproving the Hypothesis, there are two kinds of testing. The first is conducted by thought, this is deduction; the second is conducted by action, this is induction. The truth or falsity of the hypothesis will be demonstrated by the fifth step which is based on sensory experience. Therefore as was stated above, all scientific knowledge is grounded in sensation. The scientist should not deviate from that which he cannot see, hear, smell, taste, or feel. He says, "I know" because he can say, "I have seen." My conviction on the existence of Euglena in a drop of water depended on faith until January 1956. Before that date I had read about them in books. I had been told by people that such organisms existed. But during that month I looked through a microscope and saw a Euglena. Of course, I still have to accept on faith the testimony of my in-

structor that what I witnessed darting about in the field of vision was a Euglena. But I am no longer on *a priori* grounds. I recognized it as having life because I saw it move.

Since sensory experience is prerequisite to conviction, science has nothing to say on questions, the proving or disproving of which does not involve experimentation. Science can neither affirm nor deny the existence of God and the unseen world about us. Science cannot affirm that a miracle is impossible because if there is a God then a miracle is possible and science cannot dogmatically deny the existence of God. Nor will it ever be able to do so until some scientist has gone poking about in every corner of the universe with his microscope. Even then he could not be certain. Maybe his lens wasn't powerful enough. Can we believe our eyes? No! If I did, I would say that a Euglena is only a figment of the imagination, because when I looked into the lake located on campus, I did not see a single Euglena with the naked eye. Conviction based upon sense perception would affirm that Euglena have no objective existence. But though the unaided eye cannot see Euglena, the aided eye can. How can science constantly deny the existence of God? They don't know, and therefore cannot say. But they can say, "As far as we know, there is no God—but we don't know very far. There may be a God, but He is unknown to science". Because science can never ultimately arrive she should humbly remain within the restricted limits she has set for herself.

On the other hand, the theologian who stoops to an attempt to "scientifically prove God" is, to say the least, doing that which is grossly unnecessary. Why turn your back on the higher knowledge of faith and submit the case to a lower and less trustworthy court? Shall I prove God by science? Not I. I affirm God, Christ, Creation, Sin, Salvation, Miracles, Heaven and Hell on the grounds of God-given and sustaining faith. And after my affirmation, if any scientist forgets his restricted limitations and attempts to challenge me, I shall take his own scientific method and use it to drive him back to his own back yard which is so effectively enclosed by the fences of sense perception. The best argument against the objective existence of the unseen is only negative argument. Let science therefore concern herself with an exploitation of the visible world and leave the metaphysical and theological field to her betters.

There are two dangers of science. First of all, science is in danger of the mistake described above. She may speak when silence would more become her. She may forget herself and become *a priori*. This is a sin for her, though not for the theologian.

The other danger of science which I shall mention is the danger of too great specialization. Specialization of course, has distinct advantages. The whole gamut of truth is so vast that the labor in research must be divided. No man lives long enough to obtain omniscience. For example: the field of cytology (study of cells) is quantitatively a very small but qualitatively a very large part of the science of biology. We would not know much about the cell if men such as Brown and Wilson had not chosen to concentrate research on this small but very important field. Having cited the obvious advantage of specialization, we may now say that it tends to destroy perspective. Though the specialist is not one who has learned "more and more about less and less until he knows everything about nothing," he may have gotten himself into a position where he knows a great deal about a very little. The opposite extreme is "Jack of all trades" whose learning is so broad that it is shallow and who is therefore, "master of none." Either extreme is to be avoided. The practical thing to do would be at least to recognize the existence of other fields and know enough about them to avoid exposing yourself to adverse criticism by meddling in another scientific area.

The above is in no sense to be construed as an attempt to lampoon science or the scientific method. Science in her place is capable of tremendous good. The narrow-minded preacher who runs for office on a platform of "All Scientists in Hell" had better think twice and remain silent, or else drive the horse and carriage instead of his new Chrysler or Ford, because it was science, not religion that built his automobile. Theology is good in its place, but theology under the hood of a car is out of place. There the preacher needs thermodynamics. If it is better to push a button than light a wick, dial a radio than crank a phonograph, go United than oxcart—then science should stand up and take a bow.

There is much knowledge available on the level of the mature mind, unaided by revelation. We as Christians ought to seek that knowledge. We should utilize our God-given faculties which are available, namely sensory perception and natural reason. This is Science. When followed carefully, it yields tremendous dividends. Truly careful science and true theology complement one another.

Annual Convention of 1958

This year's Convention resembled its predecessors in many ways—stimulating papers, lively discussions (some of them far into the night, and some still going on through correspondence), close fellowship in the Lord Jesus Christ—but it will also be remembered for several innovations that set it apart from previous Conventions. For example, this was the first Convention in the history of the A.S.A. to be held on the campus of a state-supported school. Some apprehension may have been expressed originally that the surroundings might alter the mood of the Convention; but if any change at all was felt, it was a reminder that we are called to be witnesses in the world of men and particularly to the world of scholars and students. All of the facilities of the Memorial Union of Iowa State College were at our disposal, and the hospitality was as warm as that we have experienced on other campuses.

Also, more effort was made at this Convention to let the local community and the general public know about our activities. Much of the publicity centered around the nightly "Sermons from Science" demonstrations sponsored by the Convention, but the actual sessions also received some publicity. George Speake did a very effective job, speaking at the Rotary Club of Ames the day before the Convention started, and being interviewed on both radio and television. Art Schulert was also interviewed on TV, and newspapers in Ames and Des Moines carried stories on the Convention. "Sermons from Science" drew many interested people from town and campus, attracted by posters, notices in church bulletins, and a letter addressed to all faculty members at the College. At least one magazine of national circulation, *Christianity Today*, was sufficiently interested in our Convention to report on it in some detail.

On Monday evening before the Convention officially began, early arrivals saw the Moody Institute of Science film, "Red River of Life," while the Executive Council held the first of a series of meetings devoted to completion of the proposed revision of the A.S.A. constitution. R. P. Dilworth, chairman of the constitutional revision committee, was fortunately able to attend part of the Convention on his way back to California from Europe; he also gave us his personal comparison of the U.S. and Soviet exhibits at the World's Fair at one of our meals together.

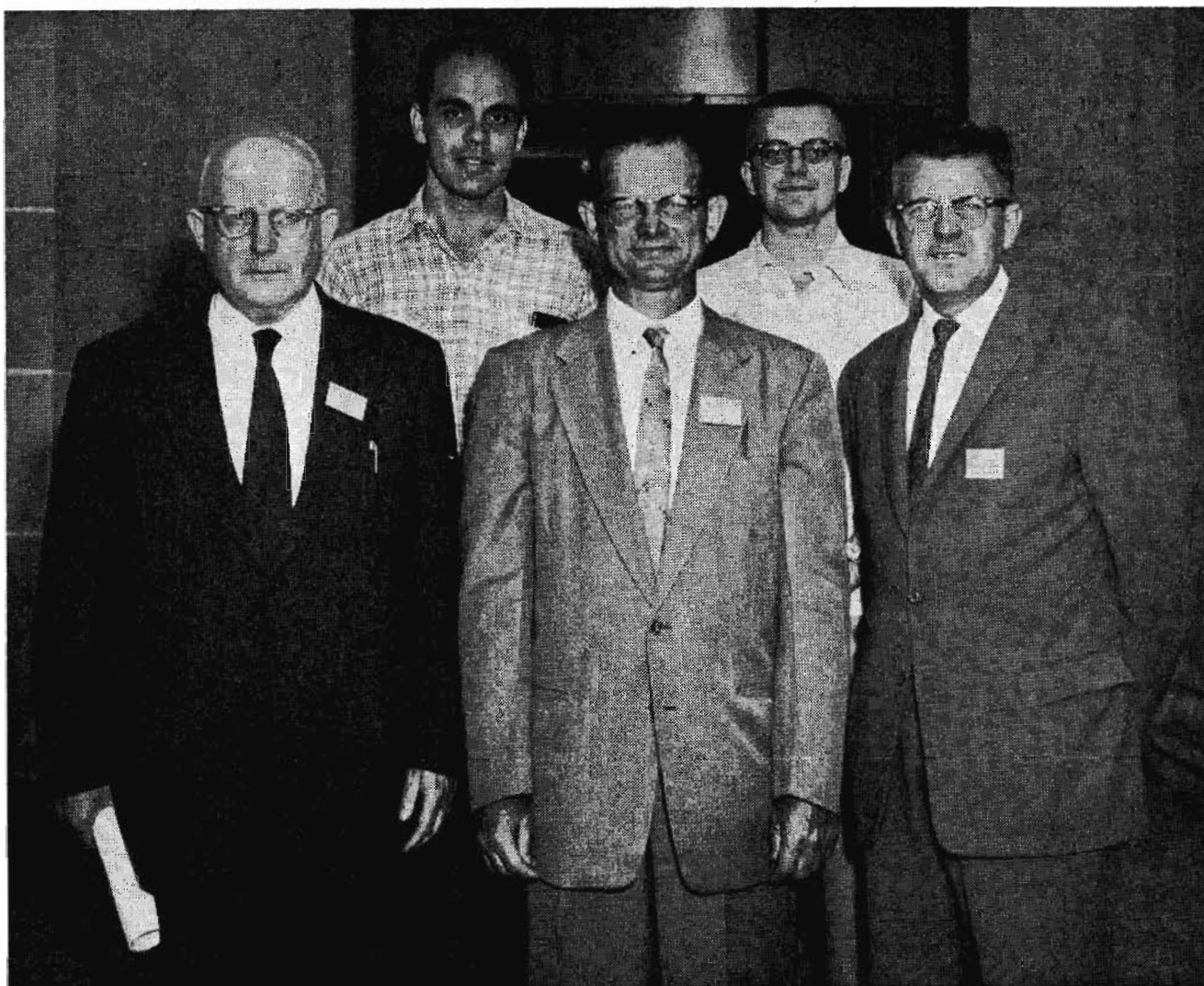
At the opening session, the President gave his report, followed by F. Alton Everest's first full report on local section activities, a very encouraging look at what is going on and an outline of future possibilities. Then Harold Hartzler and Dave Moberg focused our attention on patterns of higher education in the U. S.

and Europe by reporting some personal observations. That afternoon was devoted to an informative panel discussion on biological classification organized and chaired by Frank Cassel. Frank Marsh presented his paper on the possible relationships of the Genesis "kinds" to modern taxonomy, and other members of the panel discussed the meaning of species and higher categories from their own points of view—Don Robertson as a geneticist, Russell Mixter from the viewpoint of paleontology and anthropology, and Wilbur Bullock from the viewpoint of taxonomy. Wayne Frair and others then contributed to a general discussion which emphasized the difficulties of defining species adequately and also of interpreting properly the Biblical creation narrative.

Wednesday morning was devoted to field trips and this year offered more variety than at any previous convention. Most popular was the outdoor trip to the Ledges, a lovely little State park near Ames; the weather was delightful and the comments of Dr. Gwynne of the College geology department and the naturalists in the group made the trip very informative. A somewhat more spectacular trip was the one through part of the Institute for Atomic Research, where members of the staff demonstrated facilities for handling highly radioactive materials. The most unusual trip was to the Woodward State Hospital-School for mentally retarded children; several participants said they had never had such an impressive experience. Several families saw how dairy products are manufactured in the College dairy, and a small group of biological specialists also took advantage of the opportunity for an ecological trip with an expert that afternoon.

Theodore Tahmisian presented the first paper on Wednesday afternoon, arguing for a Divine Designer from the magnificent design seen in living cells and showing exciting examples of some of the design he himself has discovered. H. M. Spinka gave a very complete description of leprosy with slides of the lesions observed at various stages of the disease, and showed that the Biblical descriptions are accurate. At the annual business meeting that afternoon, two brief services were held, one honoring Dr. Frank Allen for his distinguished contributions to physics and his services to the A.S.A., the other commemorating the death this year of Dr. Paul DeKoning.

On Thursday morning, Dave Moberg presented some of his original research on the extent to which religious practices in family life are changing in this country, indicating that his study in the St. Paul area showed no evidence of a decline. Herb Meyer gave a good



Executive Council

Left to right: J. R. Howitt; W. L. Bullock, Vice-President; H. H. Hartzler, President; W. R. Hearn; H. J. Oorthuys, Secretary-Treasurer.

review of the history of our calendar and recommended adoption of the World Calendar, a proposal which some religious groups have opposed. Harold Hartzler's challenging paper on what Christians and scientists should be doing to promote world peace brought on a very lively discussion which revealed a wide variety of viewpoints about a Christian's responsibility in world affairs.

The final afternoon of the convention was devoted to two most excellent papers of timely interest. Art Schulert summarized the actual physical data on radioactive fallout (which he has had a prominent part in gathering), its extent and the possible dangers, and then discussed the problem in the light of the world political situation. Then Robert M. Page, Director of

Research at the Naval Research Laboratory in Washington (and the first man to send a message by reflecting it off the moon, he casually informed us during his talk), presented a fascinating picture of what science has learned about extra-terrestrial phenomena through different types of research. His talk was beautifully illustrated with slides, some of them taken from historic (but recent!) research papers. We were impressed by the majesty of our Creator's works in what was really a devotional as well as an intellectual experience.

The organized (?) discussion groups were devoted to scientific problems on Tuesday night and to Biblical interpretations on Wednesday night, with considerable overlap. Problems to be considered at future conven-

tions were suggested and there was a healthy exchange of information and opinion. Most of those attending the convention took part in these discussions.

Registration for the convention slightly exceeded 70, but attendance at "Sermons from Science" probably averaged 400 for the three nights and reached 500 on Wednesday night. Sponsorship of these evangelistic demonstrations seemed to be a very successful experiment, and we were grateful for George Speake's attractive presentation of the Gospel "with a method as modern as tomorrow."

Another innovation not mentioned above was a series of exhibits of books, literature published by A. S.A. and other organizations, and other material of interest to members; these exhibits attracted much attention and it is hoped that this sort of thing can be continued and expanded at future conventions.

The chairman, Walt Hearn, was kept busy during the convention, but he was ably assisted by Wayne Frair, who took charge of registration, and Dick Hendry, who did much of the "chauffeuring"; Deane Roth, Earl Worthington, and several others served as ushers for the "Sermons from Science" programs, and many others contributed in many other ways to the success of the convention.

Executive Council Meeting

**August 25, 1958 — Union Building
Iowa State College, Ames, Iowa**

Attendance:

H. Harold Hartzler, John R. Howitt, Wilbur L. Bullock, Walter R. Hearn, H. J. Oorthuys—of the Executive Council, and Irving A. Cowperthwaite, and Russell L. Mixer.

E.T.S. — A.S.A. Committee:

The president reported that the joint committee has been very active. A joint meeting of the E.T.S.—A.S.A. is being scheduled for June 10-11, 1959 at Trinity College, Chicago. The main theme will be "Toward an Evangelical Philosophy of Science". It is planned to invite several well-known evangelicals to participate, including Dr. Carl F. Henry and Dr. Bernard Ramm. A.S.A. members of the liaison committee are Henry Weaver, chairman, John W. Klotz, James O. Buswell, III. Representation from the E.T.S. include Merrill C. Tenney, J. Barton Payne, and J. C. Whitcomb.

1959 Convention:

It was agreed to accept the invitation of Seattle Pacific College to meet on their campus in Seattle, Washington. Dr. Howitt moved to tentatively aim for the week of Monday, August 24th to Saturday the 29th, which was recommended by Seattle Pacific College. The motion was seconded by Dr. Wilbur Bullock and carried.

1960 Convention:

Hope College, Holland, Michigan and the Moody Bible Institute in Chicago are being considered.

Constitutional Revision:

Dr. Howitt moved and Dr. Bullock seconded a motion to approve Articles I and II of the 4th draft submitted in late July by the Constitutional Revision Committee.

Motion was carried unanimously.

Considerable time was given to the advisability of an enlarged Executive Council. The factors pro and con respectively: the advantage of wider representation on the Council, as against the increased difficulty and cost of meeting.

It was agreed to continue the five-member Council.

Tuesday, August 26, 10 a.m.

Attendance: 100%

The secretary was instructed, following the convention, to duplicate and distribute to the Executive Council and Constitutional Revision Committee all parts of the proposed 4th draft of the constitution with revisions and additions approved by the Executive Council.

The council agreed to skip the field trips Wednesday, August 27th in order to meet at 9 a.m. to continue work on the constitutional revision.

1959 Convention Committees:

The following proposed appointments were approved for the 1959 convention:

General Chairman: F. Alton Everest.

Papers Committee: Brian P. Sutherland, Chairman; Walter Hearn, C. W. Taylor.

Local Arrangements: Harold T. Wiebe.

(Subsequently F. Alton Everest declined appointment due to his present responsibility as National Secretary for local sections. Also, Wayne Frair was appointed in place of Walter Hearn because Wayne was on the previous papers committee.)

Darwin Centennial Symposium:

A brief discussion of progress took place.

Policy Affecting Retired Missionaries:

It was reaffirmed that members who are missionaries shall not be required to pay dues and that this shall apply to retired missionaries as well as missionaries on furlough.

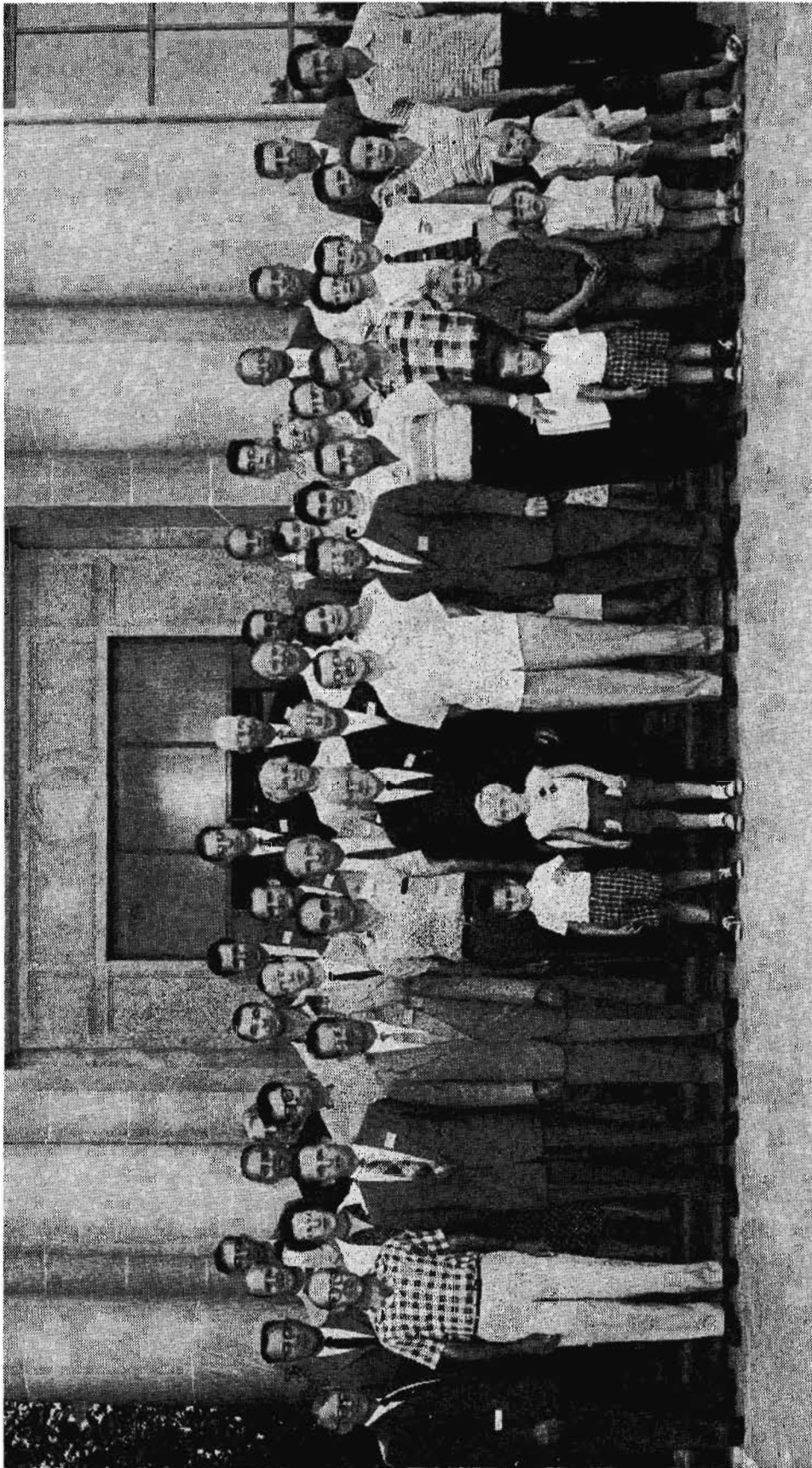
The term "missionary" is construed to apply to foreign missionaries receiving missionary support.

Recognition of Members:

Plans for the memorial service for Dr. Paul de Koning and recognition honoring Dr. Frank Allen at the annual business meeting were presented.

Tract "The Scientists Look at Life":

The secretary was instructed to implement the



Group At 1958 Convention

Front row, left to right: C. Brandhorst, D. Swartzendruber, R. P. Dilworth, H. H. Hartzler, W. L. Bullock, J. R. Howitt, W. R. Hearn, H. J. Oorthuys, G. Speake, J. L. Loewen, H. W. Lyon, M. Cummings. Helise and Cummings children in front.

Second row: H. A. Meyer, Mrs. H. A. Meyer, R. A. Hendry, J. E. Lothiers, I. A. Cowperthwaite, F. L. Marsh, A. G. Marsh, F. Helise, J. Helise, J. Speake, D. Everest, T. Cummings.

Third row: R. C. Frost, W. A. Erickson, W. C. Sones, W. Frair, Mrs. R. E. Hoisington, R. E. Hoisington, S. Marsh, Mrs. J. L. Loewen, J. F. Cassel, F. A. Everest.

Fourth row: C. W. Taylor, L. E. Kent, A. Shulert, D. O. Moberg, R. M. Page, P. B. Marquart, K. Marsh, G. Speaks, Jr., R. L. Mixer.

distribution of a sample copy of this tract to all members.

The secretary was authorized to inquire of the Good News Publishers whether a printing of this tract might be obtained omitting the material on the back cover. It was agreed that the introduction and ten testimonies including the Scripture employed are excellent, but a few members felt that for some purposes (distribution on secular campuses) the effort to press for a decision and a signature on the back cover is premature and tends to limit the use of the tract.

Nominating Committee Report:

The nominating committee: Dr. Irving A. Cowperthwaite, Dr. Paul Bender, and Dr. William Tinkle submitted the name of Dr. R. Laird Harris.

The second nominee has not yet been named.

Nomination of Fellows:

The vice president, Wilbur L. Bullock, will welcome recommendations for nominees for the grade of Fellow.

Modern Science and Christian Faith:

Dr. Tinkle has expressed his desire to be relieved of the responsibility of rewriting Chapter 4 on Biology for publication as a separate pamphlet. It was recommended by the council that Dr. Robert C. Frost be approached for this task.

Publications:

It was agreed that papers submitted to the A.S.A. for oral presentation or publication should not be submitted for outside publication unless first re-submitted by our editor. Other publishers may be given permission to publish such papers after publication in the Journal of the A.S.A. It was also agreed that an effort should be made to maintain the copyright of our publications in the A.S.A.

Book Jacket on M.S. and C.F.:

The secretary has been instructed to write to the publisher regarding the out-of-date and erroneous information on the new book jacket for M.S. and C.F.

Wednesday, August 27 — 9 a.m.

Attendance: 100%

The meeting was opened with prayer.

This session was called to continue revision of the 4th draft of the proposed constitution.

It was agreed that space should be provided on the new application form for one recommendation, that is:

"Recommended by"

Incorporation:

Incorporation in Illinois was considered. Illinois is the most central location and ultimately a head office may be established in Chicago. The president will consult with Mr. F. Alton Everest and a lawyer (member) regarding this matter.

(Note: During this meeting the work of revising and approving the 4th draft item for item was completed.

After this meeting, the president, secretary and two or three others met informally with Dr. Robert P. Dilworth, chairman of the Constitutional Revision Committee, who had just arrived from Europe. At this time some additional changes and additions were made. It then became the responsibility of the secretary to prepare a revised copy of the 4th draft for distribution to the Executive Council and the Constitutional Revision Committee.)

Resolution:

It was resolved that we of the Executive Council express our appreciation to Walter Hearn and Wayne Frair for their splendid work as general chairman, and chairman of the Papers Committee respectively.

The president of the Affiliation will write a letter of appreciation to Iowa State College.

Minutes of the Annual Business Meeting of the A.S.A. Held During the Annual Convention at Iowa State College, Ames, Iowa

Wednesday, August 27, 1958 — 3:45 p.m.

Attendance: Approximately 30

The meeting was called to order by the president, Dr. H. Harold Hartzler, and opened with prayer.

Dr. Frank Allen honored:

Dr. Hartzler reviewed the life and outstanding contributions of Dr. Frank Allen and read a letter of response from Dr. Allen who was not able to be present. Copies of this presentation may be obtained from the secretary and a copy will be kept on file with the minutes of this meeting along with the letter from Dr. Frank Allen.

Service in Memory of Dr. Paul de Koning:

Dr. Hartzler conducted a brief service in memory of Dr. Paul de Koning, member of the A.S.A., whose life was taken June 20, 1958 in a canoe accident on Lake Michigan where he was serving as an InterVarsity Christian Fellowship Camp Counselor. Copies of this service may be obtained from the secretary and a copy will be filed with the minutes along with the letter from Mrs. Paul de Koning.

Minutes of the 1957 Annual Business meeting were read and approved.

Selected items of business were read from the minutes of the past year's council meetings:

Gordon College, Beverly Farms, Massachusetts — August 26, 1957.

Moody Bible Institute, Chicago — Nov. 23, 1957.

Northwestern College, Minneapolis — March 22, 1958.

The president called for any new business from

the floor:

a. The president requested Dr. Hartzler to read a letter from the E.T.S.

b. Dr. Hearn also reported correspondence with several Christian organizations of somewhat similar character to the A.S.A. and recommended that the A.S.A. keep in contact with other Christian professional societies.

c. The secretary drew attention to the material made available through the cooperation of Dr. Wiebe describing Seattle's beautiful vacation opportunities.

d. Professor Wayne Frair inquired regarding the publication policy in view of the fact that he received correspondence from authors whose papers were not accepted.

The president pointed out that the publication policy has been to pass papers received for publication on to reviewers in the same field as the paper.

Dr. Page expressed the opinion that papers submitted for oral presentation would not normally be in suitable form for publication in the *Journal*.

It was also brought out that papers presented to the A.S.A. become the property of the A.S.A. to be published first of all in the *Journal*, if acceptable. The president recommended that this policy be printed in future annual programs.

Subsequent to the business meeting the question was raised regarding the advisability of holding the 1959 annual meeting in conjunction with the joint E.T.S. - A.S.A. meeting scheduled for June 10-11, 1959 at Trinity College, Chicago.

The council agreed to take no action until the will of the membership could be determined. The secretary was instructed to distribute a ballot for this purpose to the entire membership.

(Note: The response was appreciated. Approximately 314 members returned a marked ballot. One hundred thirty-one indicated inability to attend any of the three alternate choices. The remaining 183 ballots indicated preference as follows (these are of course not commitments):

Seattle, Wash., August 25-27—yes 57; no 132.

Joint meeting with ETS in Chicago June 9-11—yes 98; no 88.

Joint meeting with ETS in Chicago end of August—yes 99; no 55.)

Mr. George E. Speake from the Moody Institute of Science presented a series of demonstration lectures, "Sermons From Science", on three successive nights during the convention. The public was invited. A considerable amount of electronic equipment and film is involved in these demonstrations and although the cost of such a series is a minimum of \$150 per night, Mr. Speake agreed to accept only

the amount of free-will offerings. The amounts received were as follows:

August 26, 1958	\$47.01
August 27	78.67
August 28	54.75
Total	\$180.43

The lecture series was well attended and appreciated.

Respectfully submitted,
Hendrik J. Oorthuys.

Editor's Note: The minutes have been condensed somewhat from the official draft as submitted by Mr. Oorthuys.

REPORT ON LOCAL SECTIONS

13th Annual Convention
Iowa State College
26 August 1958

In 1957 the president of the American Scientific Affiliation appointed the first national secretary for local sections. Recognizing the value of strong ASA activity at the local level, this move was intended to stimulate existing sections and to encourage and assist in the establishment of new ones. This report describes progress toward these goals during the past year.

Contributions of Local Sections to the ASA

The attendance at annual conventions is usually about 10 per cent of the membership. For these favored few there are interesting papers, challenging discussions and stimulating Christian fellowship, but how about the other 90 percent. The *Journal* fills a great need here, of course, but there is no substitute for actual personal participation. It is here that local ASA groups can fill a real need.

Such local ASA meetings provide a natural environment for:

- a) gaining the attention and interest of prospective members,
- b) discovering of leadership talent, including prospective fellows, and
- c) providing an opportunity for wide membership participation in the discussion of philosophical problems before the ASA and the channeling of this into papers for the *Journal*.

Active Local Sections

During the past year an attempt has been made to obtain direct, specific information as to the officers and program of each existing local ASA group across the nation. This has not been entirely successful, but sufficient data has been assembled to present a reasonably clear picture of the present situation. To my knowledge there are, at present, seven active ASA groups as follows:

1. Washington, D. C.

This is one of our most active groups, reporting a series of interesting meetings during the past year. Mr. Dean Walter, head of the Analytical Chemistry branch of the Naval Research Laboratory, was chosen chairman on June 6, 1957.

2. Delaware

Direct confirmation of the activities of this group has not been received, but indirectly it has been learned that an active program has been carried on. A very ambitious joint symposium with the Eastern Baptist College consisting of four papers and two panel discussions was held October 26, 1957. Dr. J. Robert Martin, a chemist at DuPont, has been chairman.

3. Philadelphia

A report of the activities of this group has not been received. It is understood that Mr. Elmer W. Maurer, a chemist with the U.S. Dept. of Agriculture, has served as chairman. The possibility of merging the Delaware and Philadelphia groups is under consideration at the present time.

4. Indiana

During the past year meetings have been held at Goshen College and at Anderson College under the informal leadership of Dr. William J. Tinkle, Professor of Zoology at Anderson College.

5. Illinois

No evidence of specific ASA activity in the Wheaton-Chicago area during the past year has been received, although the potential is great. Leadership responsibility has been shared with Mr. Frank Houser of Wheaton College (preoccupied with a doctoral program) and Mr. David C. Foster, a research chemist with the Lindsay Chemical Co. of Chicago.

6. Western New York

The Western New York group is under the leadership of Dr. Robert R. Luckey, Professor of Mathematics and Physics, Houghton College. Three meetings per year are held, one at Houghton, one at Rochester, and one at Buffalo.

7. Los Angeles

One of the oldest and most consistent groups is that of the Los Angeles area, the present chairman of which is Dr. Edgar C. Smith, mathematician with International Business Machines Corporation. Four meetings per year, of varied type, constitute the average schedule.

Prospective Local Sections

A major effort is being made to encourage the formation of new local sections in order that each concentration of ASA members might thus be served. An exploratory meeting has been held at Oregon State College at which time Dr. Virgil Freed was elected temporary chairman, with the

expectation of organizing in the fall. Another group expecting to organize in the fall is in the St. Paul-Minneapolis area. Preliminary negotiations are under way with members in several other localities.

Relationship of Local Sections to National Group

It is the secretary's opinion that a closer tie should prevail between the local and national levels of ASA activities and that this can best be expressed through formal charter recognition by the Executive Council. A token financial allowance to local sections from the national treasury would also serve to emphasize the value placed upon local activities. These views are incorporated in the by-laws of the draft of the revised constitution being considered at this convention.

Goals for the Coming Year

1. To emphasize the quality of local meetings (rather than the number) by exchange of meeting notices, information on travels of qualified speakers, etc.

2. To establish at least three new local sections.

3. To devise a model constitution for local sections.

4. To urge special attention in each local section to the opportunity of soliciting new ASA members for the strengthening of the ASA at both the local and national levels.

5. To improve section-to-section communication for ideas and encouragement.

The accomplishment of these goals can only be the result of the cooperation of each ASA member.

Respectfully submitted,

F. Alton Everest,

Secretary for Local Sections

REGISTRATION

13th Annual Convention of A.S.A.

1. Robert C. Frost
2. Hendrik J. Oorthuys.
3. F. Alton Everest.
4. Elva M. Everest.
5. Thomas F. Cummings.
6. Mary S. Cummings.
7. Wayne Frair.
8. Richard Hendry
9. C. Deane Roth.
10. J. R. Howitt.
11. Lois E. Kent.
12. R. M. Page.
13. H. Harold Hartzler.
14. Walter R. Hearn.
15. Russell Mixer.
16. William L. Bullock.
17. Irving R. Cowperthwaite.

18. Solomon L. Loewen.
19. Mrs. S. L. Loewen.
20. Jesse L. Heise.
21. Mrs. Jesse Heise.
22. Frank L. Marsh.
23. George Speake, Jr.
24. Mrs. Frank L. Marsh.
25. J. Kendall Marsh.
26. Sylvia Marsh.
27. Mrs. George Speake.
28. J. Frank Cassel.
29. Mrs. J. Frank Cassel.
30. Jack Lothers.
31. Dale Hendry.
32. Huey-Lin Luo.
33. David O. Moberg.
34. Grace Ho.
35. C. W. Taylor.
36. W. C. Sones
37. Dan Everest.
38. J. G. Widner.
39. Mrs. J. G. Widner.
40. Mrs. Carl Reschly.
41. Don Robertson.
42. Wallace A. Erickson.
43. H. A. Meyer.
44. Mrs. H. A. Meyer.
45. R. E. Hoisington.
46. Mrs. R. E. Hoisington.
47. R. Ted Nichols.
48. Dan Wilson.
49. Dale Swartzendruber.
50. Charles E. Reeder.
51. Theodore N. Tahmisian.
52. Raymond H. Brand.
53. Mrs. Raymond H. Brand.
54. Floyd Judd.
55. Keith Josephson.
56. Lester E. Nelson.
57. Paul Bond.
58. Haraeo M. Spuelea.
59. J. E. Lothers.
60. Alex D. Beltz.
61. Mrs. Alex D. Beltz.
62. Robert G. Ziegler.
63. Frank Bellinger.
64. Mrs. Frank Bellinger.
65. C. T. Brandhorst.
66. R. P. Dilworth.
67. A. R. Schulert.
68. P. B. Marquart.
69. D. N. Eggenberger.

ARCHAEOLOGY

Allan A. MacRae, Ph.D.

Ten years ago Palestine was divided into two parts by the establishment of the new nation of Israel and the joining of eastern Palestine with Transjordan to form the Kingdom of Jordan. These two parts are still nominally at war. Only an armistice has been signed between them, and passage from the one to the other is extremely difficult and sometimes impossible.

Rather strangely the area that Israel possesses includes most of the territory held in ancient times by the Philistines and other non-Hebrews, but comparatively little of the region where most of the great events of Bible history occurred, while the Arabs of Jordan hold most of the great historic centers of Israelite history. As a result many of the major excavations are being carried on in Jordan rather than in Israel. From the viewpoint of American excavators this has its advantages, since almost everything is very expensive in Israel and labor costs are high, while in Jordan expenses are fairly low and the great number of refugees keeps labor costs down.

In spite of the fact that Israel is thus cut off from reaching so many of the great centers of Biblical history, her people show great interest in Biblical archaeology, and a very active Department of Antiquities has been set up. Often when a road is being constructed or when excavation for a new building is under way, some interesting relics of antiquity come to light, and it is required that the work be stopped at once, until the Department's experts have had opportunity to make a thorough investigation to determine what light if any is thrown on ancient history by what has been discovered, and whether it may be necessary to postpone the construction until further excavation has been completed.

Outstanding among Israeli archaeologists is Yigael Yadin, the son of Dr. Sukenik, a prominent Jewish archaeologist of a decade ago. Yadin, who was formerly chief of staff of the Israeli army, is now showing equal ability in investigating Israel's past.

During the past four seasons Dr. Yadin has directed excavations at Hazor, a great city of ancient Israel which is located in the northern part of the territory held by present-day Israel.

When Joshua led the Israelites into Palestine, one of his greatest obstacles was the northern confederacy, which was headed by the king of Hazor. Although Joshua's great victory led to the destruction of the city, (Josh. 11:10-13) it seems to have risen later from the ruins, for Judges 4:3 tells us that "Jabin king of Canaan, that reigned in Hazor" oppressed the children

of Israel for twenty years, until they were freed by the great victory of Deborah and Barak described in Judges 4-5.

Solomon rebuilt Hazor (I Kings 9:15). About two hundred years later, the Bible tells us, it was destroyed by the Assyrian conqueror, Tiglath-Pileser (2 Kings 15:20) in 732 B.C.

These references indicate that Hazor must have been an important city. Yet its location was quite unknown until 1926 when Professor John Garstang, who was then Director of Antiquities for the British Mandate, found a mound about ten miles directly north of the Sea of Galilee, which was so located as to fit the various historical and topographical requirements of the Biblical and extra-biblical references to Hazor. This mound was strikingly different from most others in Palestine, in that there was a large area, north of the mound itself, which was surrounded by a huge artificial rampart of beaten earth, sixty feet in height. Garstang estimated that this area, which he called a "camp enclosure", was large enough to accommodate in emergency 30,000 men with a corresponding number of horses and chariots.

In 1955 excavation was commenced at Hazor by Yigael Yadin, with the help of a large staff of competent associates. The archaeologists were greatly impressed with the size of the area, and decided that it may well have been the largest city in Palestine at one time, with a population perhaps as high as 40,000.

Excavation was carried on immediately in certain portions, not only of the mound itself, but also of the enclosed area to the north, in order to determine whether the latter was merely an area used for camping and for maneuvering of horses and chariots. To their surprise they discovered, only a yard beneath the surface, remains of a well-built city with houses and drainage systems. The floors of these houses were littered with materials that were datable to the 13th century B.C. The later Israelite city was confined to the sixteen acres of the mound itself; the earlier Canaanite city occupied a far larger area.

In successive summers of excavation Yadin has discovered evidences of the great importance of this metropolis of northern Israel between its rebuilding by Solomon and its destruction by Tiglath Pileser. He has also found much evidence of its even greater importance as an outstanding Canaanite city before the time of Joshua. The system of fortification has been found to be extremely extensive and very carefully constructed, giving clear evidence of the fact that the Israelite conquest was no mere foray by a group of desert tribes, but must have been a very extensive and powerful campaign, to have conquered cities with such strong walls and fine defenses as have been found at Hazor and elsewhere.

A very interesting instance of the correlation be-

tween Biblical statements and archaeological discoveries occurred in the third season of excavation at Hazor. We have already noticed that Hazor, I Kings 9:15, says that Solomon rebuilt "Hazor and Megiddo and Gezer." At Megiddo a great city gate, 60 feet in length, has been unearthed, and most scholars agree that it comes from Solomon's operations. Yadin suspected that a similar plan might have been followed at Hazor, and on this assumption the excavators outlined on the surface the plan of Solomon's city gate. The workers thought it almost magical when they saw emerging from the dirt under their shovels a gate exactly the size and type that had been predicted. The Biblical statement that Megiddo and Hazor were both rebuilt by Solomon is strikingly confirmed; those scholars who had alleged that the Megiddo gate came from a time later than Solomon are proven wrong; it is even indicated that both gates were built by the same royal architect. Reconstruction of them as they appeared before the invasions, with six chambers, three on each side, and square towers on the external walls, vividly illustrates the glory of Solomon's empire.

Thus in archaeology, as in every other science, discovered facts, if properly interpreted, and Biblical statements, if rightly understood, are always found to fit together, since God is the author of both.

The Palace of Croesus

In a later issue of the Journal attention will be paid to the important recent excavations in various parts of Jordan. This time we shall direct our attention to an interesting discovery in a different part of the world.

Every Bible reader is familiar with the letters to the seven churches of Asia, in Revelation 2-3. One of these is the letter to Sardis. Sardis was an important city all through the Hellenistic period, and indeed until its destruction by Tamerlane in 1402. The site has never been lost. It contains striking ruins of Greek temples, finely decorated Greek houses, etc. These have been examined at various times by students of the Hellenistic age, and have thrown much light on the culture and life of that period.

Students of ancient history, however, long to know something about Sardis at an earlier time, when it was the capital of Lydia. The last king of Lydia was the famous Croesus, whose name has become proverbial for great wealth. Yet all the ruins found until this summer were from the Greek period or later. The whereabouts of the Lydian Sardis remained a mystery. Almost the only clue was a statement in an ancient writer that the Sardis gymnasium was within sight of the royal palace of Croesus. And no one knew where the gymnasium had been.

Toward the end of this summer's campaign of excavation at Sardis by the Harvard-Cornell expedition,

a marble block was found with an inscription stating that the Roman Emperor Lucius Verus had given a sum of money to the gymnasium. On the assumption that the building in which the block was discovered might perhaps be the gymnasium referred to, the adjoining area was examined with great care, and traces were found under a luxurious Roman house of remains of the ancient Lydian culture. It is to be expected that next year will give opportunity to follow this clue, and, we hope, to learn something about a large section of important ancient culture that is almost unknown as yet.

The kingdom of Lydia came to an end, when Croesus was defeated by Cyrus, the Persian conqueror whom God raised up to free His people from the exile. Isaiah vividly predicted the terrible fear of the nations as they would see the armies of Cyrus approaching, and would look to their idols for help. Greek tradition has preserved conflicting stories of the last days of Croesus, and his wild search for safety from Cyrus. Such passages as Isaiah 41:1-10 may well find new illustration as their background becomes clearer, as the life and history of Croesus and his kingdom become better known in coming seasons of excavation at Sardis.

BIOLOGY

I. W. Knobloch, Ph.D.

The Foundations of Science

By Sheldon J. Lackman

Detroit, Michigan, Hamilton Press, 1956

This is a small book of 130 pages designed to acquaint the young college student with the nature and operation of that which is called Science. Despite the fact that it is slanted at the college student, it is a book which may profitably be read by all scientists and all those interested in science. Many teachers of elementary science courses cannot give a clear lecture on the nature of science because (1) they were never instructed in the anatomy of science by *their* teachers and (2) they are now so busy teaching facts that they feel they cannot spare the time to learn about it. A careful reading of Lackman's book will dispel many erroneous notions now extant about the nature and operation of Science. A few examples of what one may find in the book are as follows: The Axioms of Science— 1. The reality of space, 2. The reality of time, 3. The reality of matter, 4. The quantifiability of matter, 5. The general regularity of the Universe (we can roughly duplicate experiments), 6. The reality of cause and effect relationships (the existence of determinism), 7. The belief that man can eventually gain an understanding of the physical and biological world

(we are optimistic).

In another part, Lackman gives the Characteristics of Science as follows— 1. Science is amoral, 2. Objectivity, 3. Carefulness and vigilance in investigation, 4. Skepticism toward absolutism, dogmatism, authoritarianism (one avoids over-generalizations), 5. Concept of theory construction and utilization (unite isolated areas by means of theories), 6. Concept of parsimony (economy in the use of unverified assumptions) 7. Concept of reductionism (the making of laws, the amalgamation of related generalizations into principles or laws).

He compares science with other ways of dealing with human experience. Science, he says is empirical, first hand information. It is opposed by authoritarianism which says all is known and no further search is necessary. It opposes intuitionism which says no sensory observation is necessary—all is innate. It stands in contrast to rationalism which asserts that knowledge can be acquired through reasoning processes by inference from *a priori* concept and lastly, it opposes subjectivism, the idea that the validity of knowledge depends upon one's feeling states and no confirmation is necessary.

One more example will do. He belabors the extremists in science methodology when he says that although theories are deductive in function, they are either accepted or rejected in the extent that supportive evidences are acquired (or fail to be acquired) through the inductive method of science. In other words, I would add, that theories are never displaced by another theory *per se* but only by the accumulation of data gathered empirically, which data may be sufficient to enable one to erect another theory.

I have devoted so much space to this book because it is my opinion that most books dealing with the nature of science are slanted at too high a level for the student or are so wordy that the main points are obscured by the verbiage. I might add that Lackman is at Wayne University in Detroit. The address of the Hamilton Press is 800 Fox Bldg., Detroit, 1, Mich.

CHEMISTRY

Walter R. Hearn, Ph.D.

I think this new experiment is working: our get-together at the A.C.S. meeting in Chicago on September 9 seemed to me to be a tremendous success. *Walter Erickson* had arranged for a banquet room at the Como, a very fine Italian restaurant convenient to the Loop. Some of us found ourselves a bit lost in the menu—surrounded by all that ravioli, cotollete di agnello, aragosta, and spumoni—and a few timidly ordered the first thing they recognized (the spaghetti was

excellent, grazie). Seventeen chemists attended the dinner, several A.S.A. members being unable to make it because of other engagements on Tuesday night. I gave a brief review of the 1958 Annual Convention and then *Delbert Eggenberger*, Editor of the *Journal*, gave an excellent talk on the past, present, and future of the A.S.A. Finally, we had an open discussion about what the Affiliation is doing and what it ought to be doing.

One of the things we discussed was what we would like to do at these get-togethers at A.C.S. meetings in the future. Several fellows suggested that just getting acquainted was worthwhile, no matter what kind of program we had. One of the things that impressed me about this meeting was that I kept running into friends attending the A.C.S. who might be interested in the A.S.A., so I carried a few mimeographed notices of our get-together in my pocket during the sessions and was able to invite half a dozen fellows. Several of those I invited did attend the get-together and expressed an interest in the A.S.A. as a result. Furthermore, one chemist who had never heard of the A.S.A. saw the small poster I put up at the registration desk and came on his own! He said he was a Christian who was just looking for this kind of group to have fellowship with. So one obvious reason for our getting together as a group at national meetings is to spread the word about our Affiliation. I found it easy to let some of my chemist friends know of my faith in Christ merely by telling them I would be busy that night "because I was getting together with a bunch of other Christian chemists for dinner and fellowship. Would you like to come along?" In fact, this seems to offer one of the best approaches for witnessing to colleagues I've found in a long time.

Another valid reason for meeting seems to be to provide some wholesome fellowship for lonesome chemists away from home and pooped out after two or three days of technical papers and professional gossip! Beyond that, most of the fellows at the Chicago get-together seemed to favor having considerable variety in the programs we plan; suggestions included papers such as those presented at our Annual Conventions, discussions of problems of a Christian in scientific work or college teaching, devotional fellowship with hymn-singing, prayer, and sharing of experience, and perhaps occasionally a talk by a theologian or philosopher to put our scientific work in proper perspective. If you have other suggestions, let me hear from you. Let's see, it's Boston in April and Detroit in September, I believe. I've already written to *Irving Cowperthwaite* to ask him to make the arrangements for the Boston meeting.

The proposal has already been made that we start an A.S.A. Newsletter to come out more frequently than the *Journal*, a mimeographed sheet to carry news of such events as our A.C.S. get-togethers and also

local section news. If a Newsletter becomes a reality, it will make it much easier to notify you in advance of time and place, and should increase the number in attendance.

Now to continue introducing some of our chemists I have heard from in the past year:

Robert E. Jervis, Box 61, Deep River, Ontario, wrote to me last spring that he was particularly pleased with the idea of A.S.A. get-togethers during A.C.S. meetings. He said that Canadian A.S.A. members have felt a little cut off from the rest of us and that he would welcome the opportunity to meet other members. I understand Dr. Jervis was able to attend the get-together at the San Francisco A.C.S. meeting, where he also gave a paper in the Radiochemical Analysis symposium. Dr. Jervis took his Ph.D. work at Toronto, but he neglected to tell me his present connection.

John H. Pollak is now at National Lead Company, 2545 Aramingo Avenue, Philadelphia 25, Penna., where he is a Senior Chemist in the Oils and Resins Laboratory. I enjoyed meeting Dr. Pollak at the A.S.A. get-together in Philadelphia in April. He received his doctor's degree from the University of Vienna in Austria, and has published several papers in *Kolloid-Beihfte* and *Monatshefte*. He has been a member of A.S.A. for less than a year; before his move to Philadelphia I know he was a member of the Brookdale Baptist Church in Bloomfield, New Jersey.

Stephen W. Calhoon, Jr., who teaches chemistry at Houghton College, Houghton, New York, is another relative new-comer to the A.S.A., having been a member for only little more than a year. When I last heard from him he was planning to spend the summer at Ohio State working on properties of ultra-pure metals under Dr. W. MacNevin in the analytical division. He told me also that Houghton was hoping to increase their staff in chemistry this year.

Frank O. Green, Professor of Chemistry at Wheaton College, Wheaton, Illinois, spent last year at Mt. Vernon Hospital in Northwood, Middlesex, England, working in the Research Unit in Radiobiology as part of the British Empire Cancer Campaign. He worked with the Ehrlich ascites tumor from white mice, studying differences in glucose metabolism between the tumor cells and normal cells. He also investigated the relation of paramagnetic materials to radiosensitivity; since para-magnetic oxygen enhances the therapeutic effect of X-rays, it was hoped that some other paramagnetic substance, not involved in metabolism as is oxygen, might have the same effect. This work will probably be published in British journals. Frank has his Ph.D. in organic from Northwestern, but has been getting interested in biochemistry in the last few years. While teaching at Wheaton, he has studied at night

school at the U. of Chicago, and has done biochemical work for several summers at the Argonne National Labs. Last year was not his first experience abroad; in 1952 he went to Egypt as a Fulbright Lecturer at the University of Cairo and Ibrahim and had a very interesting and informative time. While there he wrote the article on Egyptian Chemical Industry for the series running in *C. & E. N.* at that time.

Edwin A. Olson, Lamont Geological Observatory, Palisades, New York, wrote me that geochemists like to consider themselves as both geologists and chemists. Those of you who attended the 1957 Annual Convention will remember the excellent paper Ed presented on radiocarbon dating; this year he has been a co-author on several papers on the contamination problem in radiocarbon dating. He is working toward a Ph.D. at Columbia. Ed wrote me about a 13-week series on Modern Science and Christian Faith that took place last spring in the adult Sunday school class of Grace Baptist Church at Nanuet, New York. The series was led by him, *Don Carr*, and *Art Schulert*; *Wayne Frair* also came down from The King's College to help them out one Sunday. I'd like to hear more details about what they actually presented and how well it went over. Have any of the rest of you had any experiences with such a project? Let's compare notes!

Herbert L. Hergert is with the Olympic Research Division of Rayonier, Inc., Shelton, Washington, doing fundamental research on the constituents of trees with emphasis on the utilization of materials now going to waste in the manufacture of chemical cellulose. His work includes studies on plant phenolics, waxes, carbohydrates, and lignin, and his papers have appeared chiefly in *J. Am. Chem. Soc.* and *J. Org. Chem.*; his hobby is paleo-botany, and he has published at least one paper in this field also. Herb's Ph.D. from Oregon State was in organic chemistry, but he says he could best be described as a plant biochemist on the basis of the work he has been doing. He is active in the Conservative Baptist Church of Shelton, where he teaches a high-school age Sunday school class, leads an adult discussion group twice a month, and serves as a deacon and church organist. The Hergerts have four sons ranging in age from 2 to 8, but this doesn't seem to keep Mrs. Hergert from also being active in church work. Herb was able to attend the San Francisco get-together and told me that he really appreciated the fellowship with other A.S.A.'ers, being one of those "isolated Northwest-coasters."

Arthur A. Smucker is an Associate Professor of Chemistry at Goshen College, Goshen, Indiana. Goshen

is a liberal arts college with about 700 students and a chemistry department that has now expanded to three full-time faculty members. Art has been able to get some research started at Goshen for the first time, working on the isolation of the enzyme maltase under a grant from Research Corporation. Art's colleague, *Henry Weaver, Jr.*, has also received a grant from the same foundation, and the two of them are undoubtedly turning out some very capable potential graduate students as well as research. Art was a contemporary of mine at the U. of Illinois, where he also took a Ph.D. in biochemistry.

Incidentally, some of the rest of you who would like to "pioneer" in starting a research program in the small college in which you teach should write to Research Corporation, 228 North LaSalle Street, Chicago 1, Illinois, for information on their Frederick Gardner Cottrell grant program. One of the purposes of this program is the encouragement of research in small schools, especially those where research has not been supported in the past. The grants are usually in the range of \$500 to \$1500. You fill out only one copy of a two-page application form describing your proposed project and the budget for it; Research Corporation duplicates the form and sends it to several referees (usually the men you list as references) for evaluation and then lets you know rather promptly whether or not you have been awarded a grant. They ask for regular progress reports, preferably quarterly, but are very pleasant and encouraging to deal with. I will always feel indebted to them for the grant which enabled me to get started in my own research program, and which allowed me to obtain enough results to justify application for continuing support from other sources. Furthermore, when a later application of mine on another problem was turned down by Research Corporation, Mr. Walter E. Thwaite, Jr., their Midwest Field Representative, told me the bad news in such a nice, encouraging letter that it softened the blow considerably. You can't ask for better treatment than that! The same foundation handles several different types of grants, so describe your situation briefly when you write for information so they will know that you are interested in the Cottrell grant program.

I hope you are planning to attend the joint meeting of the A.S.A. with the Evangelical Theological Society in Chicago in June. The whole meeting will be devoted to a Christian Philosophy of Science, a subject of great importance to us all but about which most of us have given only superficial thought. This could be a meeting of historic significance to evangelical Christianity. Don't miss it

GEOLOGY

Wayne V. Ault, Ph.D.

The Geology Column this issue finds me relocated in Hawaii—the Orchid Isle. Perhaps a word of explanation is in order. Geo-scientists are aware of the increased emphasis on volcanic research in recent years. The U. S. Geological Survey has expanded its facilities at the Volcano Observatory located at Kilauea Crater to include geochemical studies of volcanic materials in addition to the geophysics (seismology and tilt measurements) and geology (petrology and mineralogy) which have previously been the dominant emphasis. This mid-ocean location for study has a number of advantages. The Hawaiian Islands are surface expressions of the long chain of sea-mounts located along one of the major rift structures of the earth, extending for over 1500 miles across the Pacific in a w.n.w.-e.s.e. direction. Only a few of these seamounts are tall enough to be islands and mountains, the highest peak being Mauna Kea, which stands 13,784 feet above sea level. This plus the three-mile ocean depth places them among the tallest mountains (above their base) of the world. The land forming processes of volcanism have evidently progressed toward the s.e. where the Island of Hawaii has the only volcanoes along this chain which have been active in recent years. The oceanic basaltic province is a unique setting where the rock types are a minimum and where the earth's crust is only about five kilometers (three miles) thick. In historic time the eruptions, which occur on the average of every few years, have seldom been explosive and the fluid lava has been approachable for study.

The mountainous character of the islands in the trade winds belt results in a whole spectrum of climate and vegetation. Mountain tops have their snow in winter while at sea level one is in the tropics. Climatic zone descriptions of the Galapagos Islands (*Life*, September 8, 1958) could just as appropriately be applied to Hawaii. On the leeward side of the mountains arid conditions with its cactus and barren lava rock may extend from the coast up the mountains. In other areas the tropical sea level conditions give way to the rain forests (from roughly 2,000 to 4,000 feet elevation) which are thus named because it rains or mists much of the time. There are a number of varieties of orchids and ferns. The Amaumau fern (*Sadleria* sp.) may grow to a height of 9 feet. Tree ferns (*Cibotium* sp.) may attain a height of 40 feet. The trunk of the tree fern is a perfect host of the orchid and is harvested for the growing of domestic orchids. Ohia trees (*Metrosideros collina*) with their bright scarlet pom-pom flowers are the native trees of the islands which predominantly make up the lichen covered forests. The

forests are nearly impenetrable and also dangerous because of the gaping cracks which may be hidden from view and may be 50 feet deep. In the "cultivated" areas coffee trees seem to be growing right out of the rough lava rock topography and sugar cane is grown on land where there is barely enough ash cover to facilitate planting. This is only possible because it frequently rains in Hawaii. (*National Geographic Magazine*, November 1949).

On our trip across the United States we had the opportunity of seeing a number of our National Parks. Many of these have preserved the grand and awesome works of nature and especially excellent illustrations of geological processes and resulting landforms. The vivid education in geology obtained may be the only geology many people get. There is a phenomenal increase in the number of visitors who annually tour the National Parks and this is attributed by various writers to the better explanation or interpretation of the sights they behold there. Some of the most vivid geologic displays including relief maps and models are found in the museums and visitor's centers of our National Parks.

Everyone who visits Washington, D. C., and is interested in geology should know that there is an excellent museum in the U. S. Department of the Interior Building. One of the displays is a very graphic representation of geologic time and the fossil record.

Dinosaur National Park in the Uinta Mountains of Utah features an ultramodern museum built on a hill-slope against the dip of the Morrison Shale and shows a fossil dinosaur skeleton in process of being excavated (featured in *Geotimes*, July-August, 1958). The Utah Field House of Natural History in nearby Vernal, Utah has a reconstruction showing evidence of eight different fossil forests in the formations of the Uinta Mountain and Basin Area of n.e. Utah covering a time span from the Carboniferous to the Tertiary. This rates with the well known sequence of eighteen fossil forests inter-layered with volcanics in a 2000-ft. section of Amethyst Cliffs in Yellowstone National Park (Schucert and Dunbar, *Outlines of Historical Geology*, 4th Edition, 1941). These are unmistakable evidences of long periods of time of which the Christian public should be made aware.

One experiences a thrill in standing on the rim of the Grand Canyon and with the aid of field glasses looking as it were back through the pages of natural history into distant geologic time. From such a point one is able to see the tremendous geologic section which God has opened to our view by the incision of the Colorado River. The span of geologic time represented is from the Vishnu schist intruded by pegmatites and granites dated by radioactivity as at least 1.1 billion years old to the Kaibab limestone forming the North Rim (Permian) to the formations of the Paint-

ed Desert (Triassic) and even to the volcanics of the San Francisco Mountains near Flagstaff, Arizona, which are Tertiary in age.

Rocky Mountain National Park and Yosemite excel in the variety of features—cirques, moraines, U-shaped valleys, etc.—which are products of glacier activity. The evidence for reconstructing the geologic history is clearly presented.

One planning to travel to any of the above mentioned areas can review what is known of the geology of the area in such publications as the *Professional Papers and Folios* of the U.S.G.S. which are available at nearly any geology library. But even better, the information in these technical publications has in numerous cases found its way into popular editions with excellent photographs; and these are reasonably priced. Such are the books *Sequoia National Park — a Geological Album* and *The Incomparable Valley — a Geologic Interpretation of the Yosemite* by no less an authority than the late F. E. Matthes (F. Fryxell, Ed.); and *Story of the Grand Canyon — How it was Made* by N. H. Darton.

Our National Parks, preserving and making intelligible some of the spectacular wonders of God's nature is part of our great heritage to be used, enjoyed, cherished and protected. It should give us all an increased appreciation for geology. A stepped-up cooperative interpretation program between the National Park Service and the Geological Survey is in process and will facilitate much more geologic information to get from the scientific publications to the public.

There may be some who would appreciate knowing that there is an ever increasing coverage of the geologic, topographic and relief maps available at very reasonable prices. A post card addressed to Map Service, U.S.G.S., Washington 25, D.C. will obtain a publication showing what is available. Also from the Superintendent of Documents, U. S. Govt. Printing Office, Washington 25, D. C. a booklet listing "Camping Facilities in the National Park System" can be had for 15 cents.

The U. S. Geological Survey has recently released a very spectacular 16 mm. color, sound movie on the 1955 eruption which occurred along a rift of the Kilauea Volcano. It shows rock geysers 800 feet high and rivers of molten rock flowing about 35 mph toward the ocean. Interested groups may request it from the U.S.G.S. at Washington 25, D.C.; Denver Federal Center, Denver, Colorado, or 4 Homewood Place, Menlo Park, California.

Articles on a theory of the cause of the ice ages have appeared in *Harper's Magazine* (September 1958) and the *Reader's Digest* (November 1958) and are summaries of those published in *Science* (123, p 1061-1066, 1956; 121, p 1159-1162, 1958.)

In this issue of the Journal we will begin introducing some of the ASA members who are earth scientists. (We may have to find a more inclusive term if and when some are able to extend their studies to the moon and other planets.) A large percentage responded but there are a few from whom I have not heard. If there are any geologists, geochemists, geophysicists, meteorologists, etc., who did not receive a questionnaire please pardon the oversight and write me, Hawaii National Park, T. H. May I also encourage you to make this your column and share with others your interests.

Harley Barnes has recently transferred to the Denver Federal Center, Bldg. 25, Denver, Colorado. He is a geologist with the U. S. Geological Survey. Harley obtained his B.S. from Wheaton College in 1937; M.S. from Northwestern University in 1939; and Ph. D. from Johns Hopkins University in 1954. He is a member of the Geological Society of America, American Association of Petroleum Geologists, Geological Society of Washington, the Wyoming Geological Association, and became a member of ASA in 1947. He is currently engaged in geologic field mapping to determine the Pre-Cambrian structure in the Wind River Basin, Wyoming. Previously he has had experience in mining with the N. J. Zinc Co., in Colorado. His field work for the U.S.G.S. and the Philippine Bureau of Mines took him to the Philippines for a number of years. He is joint author of papers on geology and fuel resources in Colorado and of geology and coal resources in the Philippines. Dr. Barnes is getting located in a new church home in Denver and would enjoy the fellowship of other ASA members in that area. He continues his interest in International Students Incorporated—one of the most worthy home missionary groups which seeks to befriend and win for Christ those visiting foreign students who are studying in our colleges and universities.

Ivan W. Brunk is a meteorologist with the U. S. Weather Bureau and resides at 43 N. Glenview Ave., Lombard, Illinois. Ivan majored in mathematics and physics at Goshen College and received his B.A. in 1935. He is a member of the American Meteorological Society and has been a member of ASA since 1948. He has authored a number of articles in meteorology and is doing research on the relationship of rainfall and the levels of the Great Lakes. His administrative duties also have involved public relations and forecasting. Ivan is active in the Mennonite Church where he is a trustee and chairman of Evangelism and Service Commission.

Cordelia Erdman Barber also has a new address: Box 68, Big Creek, California. She is now home executive as the mother of two children and says this has alter-

ed her professional activities for the next few years. Cordie received her B.S. from Wheaton College in 1946 and specialized in paleontology for the M.A. at Columbia University in 1949. For several years she taught geology at Wheaton College and has made a number of contributions to the ASA Annual Convention program and publications. Presently Cordie is active in the Big Creek Community Church where she is pianist.

Howard Ross Cramer is Assistant Professor of geology at Franklin and Marshall College and resides at 307 N. West End, Lancaster, Pennsylvania. He received his Ph.D. from Northwestern University in 1954 and is a member of Sigma Xi, American Association of Petroleum Geologists, Geological Society of America, Pennsylvania Academy of Science and American Association for the Advancement of Science. Howard teaches undergraduate geology and carries on his research on fossil starfish. He is the author of a number of technical papers relating to his research interests. Dr. Cramer is active in the Baptist Church as a teacher, in the choir and as chairman of the Board of Education.

Richard Scott Mitchell is Assistant Professor of geology at the University of Virginia, Charlottesville, Virginia. He received his B.S., M.S., and Ph.D. from the University of Michigan where he majored in mineralogy. Richard is a member of the Geological Society of America, Mineralogical Society of America, American Crystallographers Association, Sigma Xi, Sigma Gamma Epsilon, and joined the ASA in 1953. He teaches mineralogy, petrology and crystallography in addition to his research on crystals and crystal growth. Dr. Mitchell's technical publications include studies on polytypes of silicon carbide and cadmium iodide. He is active in the Baptist Church and is adviser to the Virginia Christian Fellowship which is the local Inter-Varsity Christian Fellowship group.

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PHILOSOPHY

Robert D. Knudsen, Ph.D.

Karl Jaspers on the Meaning of Science, III

Karl Jaspers says that we cannot know the meaning of science. If a sense of science is to appear, it can be only by way of a movement of transcendence, which is fundamentally different from knowing.

The sense of science can be approached only by philosophy. The method of philosophy is not that of science. It does not give us a body of knowledge. The method of philosophy is that of transcending beyond the object of thought.

By way of what he considers to be a transcending movement of thought, Jaspers discovers what he calls the "all-enclosing" or "all-encompassing" (*Umgreifende*) which establishes the sense of science, i.e., consciousness in general.

Science is carried on according to the sense of consciousness in general. It gives us particular items of knowledge, which are available and testable by everyone. This knowledge comes with the claim to be universally valid, compelling insight. That it has universal validity means that its truth is valid for everyone. That it is compelling means that any neutral observer is forced to acknowledge its validity.

In terms of the all-enclosing of consciousness in general, Karl Jaspers wishes to establish a transcendental justification for the truth of scientific investigation. But he holds that the truth of science is only one mode of truth among others. Truth is not to be identified with that which is universally valid and compelling knowledge. There are other modes of truth, founded in their own all-enclosings, e.g., immediate vitality, spirit, true selfhood.

As we mentioned in an earlier column, Jaspers holds that it is only because of the impulse of another mode of truth, possible selfhood (*mögliche Existenz*), that the area of scientific knowledge even becomes delineated, restricted to its proper sphere. Absolutizing science, that is, considering its sense to be the only mode of truth, is destructive of true selfhood. It is the drive of latent selfhood in man that leads him to be dissatisfied with the absolutization of the object of knowledge and that leads him to delineate the special sense of truth which is characteristic of scientific thought.

For Jaspers universal validity and compellingness belong together. They are two inseparable moments of the sense of consciousness in general. Therefore, anything that is not compelling to the neutral observer

cannot have general validity. It cannot be a truth which all men ought to accept.

The items of scientific knowledge come with the claim to general validity; but science offers only partial insights. No view which would set forth the meaning of the world as a whole can claim universal validity. Thus no view which can grasp man's selfhood can claim universal validity. When one comes with an interpretation of the whole, he has gone beyond the sense of consciousness in general. Universal validity is reserved for items of compelling knowledge.

As I have shown in my thesis, *The Idea of Transcendence in the Philosophy of Karl Jaspers* (Kampen: J. H. Kok, 1958), Jaspers' position involves a fundamental antinomy. One cannot claim universal validity for his world view; nevertheless, one cannot think of his world view as being simply one out of a number of other possible world views. One hears the transcendent (God) speaking through that to which he is unconditionally committed. Nevertheless, one must be ready to acknowledge that the transcendent can speak also through opposing world views. This admission may not loosen one's commitment to his own view, by relativizing it.

For the Christian philosopher the question arises whether one can sever ultimate truth from the claim to universal validity without involving oneself in a nest of antinomies. How can one hold unconditionally to a view, and yet admit that God can speak also through contradictory views?

As we mentioned in the first column on Jaspers' philosophy, he says that it is impossible to know that science is or should be to the glory of God. This denial leads us to ask again about the Scriptural foundation for the meaning of science. That sense can be discovered in the divine command to subdue the earth. Its first enactment can be found in the dressing of the garden and in the naming of the animals. It showed itself after the fall into sin especially among those who were of the line of Cain, where man began to erect for himself a human civilization, torn loose from obedience to God.

The Christian should understand the task of science as being part of man's obedience to the divine command to subdue the earth. That does not mean that all Christians need be scientists; but it means that the Christians who are called to be scientists should see their scientific endeavor as a calling from God. Scientific endeavor for the Christian has its own legitimation. It is not of value only to provide illustrations for evangelistic purposes, though it need not be denied that analogies of spiritual truths can be found in nature. Nor is it of value only for apologetic purposes, to provide evidences for the truth of the Scriptures, though it need not be denied that wherever the Scriptures speak they speak truly. For the Christian science has its place, its own legitimation, and the Christian may be a "pure"

scientist, without any "outside" ends in view. In so far we can agree with Karl Jaspers, that science must have a legitimation other than its use for an external purpose. We cannot agree, however, that this legitimation cannot be "known".

To Jaspers our position may seem contradictory, for he would not allow any known meaning that is not for some external purpose. Nevertheless, we find that the meaning of scientific endeavor resides in the divine command, and we also claim that this sense should be that of all labor in the field of science. Scientific endeavor should be to the glory of God.

Westminster Theological Seminary

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SOCIOLOGY

Russell Heddendorf, M.A.

At times, it is appropriate to view the roots of one's ancestral tree from its contemporary extremity. In the case of ASA, it is particularly rewarding and challenging, for our original ancestor was of a particular stalwart nature.

In their attempts to study the many facets of society, sociologists constantly return to the study of the relationship of systems of knowledge with social systems. The most significant vein which has been traced in the sociology of knowledge is the reciprocal relationship between science and society. Lately, this has become increasingly concerned with the impact of society upon science.

In his studies in this area, Professor Robert Merton of Columbia University has indicated that a scientific view requires a particular social environment for proper growth. He has chosen the Puritan ethic of the 17th century as an ideal expression permitting the cultivation of the scientific view which was nurtured at this time. "The deep-rooted religious interests of the day demanded in their forceful implications the systematic, rational, and empirical study of Nature for the glorification of God in His works and the control of the corrupt world."¹ In comparing the Puritan society of the day with the more numerous Catholic societies, he points out that the former was particularly in agreement with the requirements of modern science. "The positive estimation by Protestants of a hardly disguised utilitarianism, of intra-mundane interests, of a thorough-going empiricism, of the right and even duty of 'libre examen', and of the explicit individual questioning of authority were congenial to the very same values found in modern science."² This conflux resulted in the eventual flowering of the Royal Society.

The leading lights of the early Society, such as Boyle and Ray, had as their conviction the belief that the end and all of existence was the glorification of God. It is this view which provided for the objective and systematic observation of natural phenomena, since "if Nature is the manifestation of His power, then nothing in Nature is too mean for scientific study."³ Merton notes that although Catholic predecessors of the Puritans conceived that study of nature should have as its end the glorification of God, it was the scientific method of the Puritans which made the achievement of the end a reality.

The particular relationship between Puritanism and its effect upon the Royal Society becomes more pointed when it is realized that forty-two of the sixty-eight original members were clearly Puritan. "Considering that the Puritans constituted a relatively small minority in the English population, the fact that they constituted sixty-two per cent of the initial membership of

the Society becomes even more striking."⁴

The critical point here, however, is that this was not principally an apologetic group. Rather, the ethos of each force was so compatible with each other that there was a mutual strengthening. This is a fact worthy of much reflection in a day when the secular view of religion and science is that they are at polar extremes. Is there a social environment which may once again draw the poles together? What types of social development might bring together a unique compatibility of the spirits of Protestantism and science? What, if any, changes in religion and science would be necessary for the development of such a conflux? What would be the role of ASA relative to such changes?

1 Robert Merton, *Social Theory and Social Structure*, Glencoe, Illinois; The Free Press, 1949, p. 329.

2 *Ibid.*, p. 346.

3 *Ibid.*, p. 335.

4 *Ibid.*, p. 337.

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Yardy, Paul W.
Santa Monica
Everest, F. Alton

Sepulveda
Miller, Clyde E.
Shafter
Wilson, James V.
South Laguna
Gadske, June
Sunland
Zook, Alfred G.
Ventura
Blount, George H.
Walnut Creek
Curran, Thomas D.
Whittier
Graham, Thomas M.

COLORADO

Broomfield Heights
Miller, David R.
Colorado Springs
Hitchcock, Eldon T.
Rayburn, James C.
Denver
Barnes, Harley
Clapp, Wesley M.
Hathaway, Claude M.
Fort Collins
Reyburn, William (Mrs.)
Golden
Hepworth, Malcolm T.
Mathews, Franks S.
Greeley
Kennedy, E. James
LaJolla
Amstutz, Edna
Pueblo
Sommers, Myron

CONNECTICUT

Darien
Averell, Philip R.
New Haven
McIntyre, John A.
New London
Snow, Willis J.
Talcottville
Howard, Leland L.

DELAWARE

Claymont
Houghton, Francis D.
Farnhurst
Drury, John T.
Greenwood
Grassmyer, A. Fay
Newark
Martin, J. Robert
Olney, Harvey O.
New Castle
Nersasian, Arthur
Pipenberg, Kenneth J.
Wilmington
Brace, Neal O.
Brady, James D.
Brightbill, Edgar N.
Clayton, John W., Jr.
Saadeh, William R.
Schlabach, Walter E.
Schaffers, Wilhelmus J.

DISTRICT OF COLUMBIA

Craddock, F. Harper
Page, Robert M.
Potter, Raymond S.
Statler, Richard L.
Walter, Dean I.

FLORIDA

Hollywood
Wolstenholme, Marilyn
Miami
Schwartz, Charles E.
Weiss, A. Kurt
Oviedo
Strickler, Richard E.
Sarasota
Shank, Ernest C.
St. Petersburg
Phillips, Ronald C.
Tallahassee
Tanner, William F.
Tampa
Brewer, Wesley D.
Tarpon Springs
Congdon, M. Stanley

GEORGIA

Atlanta
Carpenter, Dewey
Augusta
Dillard, George P.
Columbus
Webber, Joe M.
Decatur
Anderson, Howell B.
Thomasville
Saye, Ernest B.

IDAHO

Boise
Burkholder, Maurice M.
Idaho Falls
Fast, Edwin
Priest River
Baylor, J. Wright

ILLINOIS

Bismarck
Moss, Hugh E.
Bourbonnais
Rice, David
Bradley
Bushey, Clinton J.
Cerro Gordo
Crown, Charles W.
Chicago
Arnold, Glenn C.
Busby, David F.
Clater, Merlin
Erickson, Wallace A.
Haslett, Jared W.
Hemwall, Gustav A.
Joss, Charles A.
Larson, Donald N.
Lowe, Edmund W.
Lowell, Ralph D.
Olson, Franklin A.
Paine, Hugh, Jr.
Schultz, Arnold C.
Seaman, Lauren I.
Spinka, Harold M.
Thornbloom, Wallace D.
Walker, George A.
Young, G. Douglas
Cicero
Van Reken, Everett
Delavan
Neumann, Roger E.
Des Plaines
Roth, George V.
Downers Grove
Eggenberger, Delbert N.
Hummel, Charles E.
Elmhurst
Roth, Linwood E.
Steiner, Bradford E.

Evanston
Sunderland, J. Edward
Flanagan
Crout, George T.
Hines
Jones, Harold N.
Kankakee
Bushey, Clinton J.
Libertyville, Ill.
Matson, Edward J.
Lombard
Brunk, Ivan W.
Monmouth
Rawlings, Floyd F., Jr.
Mound City
Stuart, A. Ashley
Naperville
Boebel, F. W.
Normal
Troyer, Dana O.
Oak Lawn
Tahmisian, Theodore N.
Oak Park
Frisbey, Norman
Hyde, John S.
Olney
Pass, James H.
Orion
Wheeler, Norman G.
Peoria
Cummings, Thomas
Wise, Carl S.
River Forest
Klotz, John W.
Kruse, Wilfred F.
Stillman Valley
Hoisington, Raymond E.
Villa Park
Scorza, Arnold
West Chicago
Foster, David C.
Western Springs
Carlson, Paul O. L.
Wheaton
Adolph, Paul E.
Bate, George L.
Block, Douglas
Boardman, Donald C.
Brinks, Henry L.
Buswell, James O., III
Claassen, Howard H.
Gieser, Kenneth P.
Green, Frank O.
Harlow, Robert E.
Houser, Frank E.
Kraakevik, James H.
Lageschulte, Ivan W.
Luckman, Cyril E.
Marquart, Philip B.
Mixer, Russell L.
Muir, Douglas W.
Murk, James M.
Parmerter, Stanley M.
Stecca, Anthony J.
Wright, Paul M.

INDIANA

Anderson
Buehler, John
Tinkle, William J.
Berne
Sprunger, Edgar
Bloomington
Elmore, Austin D.
Fischer, Robert B.
Zeller, Frank J.
Bluffton
Yoder, Richard P.

Butler
Gardner, John N.
Crawfordsville
Salter, Lewis S.
Elkhart
Baker, Robert J.
Fort Wayne
Horton, E. Randall, Jr.
Stipe, Claude E.
Witmer, Safara A.
Gary
Kramer, Wilbur C.
Goshen
Bender, Paul
Bishop, C. Franklin
Blosser, Fred B.
Krabill, Willard S.
Moser, Arthur L.
Pletcher, William D.
Schrock, Alta E.
Smucker, Arthur A.
Speckeen, Fred J.
Swartzendruber, Jacob F.
Troyer, Dana O.
Weaver, Henry, Jr.
Witmer, S. W.
Yoder, Jonathan
Zimmerman, Lester
Hamlet
Leinbach, Earl R.
Huntington
Coleson, Edward P.
Indianapolis
Eckert, Alfred C., Jr.
Fox, Ralph E.
Kornfeld, Edmund C.
Lafayette
Stanley, Paul E.
Logansport
Cobb, Beulah Marner (Mrs.)
Marion
Hodson, Margaret E.
Porter, Donald H.
Milford
Rheinheimer, Floyd L.
Montpelier
Key, Thomas
Key, Frances B. (Mrs.)
Nappanee
Roose, Lisle W.
North Manchester
Dotterer, J. E.
Neher, Oscar W.
Rensselaer
Smucker, Silas J.
Shipshewana
Bontrager, Marion M.
Syracuse
Shank, Wendel R.
Upland
Barkman, Paul F.
Cross, Hildreth M.
Wakarusa
Weldy, M. L.
West Lafayette
Buschert, Robert C.
Cunningham, Robert W.
Pubols, Merton H.
Swartzendruber, Dale
Winona Lake
Bauman, Paul R.
Hoyt, Eldon D.
McClain, Alva J.
Rea, John
Woodburn
Bertsche, George J.

IOWA**Ames**

Hearn, Walter R.
Mason, Ronald B.
Robertson, Donald S.
Roth, C. Dean
Schenk, George H.
Worthington, Robert E.

Cedar Falls

Lyon, Howard W.
Cedar Rapids
Johannes, D. Delbert
Lortz, Harlan J.

Iowa City

Stoltzfus, Joseph C.

Kalona

Gingerich, Orle J.

Mt. Pleasant

Stanley, George M.

Otley

Den Hartog, Gerald T.

Waverly

Swensen, Alf W.

Wayland

Widmer, James G.

Wellman

Guengerich, L. Glen

Winfield

Widmer, Reuben

KANSAS**Emporia**

Cothran, John C.

Hesston

Krabbill, Vincent J.
Lichtl, Leonard
Yoder, Maurice A.

Hillsboro

Eitzen, A. C.
Loewen, Solomon L.
Wiebe, Vernon R.

McPherson

Johnson, Deryl F.

Meade

Nickel, Ted

Wichita

Blythe, Jack G.
Loewen, Henry H.

KENTUCKY**Georgetown**

Clark, Genevieve
Mullikin, Houston Y.

Wilmore

Chilton, Marvin L.
Hamann, Cecil B.
Howell, Henry H.
Pike, Julian M.

LOUISIANA**Bogalusa**

Sones, William C.

New Orleans

Beaumont, Donald F.
House, Richard D.

Pineville

Godfrey, Paul R.

MAINE**Skowhegan**

Jordan, W. Edward, Jr.

MARYLAND**Accokeek**

Harris, Franklin H.
Army Chemical Center
Mugg, Jarrell B.

Baltimore

Kac, Arthur W.
Kniss, Mark A.

Lane, Richard A.

Seip, William F.

Easton

Buchanan, Daniel C.

Gaithersburg

Well, John C., Jr.

Grantsville

Peachey, Ruth

Hyattsville

Nase, Erwin B.

Kensington

Judd, David E.

Pikesville

Watson, Robert L.

Rising Sun

Reisler, Ralph E.

Silver Spring

Blair, Byron E.

Elder, Samuel A.

Kirkland, Glenn I.

Sorrows, Howard E.

Wheaton

Swartzentruber, Paul

MASSACHUSETTS**Allston**

Whiteside, Haven

Andover

Riggs, Homer C.

Arlington

Herrmann, Robert L.

Auburndale

Kreider, Marlin B.

Belmont

Grondal, Bror J.

Beverly Farms

Peterson, Norvell L.

Cambridge

Bush, George C.

Danvers

Leith, Thomas H.

Milton

Cowperthwaite, Irving A.

New Salem

Hunting, Ward M.

Norfolk

Brown, Edwin W., Jr.

Stoneham

Gedney, Edwin K.

Sudbury

Barker, Harold E., Jr.

Waltham

Barrueto, Richard B.

Osepchuk, John M.

Peterson, Homer C.

West Wareham

Osborne, William D., Jr.

Weymouth

Ribbe, Paul H.

MICHIGAN**Ann Arbor**

Klingensmith, M. Joseph

Berrien Springs

Marsh, Frank L.

Cadillac

Posthuma, Millard M.

Dearborn

Winters, Howard E.

Detroit

Barnes, James H., Jr.

East Grand Rapids

Vis, William R.

East Lansing

Cressman, H. Keith

Cressman, Mary C. (Mrs.)

Knobloch, Irving W.

Miller, Lorin G.

Flint

DeGraaf, Donald E.

Gladstone

Maniaci, George D.

Grand Rapids

DeVries, John

Karsten, Martin

Miller, Charles J.

Monsma, E. Y.

Van Noord, Gelmer A.

Wassink, Harry

Holland

DeHaan, Robert F.

Folkert, Jay E.

Jekel, Eugene C.

Kalamazoo

Zimmerman, E. Elaine

Lansing

Ismond, Morrison D.

Ludington

Kleinschmidt, Gladys J.

Midland

Kroon, James

Owosso

Montague, Leon A.

Pontiac

Slater, Dwight M.

Wyandotte

Bacon, Henry K.

MINNESOTA**Mankato**

Hartzler, H. Harold

Minneapolis

Cameron, Robert H.

Condie, John D.

Hatfield, Charles, Jr.

Hunt, Robert E.

Jennings, George J.

Johnston, Lawrence H.

Logefell, Rudolph D.

Lucas, Raymond G.

Stone, Stanley P.

Van der Ziel, A.

Owatonna

Butler, Ervin B.

St. Paul

Moberg, David O.

Reed, Richard D.

Rodgers, Roy H.

Starkey, Lawrence H.

Tucek, Charles S.

MISSISSIPPI**Hattiesburg**

DeVries, David A.

Jackson

Elder, Fred K., Jr.

Potts, Warren N.

Vander Vennen, Robert E.

MISSOURI**Creve Coeur**

Buswell, J. Oliver, Jr.

Columbia

Roark, Glenn E.

Glendale

Barnes, Marion D.

Kansas City

Springer, Glenn

Wilson, Walter L.

Springfield

Frost, Robert C.

Horton, Stanley M.

St. Louis County

Bowerman, Harold H.

St. Louis

Harris, R. Laird

Jekel, James F.

MONTANA

Bozeman
Scherer, Roland G.
Harlem
Weinman, Robert E.
Missoula
Johnson, Wilbur V.

NEBRASKA

Lincoln
Ensign, Stewart, Jr.
Miller, Oscar W.
Milford
Jantze, Dale R.
Seward
Brandhorst, Carl T.
Meyer, Herbert A.

NEW HAMPSHIRE

Durham
Bullock, Wilbur L.
Farmington
Lord, Lois P.
Laconia
Snow, Richard M.

NEW JERSEY

Audubon
Speirs, Harold A.
Belle Mead
Bube, Richard H.
Bergenfield
Trotter, M. Edith
Cape May
Robbins, Noel A.
Collingswood
Crook, Evan H.
Johnson, Matthew E.
Delanco
Shipps, Hammel P.
East Orange
Breyer, Arthur C.
East Paterson
Schepp, William J.
Fairlawn
Glasser, John W. H.
Fort Lee
Snell, William A.
Haddonfield
Willits, Charles H.
Haddon Heights
Maatman, Russell W.
Little Falls
Radimer, Kenneth J.
Middlebush
Lubansky, John
North Caldwell
Von Bergen, Werner
Paterson
Pollak, John H.
Pennington
Marion, Milton G.
Pennsville
Ries, John F.
Plainsfield
Langmack, Holger C.
Princeton
Johnson, Betsy (Mrs.)
Holland, Heinrich D.
Scott, Kenneth M.
Ringwood
Paul, William W.
Riverdale
Heddendorf, Russell H.
Somerville
Lubansky, Harry
Verona
Allen, Roy M.

Westwood

Feely, Herbert W.
Zarephath
Dallenbach, Robert B.

NEW MEXICO

Albuquerque
Harrison, Charles W., Jr.

NEW YORK

Albany
Shaffer, Roy D.
Traver, Janet
Briarcliff Manor
Frair, Wayne F.
Gates, John F.
Gschaedler, Andre
Lothers, John E., Jr.
Brooklyn
Mehrling, John H.
Russell, Ronald H.
Bronx
Turekian, Karl
Buffalo
Montzingo, Lloyd J., Jr.
Post, Howard W.
Clarence Center
Worman, Robert K.
Egbertsville
Lalonde, Ernest R.
Elmira
Hostetler, Cletus
Falconer
Reno, Cora A.
Garden City, Long Island
Oehrig, Robert J.
Robinson, Douglas D.
Houghton
Calhoon, Stephen W., Jr.
Luckey, Robert R.
Moreland, George E.
Rork, Crystal L.
Terrey, Robert J.
Honeoye Falls
Bushman, Donald G.
Inwood, Long Island
Cooke, Robert W.
Jasper
Price, Richard W.
Jamaica
Liefeld, Herbert T.
Liefeld, Walter L.
Malsky, Stanley J.
Loudonville
Berberian, Dicran A.
Mooers
Stevenson, Hollis
New York
Davis, David S.
Fetler, Daniel
Harvie, George F.
Schweitzer, George K.
North Bellmore
Carlstrom, Robert A.
North Chili
Davis, Paul C.
Gustafson, Carl G., Jr.
Keys, Charles E.
O'Brien, John D.
Nyack
Harper, Leland R.
Palisades
Olson, Edwin A.
Pearl River
Carr, Donald R.
Perry
Monson, Karl W.
Poughkeepsie
Blaauw, Gerrit A.

Rochester

Caley, Wendell J., Jr.
Dayton, Benjamin B.
Mauer, Paul B.
Tryon, Barbara B.
Tryon, Lansing E.
Schenectady
Childs, Wylie J.
Scotia
Chesnut, D. Lee
Stony Brook, Long Island
Barton, Alexander J.
Goldberg, Marvin W.
Syracuse
Eichelberger, William C.
Troy
Matthews, Edgar Wesley, Jr.
Valhalla
Smalley, William A.
Yonkers
Thompson, Gail F.

NORTH CAROLINA

Bennett
Gibson, Thelma
Durham
Phillips, P. P., Jr.
Greensboro
Stam, Paul B.
Highlands
Berry, Charles M.
Montreat
Talmage, John V. N.
Salisbury
Walmsley, Frank
Winston-Salem
Turner, Thomas J.

NORTH DAKOTA

Bismarck
Brink, Norvel
Fargo
Cassel, Frank J.
Valley City
Schnell, Richard D.

OHIO

Akron
Troup, Roger C.
Arcanum
Lenhart, Paul G.
Archbold
Ebersole, Robert A.
Athens
Peterson, Wesley J.
Canton
Ebersole, Allen B.
Henkel, Milford F.
Cedarville
Reno, John
Cincinnati
Parks, Thomas D.
Cleveland
Irvine, Chester C.
Rayburn, C. Jackson
Cleveland Heights
Baxter, William J.
Svedberg, Arthur H.
Columbus
Ensminger, Dale
Starkey, Walter L.
Oetjen, Robert A.
Zimmerly, John W.
Dalton
Falb, George E.
Dayton
Miller, Arthur A.
DeGraff
Hooley, Paul E.

Girard
Weaver, Titus
Hamilton
Anthis, Austin F.
New Concord
McCleery, John M.
New Knoxville
Wolfe, Herbert S.
North Lawrence
Hooley, Clarence D.
Pittsburg
Heise, Jesse L.
Smithville
Miller, William F.
Stryker
Grabber, Elwood C.
Wadsworth
Krieder, Charles
Nafziger, Myrl A.
West Liberty
Kauffman, E. Ellsworth
Stoll, John H.
Worthington
Meyer, Arthur D.
Youngstown
Metcalf, DeForest W.

OKLAHOMA

Bartlesville
Pitzer, Emory W.
West, Earle H.
Bethany
Shannon, E. Boyd
Lawton
Means, Royce B.
Norman
Moore, Carl A.
Sutherland, Patrick K.
Oklahoma City
Dunn, J. Hartwell
Tulsa
Eckelmann, Walter R.
Elsheimer, Neil H.

OREGON

Corvallis
Clunes, Roy B.
Freed, Virgil H.
Mortimore, Donald M.
Oorthuys, Hendrik J.
Waldo, George F.
Gresham
Butler, J. Lowell
Newberg
Beltz, Joan (Mrs.)
North Bend
Parker, Paul E., Jr.
Portland
Boehr, Marian O.
Corbin, Ludlow V.
Ellis, John M.
Schlicker, Herbert G.
Sprague, Boyd F.
Voth, Elver
Salem
Strubhar, Timothy J.
Yoder, Paul E.
Silverton
Van Cleave, Raleigh J.

PENNSYLVANIA

Akron
Esh, Glenn
Allensville
Zook, Floyd I.
Collegeville
Sturgis, Russell D.
Connellsville
Shope, Wilson R.

Darlington
Adams, Roy M.
Emmaus
Tschudy, Earl H.
Fleetwood
Koch, Gawain
Gladryne
Durant, Thomas M.
Grantham
Wittlinger, Carlton O.
Green Lane
Tavani, Nicholas J.
Grove City
Haas, John W., Jr.
Hatfield
Clemens, Edgar M.
Kuhns, James W.
Havertown
Wagner, Robert P.
Johnstown
Hostetler, Mervin J.
Lancaster
Carrell, Walter
Cramer, Howard R.
Rutt, Clarence H., Jr.
Manheim
Housman, J. Harold
Mohnton
Eby, Martin C.
Morgantown
Mack, Noah K.
New Holland
Kennel, John R.
Newtown Square
Roberts, Frank H.
New Wilmington
DeHaas, Herman
Oreland
Kuschke, Arthur W., Jr.
Perkasie
Nase, Howard M.
Philadelphia
Beilstein, Henry R.
Glover, Robert P.
Glasser, Arthur F.
Kanagy, Dale Y.
Knudsen, Robert D.
MacRae, Allan A.
Massa, Mary Jane (Mrs.)
Webb, Henry P.
Pittsburgh
Baldwin, Edward N.
Cadwell, Carl L.
DeWalt, Curtis W.
Moor, James W.
Squire, Alexander
Reading
Ortega, Josefina M.
Salisbury
Schrock, Elnora A.
Scottdale
Swartzentruber, Mervin
Sellersville
Loux, Norman L.
State College
Kocher, Frank T., Jr.
Terre Hill
Hess, Robert B.
Tyrone
Aman, Charles W.
University Park
Hershberger, Truman V.
Wayne
Lerch, Robert D.
Wilkes Barre
Hammer, Eugene L.
Wyndmoor
Maurer, Elmer W.

York
Bender, John W.
Hamme, Elmer G.

RHODE ISLAND

Barrington
Sorrentino, Louis V.
Providence
Graybill, John B.

SOUTH CAROLINA

Columbia
Culley, Paul G.
Giles, Frederick H., Jr.
Greenville
Henson, Joseph L.
Waite, Roy E.
Rock Hill
McColley, Earl S.

SOUTH DAKOTA

Aberdeen
McKernon, James G.
Olson, Kenneth V.
Ellsworth Air Force Base
Winter, Malcolm D., Jr.

TENNESSEE

Chattanooga
Shephens, Roland R.
Wilson, Robert L.
Dayton
Henning, Willard L.
Woughter, Lou Ellen (Mrs.)
Warwick, Lewis A.
Harrogate
Ziegler, Robert G.
Knoxville
Rusk, W. Roger
Memphis
Morris, Joe H.
Nashville
Artist, Russell C.
Thornton, Spencer P.

TEXAS

Austin
Hillis, Stanley R.
Rapp, Robert P.
El Paso
Green, John W.
Slusher, Harold S.
Falfurrias
Reist, Robert L.
Houston
Allen, Kenneth W.
Andrews, George W.
Fan, Paul H.
Kaiser, Albert, Jr.
Karkalits, Olin C.
Kaufman, Willis M.
Meyers, Wayne M.
Lubbock
Hendry, Richard A.
New Braunfels
Green, James A.
Plainview
Freeman, John A.
San Antonio
McBirnle, William S.

UTAH

Dugway
Holland, Hans J.

VERMONT

Colchester
Smith, Howard M., Jr.
Underhill
Wood, Glenn M.

Waterville
Shrader, James H.

VIRGINIA

Alexandria
Fielding, George H.
Jensen, John T., Jr.
Wales, Charles P.
Randall, Dwight L.
Bergton
Hertzler, Charles W.
Blacksburg
Morris, Henry M.
Charlottesville
Brunk, James R.
Heatwole, Kenneth M.
Magal, Ivan V.
Mitchell, Richard S.
Falls Church
Coleman, Charles G., Jr.
Douglas, George R.
Kerr, Maxwell A.
Fredericksburg
MacKnight, Joseph C.
Harrisonburg
Brackbill, Maurice T.
Landis, Wilmer M.
Lefever, Grace B.
Lehman, Robert C.
Suter, Daniel
Yoder, J. Otis

WASHINGTON

Harper
Mattson, Enoch E.
Kennewick
Payne, Edward B.
Seattle
Babb, Albert L.
Babcock, Douglas C.
Evans, J. Robert
Gross, Vernon L.
Roys, Harvey C.
Sanderman, L. A.
Sutherland, John A.
Wiebe, Harold T.
Shelton
Hergert, Herbert L.
Spokane
Duvall, R. Fenton
Forrester, James
Tacoma
Potts, John C., Jr.
Vancouver
Brougher, John C.

WEST VIRGINIA

Bethany
Jacobs, Merle E.
Charleston
Smith, Theodore R.
Fairmont
Maxwell, Joseph S.
Keyser
Drechsel, Paul D.

WISCONSIN

Clinton
Minter, Donald L.
Monroe
Weir, James R.
Racine
Chapman, Francis E.
Waukesha
Blann, Wm. Arthur
Woodruff
Klingbiel, John H.

AFGHANISTAN

Kabul
Halladay, Phyllis C. (Mrs.)

AFRICA

Angola
Bier, Leslie B.

BOLIVIA

Riberalta-Beni
Key, Harold

BRAZIL

Sao Paulo
Goodson, Curtis C.

CANADA

Calgary, Alberta
Taylor, Charles W.
Ft. Vermilion, Alberta
Nafziger, Samuel B.
Ceepeecee, B.C.
McLean, H. A.
North Vancouver, B.C.
Cox, Robert A.
Lea, Norman D.
Rossland, B.C.
McAllister, Robert D.
McGowan, John
Rice, David F.
Sutherland, Brian P.
Trail, B.C.
Gowans, William K.
Vancouver, B.C.
Kopp, Beno
Peters, Ernest
Victoria, B.C.
Hall, Alex
Winnipeg, Manitoba
Allen, Frank
Dirks, Henry T.
Aurora, Ontario
Donovan, Ross G.
Chatham, Ontario
Groh, Harold D.
Osgoode, Ontario
Wilson, Hugh W.
Ottawa, Ontario
Gear, Emily J.
Custance, Arthur C.
Port Arthur, Ontario
Howitt, John R.
Port Credit, Ontario
Dunkin, T. Gilbert
Morrison, W. Douglas
Toronto, Ontario
Jervis, Robert E.
Taylor, Addison
Taylor, Glenn C.
Waterloo, Ontario
Krause, Friedrich
Woodstock, Ontario
Kent, Lois E.
Saskatoon, Saskatchewan
Ashwin, James G.

CANAL ZONE

Balboa Heights
Icke, Roland N.

CONGO BELGE

Bukavu
Zemmer, Harry R.
Kasai District
Loewen, Melvin J.
K'ambi Manono
Greenhow, Robert L.

COSTA RICA

San Jose
Cameron, Marie C.

ETHIOPIA, EAST AFRICA

Addis Ababa
Strong, Albert C.
Nazareth
Eshleman, D. Rohrer

TANGANYIKA TERRITORY

Shinyanga
Barnett, William J.
Tarime
Brenneman, Frederick S.
Eshleman, J. Lester

ECUADOR

Guayaquil
Lopston, Gordon P.
Quito
Fuller, M. E.
Johnston, A. Arthur

FINLAND

Kauniainen
Saarnivaara, Uuras

FORMOSA

Chung-li
Chappell, John T.
Ta'peh
Woods, Francella
Taipei
West, John O.
Taipei Hsien
Harris, A. Dorothy

FR. EQUATORIAL AFRICA

Ippy
Rouch, John H.

HAWAII

Hawaiian National Park
Ault, Wayne U.
Honolulu
Jung, Tennyson T.

HONG KONG

Kowloon
Harverson, Stuart
North Point
Rees, D. Vaughan

INDIA

Bihar
Scott, William R.

INDONESIA

Kupang Timor
Kingsley, Leonard

JAPAN

Tokyo
Peachey, Paul

LEBANON

Beirut
Krikorian, P. C.
Lopston, Melvin
Sidon
Hoover, Esther J.

MARSHALL ISLANDS

Marjuro
Loomis, Robert C.

MOROCCO

Tangier
Campbell, William F.

NORWAY

Trondheim
Nygaard, Agnar P.

PARAGUAY

Asuncion
McDowell, Donald E.

PHILIPPINES

Iloilo City
Villanueva, Edith M.

PUERTO RICO

LaPlata
Yoder, Richard J.
Santurce
Troyer, Weldon

SWEDEN

Lidingo
Krook, John

UNION OF SOUTH AFRICA

Ingwavuma Natal
Bennett, John E.
Morrill, Don R.
Taylor, Douglas H.

LIBERIA, W. AFRICA

Monrovia
Coddington, Raymond M.
Tichy, Frank C., Jr.

NIGERIA, W. AFRICA

Egbe via Ilorin
Grant, Lonnie C.
Kaltringo via Gornbe
Edwards, Donal C.
Ogbomoso
Goldie, Robert F.

SIERRE LEONE, W. AFRICA

Binkola via Makeni
Prinsell, Gustave B.
Freetown
French, Alvin E.

WEST PAKISTAN, W. AFR.

Mansehra, N.W.F.P.
Karsgaard, Andrew T.
Rawalpindi
Dye, David L.

NAMES CHANGED

Ancker, Betsy, now Betsy A.
Johnson, RCA Labs.,
Princeton, N. J.
Cook, Phyllis C., now Phyllis
C. Halladay, c/o American
Embassy, I.C.A., Columbia
Team, Kabul, Afghanistan
Manner, Beulah, now Beulah
M. Cobb, R. 4, Box 8,
Logansport, Indiana
Rouch, Lou Ellen, now Lou
Ellen Woughter, Wm. Jen-
ning Bryan University,
Dayton, Tennessee