Encl. to Ross Gilmore
8-18-61

Soils Department, Col. of Agr.
Madison, Wisconsin
June, 10, 1961.

Mr. Walter E. Scott, Assistant to Director
Conservation Department
4802 Sheboygan Ave., Madison, Wis.

Dear Walter;

Thanks for your letter of June 6 and enclosure. You have recorded many items of historical importance and I shall value this copy. I have the following comments, but don't feel under obligations to pay attention to any of them.

On page 11, near end of first long paragraph, Professor E. R. Jones is listed as sole author of C.C.C. hand book for 1933. I don't want to take away any credit, but for your information, Neil Minshall's and my name also appeared as co-authors. Actually the hand book was based on my 10 years' of pioneer field experience and Minshall's engineering analysis and detail designs, and written by us two. Because of his executive college position, Jones was named field director and his name given fist position in list of authors. Actually his only field experience or contact with erosion work had been as member of 4 man committee that selected the farm for the La Crosse experiment station.

On the blue sheets, item 63 in 1933; Coon Valley Soil Conservation project was designated #1 in the nation by H. H. Bennett because it was the only application (in actual time it was preceded by some half dozen) that contained plans for erosion control practices, consisting of the broad item land use, and the special practices needed on the land devoted to crops. The circuitous route of applicati[illegible] for Coon Valley project was by

H. Davis, Superindentant of the La Crosse experiment station who obtained the original plan that pleased Bennett, and consisted largely of my recommendations in conference with Jones, relayed through Noble Clark to Davis to Bennett. I beleive, some forestry ideas were added in Washington. To you I can state that I never did give the prominence to forestry in the soil conservation picture, that some foresters did and are doing but time will be required to vindicate my position. I have never rated with most Federal people because I can't see the wishful thinking simple solution "hold all water where it falls" they emphasize. That is impossible with our torrential type rains. For this reason I didn't go to Washington with plan at time Clark and Leopold accompanied Davis.

Thanks for giving me credit for joint authorship for item 57, 1930; and authorship for item 5, 1931. Just for your own information but not to be interpreted as a suggestion for inclusion in any record you might make in the future, I was author or joint author of the following College of Agriculture publications.

Feb. 1941; Special Bulletin "Soil Erosion Survey" R.J. Muckenhirn, O.R. Zeasman

March 1941; Circular #~~320~~ 317 "Strip Cropping to Control Erosion, O.R. Zeasman

August 1941; Circular #320 "Grass Waterways Control and Prevent Gullies" O.R. Zeasman.

June 1945; June 1945; "We Can All Help Save Our Soil" J.W. Clark + O.R. Zeasman

August 1963; "A Brief History of Soil Erosion Control in Wisconsin." I. O. Hembre + O.R. Zeasman

This last publication calls for an explaination of the time span between my retirement in 1956 and date of this publication, 1963. The first part of this (with exceptions to be noted later) up to the table on page 36 was written by me in early 1956 at the request of administrators then currently familiar with the work. The manuscript passed through regular channels and was approved

publication. After months of unexplained delay I learned from Miss Langdon that the manuscript, after the formal approval, had been sent to some interested agency but no record kept. I did not have a complete duplicate and in a not too pleasant mood refused to write it over. In 1963 I. O. Hembre asked me to help with his annual report for the State Soil Conservation Committee in which he wanted to summarize early work. In consulting files of the committee, I uncovered my original manuscript. Mr. Hembre then offered to publish it as the first part of his 1963 committee report. The three changes or additions referred to earlier above as being made in the first 36 pages are as follows: (1) The Zeasman biographical sketch on page 1 written for testimonial dinner at time of retirement (I believe "Andy" Hopkins wrote it), was modified by addition of the last paragraph without my knowledge and which is definately out of place and a somewhat exaggerated claim. (2) The Hembre biographical sketch was a natural addition. (3) Near the bottom of page 11, in discussion of the Orville Jost diversion terrace, the 1962 observation was made on a field trip with Hembre and Leonard Massie. The table on page 36 was developed by me as condensation of several pages of text. The balance of the circular was co-operative work by Hembre and me but I don't recall cleavage lines. Failure to insert in the text of the circular an explaination accounting for the time gap has led to confusion.

This letter has got much longer than I had anticipated at the start but I hope you have followed to the bitter end.

Sincerely yours

O. R. Zeasman

2

ARTHUR E. PETERSON
303 Soils Building
University of Wisconsin
Madison, Wisconsin 53706

January 24, 1973

Confidential

Mr. C. R. Amerman, Soils Building
Mr. Leonard Massie, Ag. Eng. Bldg.

Gentlemen:

This letter is not intended to be a belated answer; item by item to the objections and questions you raised to the proposal I was privileged to make at your meeting last January. Since correspondence covering about three months revealed the fact that the opposing sides were not on common ground, it became aimless to pursue detail discussion. This letter is intended simply as a review of some pertinent facts, because of your involvement in soil conservation research.

I hope you have patience to read it to the bitter end now and not consign it to the wastebasket, but hold it for review 25 years from now. I appreciate the fact that you young men with superior technical training for background, consider anything I say about soil conservation needs, as fulminations of an "old fogy." But that is a risk I must take because of my deep interest in soil conservation. By way of introduction, I want to shock you with a bit of ancient history covering unknown extent of time in which an active life time is only a fleeting wink.

China and Peru have continental climate quite like that of the United States. Peru is in equatorial location, but the high elevation of the example used, causes precipitation similar to ours. No one knows what the initial stages or preceding steps might have been, but in both situations bench terraces evolved as the effective and product. In China bench terraces are in use today. In Peru, only remnants of such terraces remain, but archeologists and historians say the terraces were undoubtedly developed by the Incas whose highly developed civilization ended mysteriously about twenty centuries ago. (Cause unknown, but the guess is that barbaric tribes exterminated the Incas.) This observation is not intended as a recommendation for adoption in the United States, but to illustrate that a continental climate compels heroic efforts at erosion control.

Virtually all of the soil conservation practices in use today in the U.S. originated and were developed by farmers as erosion damage became evident, and each practice was aimed to solve a particular problem. Is it surprising that practices with that historical background might fall short of being the necessary final solution? Examples in support of the above statement are in order.

When wheat farming in Wisconsin became unprofitable in the latter part of the last century, the trend toward livestock farming developed and with it, use of forage crops and pastures. Initially crop sequences, oats, barley, clover, or clover and timothy 2 years, came into use. From this initial practice many

farmers worked into definite rotations generally 3 or 4 years. With the increase in alfalfa acreage, and the advent of hybred corn, an appreciable number of farmers adopted a 5 year rotation of corn, grain, 3 years of alfalfa. I recall seeing many grass waterways in draws rather early in my extension work that began in 1914. In about 1930 or perhaps somewhat earlier, County Agr. Agent, W. E. Spreiter of LaCrosse County led me to the Kraemer farm to view the field continuously strip cropped from about 1885 when August started the practice. These features and practices constituted contributions Wisconsin farmers made early to soil conservation. Some time in 1940's I was informed by "Marv" Schweers, State Conservationist, that the S.C.S. found an example similar to the Kraemer farm, in Ohio.

During the 1920's I attended a considerable number of annual meetings of the American Society of Agricultural Engineers. At some of these, particularly those in the deep south, there was considerable discussion of erosion problems and terracing as the current control practice. A. Lewis Jones and C. E. Ramser, the only Washington personnel working in the field of erosion control, furnished excellent leadership in this activity. The practice of terracing had originated on cotton belt farms, "by-guess and by-gosh", as farmers attempted to control the obvious problem. About 1918, C.E. Ramser reported in a federal bulletin, on a study he had made of existing farm terraces. As a result of critical examination of many terraces, he eliminated the obvious failures and borderline cases, and analyzed characteristics of successful examples. The products of that Ramser study are the principles and standard specifications used today in design of terraces. The highlight discussion on terracing took place at a meeting in the cotton belt, but I don't recall the city. Principal participants, besides the two Washington representatives, were extension specialists from Georgia, Alabama, Louisiana, Mississippi and Texas, who were devoting almost all of their time to terracing and problems with operating machinery on terraced land. The constructive product of lengthy discussion was, "work land in direction of terraces". This was probably the origin of operations on contour, that preceded the wishful thinking leap that led to the notion that cultivator marks on contour, store all precipitation.

My early contacts with Dr. H. H. Bennett took place at a couple of the A.S.A.E. meetings in the 1920's. He had a forceful personality and other qualifications of a lobbyist. His back ground was soil surveyor of the U.S.D.A. About 1917, Dr. Bennett and Chanlaine, another soil surveyor, were joint authors of a federal bulletin entitled, "Soil Erosion; a National Menace", in which they summarized their observations of soil erosion damage, but control practices current at the time were not mentioned. I had the good fortune to hear Dr. Bennett give three lectures on the subject of soil erosion, two at winter meetings of the A.S.A.E., noted above, and one at our midwinter farmers week in 1935. The only erosion control method that he offered at any of these meeting was the principle or theory that all rainfall ought to be held where it hits the ground. In interest of brevity I'll call it Dr. Bennett's theory.

In 1934, Dr. Bennett received the first reward of his lobbying. This occurred in the popular expansion period of make-work programs, dating from 1933. A fund was provided for establishing erosion control practices on farms in watershed units, because such practices had been extensively represented as an effective flood control method. Coon Valley was one of these projects. (No noticeabl

reduction in flooding has been observed as an end product at Coon Valley).

Included with the application for the Coon Valley project, was a plan for erosion control promoted by Prof. W. Noble Clark, Associate Director of the Experiment Station. Prof. Clark called Prof. Aldo Leopold, a forester by training, and occupation as wild life specialist, and Prof. E.R. Jones, Chairman of the Agricultural Engineering Department into a meeting for development of the plan. In this plan they placed great emphasis on effectiveness of crop rotations and retirement of badly eroded land to permanent pastures or forests. Before the meeting took place Prof. Jones asked my opinion on plan content, but from a lengthy discussion of the problem and control practices that I had covered, a mere mention of terracing and strip cropping was included in the plan, forwarded to Washington with the application for Coon Valley. Dr. Bennett was greateful for the plan (the only operations plan offered) and adopted it for use in the watershed projects for 1934-5, with expansion into terracing and strip cropping, and originated buffer strips. The stated object of these watershed projects was to stimulate expansion of the approved soil erosion control practices of the time. The organization that was developed with Dr. Bennett at the head was named Soil Erosion Service.

The voluminous publicity given to the watershed projects in 1934 stimulated Congress to create the SCS as a division of the U.S.D.A., and concentrate in it all soil conservation activities, including research. Somehow the S.C.S. was imbued with the idea that its mission was identical with that of the watershed demonstration projects--promote and secure general adoption of the erosion control practices in use at the time.--This viewpoint seems to be an insurmountable barrier to progress toward more intensive control practices. I fail to see any logic in the observation or contention that progress toward more effective erosion control must wait until most farmers are using S.C.S. plans. Some farmers are progressive enough to adopt more effective practices. Closing the door to them will eliminate evolutionary development. Who took the first steps or furnished the early control methods? Progressive farmers; not the government! But government resources could and ought to be used to search for and hopefully uncover methods intensive enough to insure longer life to our civilization.

Actually SCS operations in the field and practices recommended remained quite consistent with what had been used in 1934 and were continued through 1935 in the watershed projects, although farm planning methods were somewhat refined. But the administrative and supervisory staffs were greatly expanded to cover the entire nation. This added personnel by a variety of means--object unknown, unless it be courting favors--created the impression that Dr. Bennett was the fountainhead of all information on the erosion problem, and that nothing had been done in the control field until the watershed projects were established in 1934.

You men came into the soil conservation field when the SCS was in full bloom, and it is not surprising that you rate it on a par with the division in the U.S.D.A., that evolved from basic research. You have been given the impression that virtually all useful information is known and in use. At present the door seems closed on any work aimed at seeking answers to control practices aimed at higher

intensity methods, that time will prove are necessary for survival under our climate.

This narration has grown to much greater length than I thought possible at the start, but some of the features that I had in mind are not included. But I am impelled to list a few generalized statements.

1. Theories do not merit endoursement as facts unless they have been adequately verified by comprehensive field tests because natural phenomena are involved. For example--a fact well known now is by-passed--annual rainfall records do not reveal the fact that 3 to 5 moderately intense storms of probable annual frequency cause 90 - 95% of the soil loss of that season, and all methods of estimating soil loss that use annual rainfall records only, to the exclusion of above fact, are suspect.

2. All of us must admit--perhaps reluctantly--that the rate of adoption of presently used practices is slow. But only a few of us feel that this fact ought not impede efforts in search for better control practices, because that need is inevitable.

3. Present practices are an improvement over traditional land management, but fall decidedly short of being a final solution.

4. Conclusion by geologists: pronounced erosion took place under virgin plant cover. The radically reduced plant cover under farming obviously cannot approach the natural cover protection.

5. The report of 10 years work on the LaCrosse station, 1933-43, published in 1949 as USDA Technical Bulletin No. 973, provides material that forces the conclusion that strip cropping and contour tillage do not provide adequate long range erosion control.

6. Search for best protection methods physically and practically attainable, inevitably will cover a great deal of time, a fact that provides an argument favoring action rather than delay.

7. Since Dr. Bennett has such a loyal following, it seems logical to initiate long range research that might approach realization of this theory "hold all rainfall where it falls". The theory offers a sound approach. The weak link is the assumption that farm plans make 100% delivery. Mechanical storage of rainfall as a supplement to strip cropping, rather than exclusive or heavy reliance on plant cover appear necessary.

8. Level water storage terraces (perhaps basins would be a better description) somewhat along lines of January 1972 proposal might be a start in such research, but if it merely induced constructive thinking in the direction of effective water storage, it would be useful.

Yours very truly,

O. R. Zeasman

O. R. Zeasman

2220 Keyes Avenue
Madison Wisconsin 537
August 24, 1975

Dr. A.E. Peterson
Soil Science Building
Dear "Art."

I recently saw the masonary arch drop spillway, located about 2½ miles south of Mt. Horeb — to which I guided you years ago — that the Mt. Horeb C.C.C. camp built in 1934. You will recall, the dam is situated at a gully head, that was in 1934, advancing up a 1000 acre watershead. Up to this date the dam has served for over 40 years to prevent advance of the gully, and appears in perfect condition to function well indefinately. This view induced the reflection that I ought to ~~record~~ leave some record of crucial events and reactions that might never surface unless I put them in writing. I am imposing on you as recipient, because you of the Soils Dept. Staff, have the most intimate association with the problem of soil erosion, and probably will take time to read this lengthy letter to the bitter end. (I am incurably hard-of-hearing, and have defective speech, that make personnel contact unsatisfactory, but I can still claim sanity.

Permit me leeway to outline the steps or events that initiated my interest in soil erosion. As a U.W. student that began in 1911, I attended a series of lectures by U.W. President, Dr. Charles R. Van Hise, geologist by training, on the subject of soil formation under virgin forest and prairie plant cover, and destructive erosion that took place when

virgin plant cover was replaced by agriculture. At the same time, College o Agriculture lecturers said, soil erosion was confi. to continuous intertilled crops of the cotton and corn belts, bu Wisconsin, with diversified crops and good rotations with genero percentage of meadow and small grains, had no erosion problem.

The day after graduation in 1914, I became a member of the Soils Department staff with duties of Extension Specia in land drainage. At later date, part of my responsibility was with Agricultural Engineering Department. In the early 1920's, I attended a number of annual winter meetings of the American Society of Agricultural Engineers. Some of the meetings were in the deep south where a good share of a da was devoted to soil erosion and use of terraces as a contr measure. A prominent leader in the discussion of terracing was C.E. Ramser of the U.S.D.A., who in 1930 became a supe. viser of the 10 Cooperative Federal State Erosion Experime stations, of which Wisconsin's was the first in a northern state, established about in 1930. At two of the above mentioned A.S.A.E. winter meetings, Dr. H.H. Bennett, then serving in the capacit of U.S.D.A. soil surveyor, presented a word picture of soil damage by erosion. On these two occasions and at Our winters Farmers Week, (I beleive in 1935) Dr. Bennett offered the blanket solution, "hold all precipitation where it falls", but did not, in any of the three lectures include applicable methods of achieving that desirable object. And it appea that Dr. Bennett had not considered research data on so and water losses available at the time and in process of being

confirmed in Federal State cooperative stations in which he was participating as a joint superisor.

This is end of effort to reveal background. Such disclosur is presumed to be quite strictly in chronoligical order, but I have violated. Anticipated context will probably be more or less disjointed. After all, this is a letter not a coherent essay.

By early 1922, piece meal reports from southwest Wisconsin county agricultural agents and Highway Maintenance Engineers, that "ditches" (gullies) were destroying good level land, cutting away some bridges and filling others, received attention, that resulted in sending me on an inspection trip to the Beef River valley in Buffalo county in June 1922. The first days tour, guided by the County Agent, a local leader, and highwa maintence engineer revealed shocking sights, a few of which are shown in pictures that appear in the publication, "A Brief History of Erosion Control in Wisconsin." I saw gullies, 20'-50' deep and up to over a quarter mile long. Surprisingly these were in level land ~~land~~ areas, that had steep faces on the side facing the river, and bounded on the farther side by steep bluffs several hundred feet high. The higher zone above face of bluffs formed the boundary of quite flat to rolling productive ridge land. The valley highway #37 and bridges, were in some places cut away and in other places buried by earth from the advancing gullies, depending on location with reference to riverside face of the level land area.

On the morning of the second day when we started farther up the valley, I observed hand bills, "Come and Hear

an Experton Stopping Ditches," Gilmanton High School, June 13, 1922 and Bennetts Hall, June 14, 1922." I confiscated one of the hand bills as a souvineer but it has long since disappeare We had good attendence at both meetings, but what could I offer? I hadn't see the problem up to that time, and many in the audience probably had seen more "ditches" than I had. My approach: I praised them for being interested in the problem, and obvious desire t do something toward solution; got them into discussion of lighte thunder storm type rains, and gully cutting when rain came dou by "pail-fulls". I had formed some definite ideas in the two days that turned out later to be sound, but could not be definitely pre-sented then, although they served well for round about talk. Some statements by farmers were good cues. Fortunately this was corn cultivating time and approach of haying seaso I vdunteered to look at "job" situations they might want to wor on, and come back in the fall with plans for solution. — Appar ently I "got by" and was not mobbed as an imposiler. — Quite a number expressed interest, and two of them became firm and were constructed that fall. — Details of them later

During the remainder of the week, I helped on a highw maintenance project for which experience furnished some backgr I helped highway patrolman divert a stream back from a new sediment plugged bridge that had been built in new location margin of a debris cone of gully waste, back to the original sto arch culvert course, on crest of the cone, where the more nearly uniform gra-dient served to keep the old stone arch open. This served wel for 10 years until the road was relocated. At time of this aid

on makeshift construction it generated some local confidence in "knowhow."

The report I made of that week's observations was heavily discounted in Madison headquarters, but I had no idle time for the balance of the summer. The commitments I had made in the Beef River valley, to come back in the fall with plans, was based on confidence that there was ample coverage of the problem in the agriculture literature. Imagine the surprise and disappointment I had at the College of Agriculture library, where the only publications in the entire erosion control field were two good bulletins by C. E. Ramser of the U.S.D.A. — "Prevention of Erosion on Farm Lands by Terracing." U.S.D.A. Bulletin No. 512 published in 1917 and "Terracing Farm Lands" U.S.D.A. Farmers Bulletin No. 997, published in 1918. But there was nothing that touched on the type of gullying I had observed in Buffalo County. I had to start from ground level.

My first step was looking up Geologist's reports of topographic features and land forms. An upland occupies parts of 4 states, Illinois, Iowa, Minnesota, and Wisconsin, with major portion in Wisconsin. The island has an elevation of up to 400 feet above the surrounding glacial drift area. Geologists identify the level land ares in the river gorges as river terraces, and account for them as a product of the melting ice sheet face, identified as the Wisconsin glaciation, in the northward retreat. Borings in the riverbed indicate that in the pre Wisconsin glaciation period, the Mississippi river had been cut down about 100' below the present level. The melting ice front produced a silt load in excess of the river's carrying capacity or capability, that resulted in deposit of sediment u

to the elevation of the highest terraces. Following the depos
period, the Mississippi River has been cutting its channe
down into the sediment bed, exposing the steep terrace face
This is the physical, or topographical feature where gullies are
bordering the Mississippi River and tributaries in Wisconsin.
The Wisconsin observation compels the conclusion that the thr
neighboring states have parallel situations, but much small
areas are involved. Apparently parallel situation exists alo
the Missouri River as an extension of the melting ice front
the Wisconsin glaciation extends in western direction. The 19
progress report of the Clarinda, Iowa Erosion Experiment
Station appears to identify this as a similar ~~similar~~ ~~similar~~ situa
along the Missouri River and labels the gullies, "canyons," t
advance at unbelievably fast rates. I feel confident that simila
situations continue farther south into Missouri. Some of
the raw ugliness observed in 1922 is now obscured by
voluntary brush and tree growth, but that does not restor
lost values.

Analysing the problem further: There had to be a
dynamic force that caused the conspicuous destruction,
and some logical explaination of how or why this area in
Buffalo County, had for centuries including a period of o
a century of agriculture, stood intact + then put on this display of destruc
in the early 1920's. Guides in the field inspection and s
farmers at the two meetings furnished a clue. In a sim
1921 storm, accompanied with lightening and thunder, rai
had come down by "buket-fulls", not experienced before i

their lives. Weather Bureau records at Madison revealed that an intense storm of long duration had fallen here in 1911, but I do not recall details. I failed to find a record of damage. The further search revealed that the U.S., with the exception of a relatively narrow belt at the coast line of Washington and Oregon and a small area of Maine, where Oceanic climate exists has Continental climate. Rainfall in Continental climates is extremely erratic.

It becomes necessary to break further into chronological sequence in order to make unit discussion of rainfall that includes facts I learned later, and subsequent developments. Annual rainfall figures are meaningless and use of them in estimating soil loss is definately misleading.—Likewise it is an error to assume soil & water losses are in parallel, major factor in soil loss is velocity of water movement; water loss is quantity of run-off.— The first reasonably well designed experiment to determine soil and water loss under different crop covers were by Millert Duley of the Missouri Experiment Station in the second decade of the century. Six year results were reported in Research Bulletin No. 63 of the Missouri Experiment Station in 1923. Permanent sod cover was used on the control plot. Soil loss from that plot was virtually zero, but 25% of erosion producing rains was lost as run-off. Both soil and water loss from continuous corn was high, and loss from grain and meadow seeding following corn was variable depending on stage of growth. A very significant conclusion was the fact that 3-5 of the more intense rains of a typical season caused 90-95% of the soil

loss of the season. Several southern states, probably five in no
per (I definately recall, Texas, Alabama, Georgia, Mississippi, Louisiana is total
Missouri's leadership. In 1929, Congress appropriated $4,150,000 fo
set up 10 Federal, State cooperative Erosion Experiment Stati
(My effort to get one in Wisconsin resulted in the station at
La Crosse.) These 15 stations, during time of record, 10+ years
substantially checked the original data. But none of them
received intense rains of longer duration than probable annual frequen

Extension of ~~above~~ the above fact into the area of
floods logically follows. Summer floods are caused by hi
intensity rains of considerably longer duration than those of
annual frequency as determined, to date, by erosion experimen
stations. The highly publicized Bayfield flood of 1942 is a goo
example of summer. No official rainfall records are available. But quit
reliable estimates or opinions are, that nearly five inches o
rain fell, beginning at about 11:00 P.M. one day and endin
about 10:00 A.M. the next day. Nearly all the rain fell befo
3:00 A.M., with the balance a dribble, typical of such storm
that ended about 10:00 A.M. Extensive damage was caus
to buildings and cemetary, where remains from 22 grave
were carried away in a gully cut by the run-off from a wa
shead of about 1000 acres, approximately 75% of which wa
in undisturbed brush and tree cover. This storm might
have been of near 50 year probable frequency. The Corp
of Army Engineers has made an investigation, but I ha
not seen their report. Random distribution of such storm
makes prediction of time and place impossible.

I had nearly reached this point when I saw head lines and read a report in the August 24 morning newspaper of floods in over half dozen counties in west central Wisconsin Naturally the paper report emphasized flood damage. I wa to deviate from cause of floods and direct a few statemen that cover opinions that I have on the subject of flood control Man has encroached on the rivers' inherent right to the flood plain. Pioneers in the U.S. had a transportation problem and rivers provided convenient routes that incidentally invited settlement near rivers. Excessive rains that in above example caused the Black, Chippewa, and Trempaleau, Riv to reclain flood plains by rising up to 5 feet above flood sta Instead of directing efforts at flood control, commonly ver at hgh cost, why not adopt a rational and probably cheaper method? Get off and stay off flood plains! — But back to cause of this reported flood: It occured in the nig Aug 22-3. August 22'nd was a hot sultry day, that g enera means high humidity. Moist air from the Gulf of Mexi was met by a cold front in a line extending from vicinity of La Cro eastward The sudden cooling caused the high intensity rain of fl duration.

Claims that floods from such storms can be contro by moderate soil conservation practices now in use — crop r tations, strip cropping, contour cultivation, etc., and conver to tree cover — go far beyond inherent capabilities. H can this possibly be accomplished by such methods, wh the rains of annual frequency allow 25% run off from mea

10

the best water rater retintion plant cover protection, while other crops allow a higher percentage to run off. Then we have flood nearly every spring. These spring "break-up" floods result from melting winter accumulated snow, frequently augmen by current rainfall on frozen ground that promotes nearly 100% run-off. Volume of runoff greatly exceeds channel capacity and rivers reclaim flood plains. Repeat: Considere permanent solution: Get off, and stay off flood plains! In the 42 years covering activities, I recall only one spring, tha of 1935, when rivers generally remained within banks. In the fall of 1934, a heavy blanket of snow fell on unfrozen ground; winter snowfall was moderate; winter temperature were decidedly above normal; Melting of snow was gradua and spread over considerable time in excess of normal. Evap ation, infiltration, depression storage, were ample under th above exceptional, coincidental conditions and events.

Following the extended digression made in interes of developing sound principles, as the basic information became available, I want to turn back time to my commit- ment to return with plans in the fall of 1922. The first firm request was for protection of a building site. The house and barn were spaced some distance apart on a narro segment of river terrace, backed by about a 20 acre fiel sloping upward. Run-off from this field had interfere with necessary travel between the buildings. The site was "made-to-order" for terracing that would divert the run-off. But the farmer did not want to terrace the field

All he wanted was convenient travel between buildings, whic
meant, keep run-off from the building site. I took a consider
chance: Staked and built a terrace about 700' long by use of
a road grader. The 100' section at head end was given a grad
or drop of 0.1' and each successive 100 feet had an extra 2' dro
that resulted in about 1.3' fall in the 100' foot section at outle
end, far in excess of standard terrace design. The cross
section was build somewhat larger than standard specifi-
cation to compensate for possible sedimentation, and deve ations.
I had made from standard conditions set up in the Ramser
terracing bulletins. From the outlet water was carried in
a sheet metal flume into the grass covered bottom of an ol
gully. I named this structure "diversion terrace," because it
was a modification of standard terrace design. Annual
inspection for about 5 years generated confidence in prin-
ciples of this device, and I built several more in later yea
including one on the Arnold Vollmer farm nearby, but I do not
recall names of other co-operators. I saw the original
diversion terrace (in 1956) shortly before retirement when
it was in good serviceable condition after nearly 35 years
service. In the 1940's, I received numerous reports, some
quite directly, that the S.C.S. was using diversion terrace
principles, but simply called them "diversions."

The problem at the second follow-up request was
to trap silt from a gully that was advancing up a watersh
of about 30 acres, and was threatening to fill a spring at th
base of a terrace. The prime object of the request was to save

the spring, used for household water supply. In my extensive search, I had noted a very sketchy description of a gully control dam that a Missouri farmer had built. It had received only passing attention because of early failure. In our effort to copy, we placed a 12" corrugated culvert in the bottom of the gully. A sheet metal worker in Alma, who had used flume to stop advance of gullies with limited success formed a elbow to support a vertical stand-pipe. We placed earth fill over the culvert section up to an elevation of about 2' above the intake line of the stand pipe. We named this crude attempt Adams dam, after the Missouri farmer. In course of preparation for 1933, C.C.C. camps it was given the descriptive name "drop-inlet". The two jobs described above were completed in about a week. The experience intensified my interest in the erosion problem. I continued construction of dams based on this principle, to the end of 1932, when I feel confident that over 30 were in successful operation, nearly all in Buffalo County. I had C. E. Ramser of the U.S.D.A on an inspection trip in about 1930. He stated that he had not, up to that time, seen gullies like those in Buffalo County in the U.S., and expressed interest in our effort at ~~control~~ control

Now back to the ~~end of the~~ end of the first week on construction in 1932: For the next 4 years, I borrowed (without security) at least from 3 to 5 weeks time from my approved land drainage project, for follow-up on gully control efforts in the Beef river valley, but made no on Campus efforts to justify work outside drainage project boundaries. How

in my annual reports of work that were forwarded to Washington, I listed work on erosion control. About mid-summer 1927, Prof. K.L. Hatch, Asst. Director of Co-operativ Extension work, called me on the "carpet" — Question, "Why di you list time on erosion control work when we have no erosi problem and no orgaized project along that line"? Reflectin on my 1922 campus experience, I made no effort at a word picture, but put the question: can you find a day or two for a trip into the area of the state where I spent this time? "K.L. agreed readily. We spent a pleasent two days on field in spection. I beleive that Prof. Hatch was satisfied that mis appropriated time had not been wasted. In May of 192 I received copy of a letter, dated May 10, 1928, that Prof. Hatc had written C.W. Warburton, Federal directer of Co-operativ extension. Letter confirmed the fact, that of that date 2/3 of my time had been allocated to an approved project i soil conservation. Major emphasis was placed on gully control, in Buffalo, Jackson and Trempealeau counties. Work chiefly on sheet erosion control on the rolling upland by terraces, strip cropping was incresing steadily.

The project, designed and ~~approved~~ promoted at state level, received substantial, direct Federal aid on two occasions. In 1929, the Lake States Forest Exper ment Station, located on the Minnesota College of Agricult campus, was allocated $10,000 to use on erosion studies in any one or more of the five states in which they operate They first approached the Colleges of Agriculture in Min

nesota and Iowa, and received the answer that materi
erosion did not exist there. At Wisconsin, the Lake States
director was informed that the College of Agriculture had
staffmember using 2/3 of his time on the problem. The resulti
cooperative agreement divided the work into three sections
Lake States would make Climatological observations and me
surements of soil losses from different crop covers. K.A. Ableiter of Wisconsin Soil Surv
made estimates of Soil and land ~~and land~~ area lost
from gullies, in watersheds of different characteristics, an
in different localities. I, with the help of sophomore student H.D.
Bruhn for three summer months and $1000 aid of Lake Sta
Capital for construction materials was to work on gully con

I can not give complete results of Ableiter surveys,
because I had only a summary, and that was lost on way
publisher, after all routine approvals had been given. Six yea
after my own files had been destroyed
later, I discovered, ~~I discovered~~ the original manuscript i
files of the State Soil & Water Conservation Committee, wh
I had been asked by the Secretary for help in his prepa
tion of a report of committee activities. Apparently the secre
had been too busy building reputation for a new organizatio
To remember burying my manuscript. He volunteered to have
pulished as the first section of the report I was helping
him prepare, but Ableiter survey reports do not appear in th
publication.— Incidentally, many other items, even sections, d
not appear in the publication. All efforts at recovery of ma
uscript have failed.— But I recall a few high points of Ablei
data. Survey line around head ends of main gully and its

branches on the McPeak farm, located about 2½ miles east of North Bend in the Black River valley, enclosed about 50 acres of high class level river terrace land, lost to agricul
The last time I visited the locality, forest cover had complete masked the raw ugliness of the gully, but masking it does not ~~does not~~ reclaim it for agriculture. Below the outlet of the quar ter mile gully on the Arnold Vollmer farm in the Beef River valley, an Ableiter survey recorded sediment deposit averagi & about six feet thick over 40 acres, but it is not sufficently ~~high~~ above high water marks for crop use.

During the 1929 summer and late into the fall, wit Bruhn's help for 3 months we built over 25 gully control dms on the drop-inlet principle initiated in 1922. For conduits we imported 24" sewer pipe from Red Wing, Minnesota. The dams were in moderate size watersheds. In some of the larger of these watersheds, we made twin conduit installations. I was almost completely occupied in making and completing earth fills until freeze-up. At last inspection in 1956 the dams were giving satisfactory service. In some of them, the temporary pools were completely filled with sediment. The one dam larger ~~tha~~ than what I have called ~~an~~ moderate size watershed was located about 3 miles east of North Bend. Here helped a farmer install a 60" diameter corrugated culvert, and tamp the earth fill next to the horizotal se tion, and he completed the fill.

~~The second Federal aid to our effort was a~~

About midsummer, 1929 Dean H.L. Russel wanted to know what I was doing with all the materials for which he was signing requisitions in the cooperative project. I reflected earlier Campus expeience, and good "takes" on field trips, and invited Dean Russel to have a look. I guided Dr. Russel around the territory to view the gully problem and see some of the work we were doing. In the afternoon of the second day, we made the last stop on a high point about three miles east of North Bend to view extensive gullies three directions. After Dean Russel had seen ~~seen~~ gullies in the three quadrents, he remarked: "Zeas, if you had come into my office and told me we had anything like this in the fair state of Wisconsin, I would have called you a liar and thrown you out." This field trip undoubtedly helped win his support for an Erosion Experiment Station.

The second Federal aid to our effort was a make work program by C.C.C. camps for youths. Wisconsin used nine for the last half of summer 1933 and eight for the entire summer of 1934. In development of our plans, Prof. E.R. Jones Chairman of Ag. Engineering Dept., enlisted help of Hydraulics Dept. of the College of Engineering, to make tests of the hydraulic characteristics of the types we had been using, refine designs, and offer plans for other devices that were suggested by observed field situations. Prof. Jones, Neal Minshall and myself served as field supervisers of the work

Naturally the Washington "powers that be" sent successive in-
spectors of the work who had no conception of the job problem
and we had to practice salesmanship. Camp administration
and work supervision force consisted of a camp superintendent, 4 graduate Civil, and 4 Agriculture Engineers. Total
production of the 1½ years was almost exactly an even 1000
permanent gully control dams. The summary record of these
dams was impounded by the S.C.S. in line with Congressional
act of 1935. However, in response to requests by supervisor of
University Archives, I succeeded by unrecorded means, recover
of the records in the 1960's, and they are now safely lodged
in University Archives.

Immediately following 1934 camp activities, the 3 man
team, Jones, Minshall, and myself, had the task of keeping 700
1000 financially hard pressed farmers on make work jobs. They
were better producers than C.C.C. camp youths. These men
were directed from County make work centers. In the period
to freeze-up time we kept them occupied on creek channel
improvements and changes. During the early winter
months we worked on protection of river banks, where
high values such as roads, bridges, buildings, farmsteads and
good valley farm land was endangered by river bankeros
One type of protection we used quite extensively on small
to moderate ~~to moderate~~ size rivers was use of piles that
I had tried or tested in an emergency situation nearly 5 years
before this time.

Description of that emergency situation is useful

for description of a type we used in 1934-5. About 1930 or shortly before, I received a letter from a panic stricken farmer about two miles south of Millville, that stated Mill creek, at a recent flood had cut its bank to within of his valuable 100' dairy barn and he feared the next flood would destroy the barn. — Mill creek is a tributary of the much publicized Kickapoo River. — On my way to the farm, I passed a pile driver about half a mile from the farm working on bridge repairs obviously made necessary by the recent flood. Inspection of the barn situation indicated that the letter description did not exaggerate the danger. The situation suggested rock rip-rap bank cover, currently well established practice But there was no quarry nearby. Trucks and necessary man power were not available. General observations for nearly 10 years in the territory, I had noted stream behavior. This suggested possibility of deflection of the stream by use of the nearby pile driver. We cut piles in the farmer's wood lot, and drove three bents or strings of piles, each consisting of about 8 piles spaced at about 2' intervals, along the broads length of the barn, at an angle to deflect the stre away from the raw bank. Water flows between the piles in the bents but at reduced velocity. However at the pile junction with the bank we placed abra mat wired to the pile to prevent by-passing. I had inspected this "by guess" ~~or~~ device frequently enough

to induce confidence for 1934-5 use. The farmer provided evidence of satisfaction with the method by having us install similar deflecters in 1935 on an eroding bank farther down stream to protect a field. We used such deflecters quite extensively that early winter, but found a few situations where an eroding bank closely paralleled a road that it was starting to undermine. In those places we drove piles in solid blanket-like cover to hold everything in place. In the larger rivers like the Chippewa for example, where large ice flows would destroy piles, we built rockfilled timber log cribs. No complete detail permanent records of this C.W.A. work. More extensive coverage than above memory review, was included in my 1956 manuscript, but it like many other items, did not get into print. One of these was coverage of work on sheet erosion.

The above outlined make work projects, financed by U.S. with project plans and work ~~of construction~~ supervision by the College of Agriculture Extension Service were largely directed toward semi-permanent structures to control or prevent damage from unavoidable run-off. In the intervals between the projects, and before and after my efforts with them, were largely directed to sheet erosion control practices that a farmer could fit into his operations when he became convinced of need, desirability and profitableness. I tried to cover the entire field with good crop rotations with generous percentage of meadow crops, terraces for safe disposal of run-off, strip crop

ping, and field operations on contours as the best way to operate on rolling land, and incidentally hold more of the rainfall for crop production. I choose to call these moderate soil conservation practices. The ultimate or climax practice for Continental climate that we have is not available. This is a problem for future research. I favored field demonstrations because field activity attracts farmers. A favorite practice was terrace construction demonstration. I would stake and partly construct a terrace in the forenoon. In the afternoon farmers watched the finishing operation. Then we used the occasion to discuss all aspects of erosion, cause, damage, protection methods and principles. Good attendence was the rule. Such demonstrations were quite definitely concentrated in Crawford, Grant, Iowa, Green and La Fayette counties but extended as far east as Waukesha county, and north to Pepin. I have no detail record, but am confident that a total of over 100 is no exaggeration. Probably only about half consisted of the demonstration type witnessed by farmers crowds at time of construction. About mid summer 1937, I was officially notified by S.C.S. that the 1935 law reserved all field activities to the S.C.S. My activity as extension agent was henceforth limited to "jaw-boning". I was however permitted to show farmers evidence of erosion in the field. The above is not written with the object of personal aggrandizement. I have never sought the limelight. That role is reserved for more talented publicity seekers.

The decade of the 1930's was an era when Congress attempted to solve every national problem by creation of a new action agency for ~~solution~~ each apparent problem. The Civil Conservation Corps, and Civil Works Administration, described under initials above, represent early ~~grants~~ efforts that were by grants to states, and the actual work in Wisconsin that involved that ~~involved~~ soil conservation, was planned and supervised by College of Agriculture staff. Concurrently, the first soil conservation activity administered directly from Washington consisted of watershed demonstrations projects, represented in Wisconsin by Coon Valley. Dr. H.H. Bennett had charge of the project. His first apparent step was a letter to state requesting applications for co-operation. Application for Coon Valley from Wisconsin was via College of Agriculture, was preceeded by about 8 others, but because it was the only one accompanied with any suggestion for erosion control practices to be used, was designated by Dr. Bennett as #1 in the U.S. Upon receipt of the plan, Dr. H.H. Bennett invited originators to a conference in Washington. Asso. Dean Noble Clark + Aldo Leopold were delegates to the conference. The plan they took to Washington had been developed by a committee headed by Asso. Dean Noble Clark, assisted by Dr. Aldo Leopold, Prof. of Forestry and Wild Life, and Prof. E.R. Jones, Chm. of Agricultural Engineering Dept. Before the planning conference, Prof. requested suggestions from me: Outline of my suggestions (with details of observable symptoms, and effectiveness, and limitations omitted here—): For sheet erosion, use cropro-

rotation with generous percentage of meadow crops, reinforced or modified by strip cropping, or combination strip cropping with a terrace in one strip of each pattern (I had been using the combination for a few years with promising results) and terracing entire fields, as indicated by field condition or situation. Fo the unusual & gully problem Wisconsin has in river terrace soils along the Mississippi river and tributaries, permanent gully control dams are necessary and effective. By way of relay, or lack of acceptance, my sugesstion for gully control was omitted and sheet erosion control practices were reduced to crop rotation (emphasis added) and mere mention of strip cropping and terracing.

I was repeatedly invited to visit the Coon Valley watershed project in 1934-5, persumably to show me virtually educate me content of a complete well rounded program of perfect soil conservation. I responded in late summer 1934. In the extensive field trip I was real attentive and interested, and asked a few questions for explainations of a few features where object was not evident, but can't conceive how any of the questions could have been interpreted as criticism. In the discussion following the field trip, they informed me they expected to get approximately 50% farmer cooperation the first year and 100% by end of second year when the project would go on "stand-by". My experience with farmers brought forth a quick spontaneous remark, "you'll do well to get 50% by end of second year." Not very long afterward I learned via grape-vine

I was "knocking" the Coon Valley project. Many years I learned that they had aprrox imately 35% of farmers signed at end of second year, and had no additions in the 10 year "stand-by" period, but had cancelled some of the 35% as poor follow-up cooperaters. Did my spontaneous expression deserve th label "knocking"? I simply think of the remark as a realistic statement that had no relation to the practices they were using on the land.

I want to express some reflections and opinions quite confidentially, but you might choose to share them with some few individuals like, for example Chairman of the Department, and Dr. Englebert. In this attempt to make a realistic appraisal, I risk being ~~b~~called a "knocker" repeatedly, but I feel impelled to list some back-ground events and present conditions that I feel are influencing rate of achievement and probably will retard development of more intensive erosion control methods necessary for permanent highly productive agriculture under our continental climate.

In late 1934 or early 1935 Congress passed a law creati another action agency in the soil conservation field, nam somewhat later, Soil Conservation Service, and gave it absolute authority of all work in the soil conservation field in which the U.S. government had participated, or into which it might want to expand. Head quarters for the S.C.S. were established in the Department of the Interior, where incidentally the Federal flood control work then underw was by isolated projects, with plans and supervision of wor

was by Corps of Army Engineers. Dr. H.H. Bennett was appointed Director of the S.C.S. (I never learned exact title) and he moved his office from the U.S.D.A to the Interior Department. I dare not venture a guess which of the two offices, if either, will dominate direction of flood control.

The important position as Director of the S.C.S. marks this as an acceptable place to outline Dr. Bennett's qualifications to the best of my knowledge. When I first heard his name, he was a soil surveyer in the U.S.D.A. In that capacity he had noted erosion damage described in 1928, U.S.D.A. Circular No. 33, "Soil Erosion a National Menace." H.H. Bennett + W.R. Chapline. ## His first notable activity in the erosion control field was lobbying before Congress that resulted in the $150,000 appropriation for establishment of the ten Federal, State Erosion Experiment Stations in the early 1930's The next ~~notable~~ conspicuous step was director of the watershead demonstrations.— Coon Valley one of them— As, or for local or resident supervisers of the demonstration work in Wisconsin, Dr. Bennett transferred or added duties to the Experiment Station Staff, and they directed the detail planning under Dr. Bennetts direction. It appears to me that the erosion control plan at Coon Valley was heavily weighted by the principle, (I want to call it theory) I had heard Dr. Bennet express at the three lectures I had heard him give,— "Hold all precipitation where it falls"— The product I had observed on the tour of Coon Valley project and confi

by review of several farm plans, S.C.S. was using later on Wisconsin fa
These are: Retire excessively steep and very irregular or broken, ca
badly damaged areas to permanent plant cover; on crop land use
good rotations with generous percentage of meadow; grow thes
crops in a strip crop pattern; conduct field operation on contou
to promote storage of water. I choose to call these "moderate
soil conservation practices," because they fall short short of
achieving B. Bennett's principle, even though they are good
soil conservation practices. ~~Over~~ Approximately 25% of the 3-5 erosion
producing rains of probable annual frequency, will escape in
runoff, and the only principle now available is to provide
for safe methods of disposal.

The S.C.S appears to be a strict line organization
directed from headquarters in Washington. This strictly limit
initiative in the field. Attempts at uniformity further national, restricts flexibil
and the erosion problem varies regionally. Obviously no on
in ~~an~~ executive position in S.C.S. has reviewed the extens
record by Corps of Army Engineers on floods. I am confid
that up to time of my retirement in 1956, S.C.S. farm planner
were not acknowledging that experiment station data
had provided conclusive evidence that the very best
water retention practice—permanent sod cover—fell 25%
short of satisfying their theoretical standard or aim,
"hold all precipitation where it falls", even from annual
frequency storms, to say nothing about excessive flood producing storm
Nothing that I have said about vegetative or cultural prac-
tices is intended to discount those practices, but we need

to be realistic and acknowledge inherent limitations.

Undue emphasis on flood control may attract public attention, but does not stimulate essential farmer interest and cooperation. The farmer is interested primarily in his farm, not in remote problems. I see no justification for emphasis on watershed units as a key to erosion control on farms. Progressive farmers are randomly distributed, not concentrated by watershed boundaries. Extension work in agriculture covering over half a century, has experienced that initiation and expansion of improved farm practices follows a characteristic pattern. Real progressive farmers ~~are~~ with leadership qualifications are randomly distributed, who after deliberate consideration accept, try and prove value of a new practice, acquire followers progressively that ultimately results in "snow-balling". Mass education becomes effective after snow-balling begins. Attempts by mass education aimed at 100% participation within restricted boundaries like watersheds featured in S.C.S. plans do not attain results compatible with expended effort.

Extension work in agriculture, covering considerably over half a century has observed and concluded that initiation and expansion of improved farm practices follows a denominal characteristic pattern. Real progressive farmers with leadership qualifications are randomly distributed, who, after deliberate consideration, accept, try, and prove value of new practice, acquire followers progressively, that ultimately results in snow-balling. Mass education methods become effective after snowballing begins

Attempts by mass education aimed at 100% participation with
restricted boundaries like watersheds featured in S.C.S. planning
do not attain results compatible with expended effort. In the
30+ years of watershed planning before my retirement I did not
witness a successful performence.

Tying flood control into a drive for soil conservation
is dragging an extraneous item in by back door entrance. Present
soil conservation practices are incapable of accomplishing
flood control. The urgent drive for more watershead
organizations might have the single object of ~~no~~ pressure
for more funds or incidentally provide a scape-goat. Soil
conservation is important enough to deserve attention in its
own sphere as of growing importance for permanent agri-
culture. It is a farm problem intimately associated with
general welfare, and ought to be treated as such.

In the early 1940's, the 10 Federal State cooperative
Erosion Experiment Stations ceased operation, probably becaus
no one pressed for further Federal appropriations. Wiscons
obviously expressed desire for continuance by purchase of a
larger farm near Lancaster, well adapted for research, but no
such work was installed. The research work on the 10 sta
tions and those on several southern states stations, had been
largely limited to evaluation of soil and water losses
under different crops. But much needed basic information
in this complex problem that varies regionally and with lan
forms and topographic situations. If the problem is to be
solved on the basic principle of retention of all precipitati

[even approximately] where it falls, research to date is negative. To accomplish that object, mechanical storage methods will need to be devised. This involves extensive, intensive field studies to find effective devices that can be used by farmers with minimum difficulty. Permit me to cite a historical example, not applicable to our situation. Ancient Chinese developed ben terraces, some of which are now in use. No one knows if these terraces were constructed by man power or are massive accumulations of sediment (deep loess origin) above earth dikes located on contours. But this indcates that a start on water stor devices might well be dikes with cross sections shaped like our present terraces, level grades, with ends partly or completely closed (No attempt at details.)

I, like many others had high hopes (fingers crossed) that the S.C.S. would make sound, steady progress in soil conservation. To date, after 40 years, I'm sadly disappointe I can't visualize a bright progressive future unless or until progressive internal leadership evolves. In a large organiza there must be enough hard headed thinkers, that evaluate trends, sufficiently to work for improvement. Following comme are not offered as advice but simply a few illustrations of precau Time to study research findings is not waste. Exaggerated clai generally backfire. Farmers are good observers. Remember you're dealing with physical facts, not ideologies or philosophic

Former Co-worker

W. R. Seaman

2220 Keyes Avenue
Madison Wisconsin 53711
October 3, 1975

Professor L. Engelbert
Professor A.E. Peterson

Gentlemen:

Since both of you have expressed interest in the early work in erosion control work in Wisconsin, I am tempted to trouble you once again with some records of events and developments, and with supporting enclosures. I am also enclosing reports of the La Crosse, and Clarinda, Iowa Erosion Experiment Stations that might be useful as reference material. I gave my copy of Missouri Research Bulletin 631 to L.R. Massie quite a number of years ago. I had ~~had~~ seen copy of it in our library before requesting copy from Missouri. I have repeatedly expressed admiration for this pioneer effort by Missouri. The other printed enclosure, "A Brief History of Erosion Control in Wisconsin," is a modified form — partially explained in marginal notes, that has resulted in a long fruitless effort to obtain the original manuscript, desired for deposit in University Archives.

I hope you can find time enough to read the insert pasted over my picture on page one of circular that gives overall outline of that accounts for delay in 1956-'63. I am unable to harmonize topics with chronological order but will attempt combination, brevity and completeness. Following time of my first "stroke" pressure was brought to record events and experiences, that induced me to write a large part of the mid-portion of circular contents. My rapid recovery forced it aside for field activities. In spring of 1956, I

added considerable prefix and annex — covering 6 year gap noted in pasted note in the enclosed circular. — For a large number of years following 1956 retirement, I was very busy as consultant engineer on a couple of sizeable drainage projects. But when I had time to hear references of readers made to the circular, I gave it some study and efforts to recover original manuscript for check. I contacted Ray De Muth, Associate Professor Hembre's secretary and asked him on numerous occasions if manuscript was in files where I had seen it in 1962. His answers were negetive and apparently evasive, but finally he said Prof. I. O. Hembre, at the time of his early retirement, had taken considerable material to his home. I contacted Hembre and received the answer that several week's time would be required to sort material and would let me know result. Quite a few months later, probably in late 1960's, Hembre stopped at my house, said he was in neighborhood and stopped to say "hello," but never mentioned manuscript. --- Answer by Mrs. Hembre, early this year, to my latest request is attached to enclosed letter to Mrs. Taylor, dated July 14, 1975.

About the middle 1960's Mr. J. Frank Cox Director of University Archives, contacted me with request for C.C.C. camp records, wanted for Archives. My answer: S.C.S. had taken them in line of Congressional act of 1935, that gave them over all authority of all conservation activities in which U.S. had participated. (Perhaps this is loophole for change of name plate, from camp number to E.C.W. referred to in earlier letter on The Mt Hoverb dam that I showed "Art" years ago.) I managed to recover the records by round about methods, now unimportant, and

I don't know if C.C.C. camp identification plates of any other of approximately 1000 CCC structures have been defaced or altered.

-3 delivered
them in person to Mr. Cox about 1970. After hurried examination he suggested that I must have other materials intimately connected with erosion control work in Wisconsin. I gave him a hurried outline but was forced to state that the time interval between my retirement in 1956, and his contacts with me had covered a long time. I had no reason to place high value on "run-of-the-mill" file materials, except records of work in which other agencies had been materially involved.

But this interview set off chain reactions: I had a number of widely scattered conferences with Doctor Ira L. Baldwin, Vice President Emeritus, who had charge of reviewing material for Archives. His reactions are summarized in his enclosed letter of September 20, 1972. Copy of statement he refers to in first sentence is enclosed. I followed Doctor Baldwin's suggestion with quite a few conferences and exchanges of letters with Mrs. Donna Taylor.

Before pursuing line suggested in the preceding sentence, I want to enlarge on Doctor Baldwin's suggestion that revealed need for enclosing following statement: The primary object in troubling you with this letter and the earlier one, is to present a true picture of work with which I was involved, and aims of the time in order to prevent false accusations. That is why I enclose Doctor Baldwin's letter of approval and copy of material he approved for Archives. From context you will note that the drainage activities on family farms were directly aimed at improvementing family source of income. In the case of University Marsh the object was to reduce cost of operating

4

University Hill Farms. The drainage project, 9/30 had very moderat expansion into development of a couple larger area projects of nearly 1000 acre; areas devoted largely to production of truck crops [Advantages: Ideally adapted physically for maximum yields and economical ~~for~~ operation.] Expansion of this use will probably be evolutionary with, inevitable increased population pressure. When that stage is reached arrives in the not distant future, even hungry environmentalists and hunters, probably will admit that food plant cover can fill the eye as well as monotonous marsh grass. Lakes eventually will become restricted with accumulation of peat beyond control of man, although he might try to reduce rate of formation of peat.

In the first part of the erosion control section, the prime object was to reduce undermining farm values in a special situation, destructive gullies in river terrace soils. This feature had received hearty endorsement by Assistant Dean K.L. Hatch in 1927, and by Dean H.L. Russel in 1929, after field inspections. Field work under this approva was continued up to mid. 1938. During the period mid-1938-mid-56 I was limited to "jaw-boring" which from my viewpoint, called for technical soundness based on limited fundamental research and fundamental physical facts, while S.C.S. was primari interested in having their operations boosted. This incompatibility did not promote contentment. I am convinced that present trends are short of grass roots development.

In May of this year (1975) Mrs. Hembre, in response to my letter request, To I.O. advised me by letter that Engwald was incapacited, but she would go through the material he had brought home from the office, and

if she uncovered the desired 1956 manuscript she would see that I get it. To date, (October) I have not heard from her. By early June, I had submitted all pertinent available materials to Mrs. Taylor but lack final information, and do not know standards in vogue for admissibility. Probably no one will ever look for erosion material in Archives. I hope you find some use for the Experiment Station reports and find temporary storage space for materials I have given you and am enclosing. I have no reason for retaining it.

Summary: (1) I never considered my accomplishments above higher levels than part of a day's work. (2) I have not been in the habit of seeking personal aggrandizment, and am not embarking on that course now, even though that seems to be a popular trend. (3) I place greater reliance on admittedly limited research than on voluminous propaganda based on theories. (4) Present major handicap is; that much of the program is preceding adequate grass roots background. (5) Oversimplification of a complex field might easily endanger progress in solution of the basic problem, (erosion) particularly where inherent handicaps exist.

I wish you every possible success in pursuit of sound soil conservation. It is important, both immediate and long range

Former Co-worker
O.R. Jeasman

P.S. I have incidentally conveyed a lesson learned late in life — Never help a person bent on self aggrandizment O.R.J.

Annual precipitation records do not account for erosion producing storms
Annual precipitation in Wisconsin is 30 inches
This falls in approximately 55 storm periods per year

by O.R. Zeasman

Annual precipitation totals obscure significance of intense storms

Numerous storms 30 inches total per year	20± inches rain falls in approximately 35 storm periods per year. Some periods cover more than a day Nearly all falls at gentle but variable rates, and intense segments are of very short duration.	3-5 high intensity moderate duration Characteristics 30 min. intensity rate at rate 1 in. per hour, build-up at terminal dribble being 1 inch total.	High intensity long duration storms
No specific number. Initial and terminal dribble of many storms. 0.0	Results in terms of soil loss 5-10% of normal annual soil loss	Cause 90-95% of soil loss	Excessive erosion Flood damage
Infiltration	Present disposal methods Broad zone offers wide opportunity for observation	Helpful but not adequate	present methods fall short of adequate
No controls necessary	Results or conclusions Too high effectiveness attributed to slightly effective practices, contouring, rough seedbed, etc.	Improvement needed	Heroic methods will have to be found

Erroneous conclusions

Claims that present practices are more effective than justified. Most extravagent claim made is that they control floods. Enthusiastic advocates even discount or disregand the fact that strip cropping allows down hill movement of soil in corn and grain strips

Question

Can moderatively effective control practices based heavily on observations and theories

Danger unjustified

Precipitation at gentle rates
Line of shark break
Convulsive thunder storms.
Impact of large rain drops dislodges soil and puts it in suspension for down hill movement. Initially stored water is added to run-off.
High rate of precipitation creates problem of disposal of run-off. Desirable to explore complete storage
near point of impact, in contrast to safe disposal
earths in principle.

I plan to convey a few facts in this note but do not intend to sign it because friendships are involved.

"Blair" Schweers, State co-ordinator for S.C.S. relayed to me an order he had from Washington headquarters, that he ask me to boost S.C.S. farm plans as effective means of flood contro because H.H. Bennett had emphasized that in lobbying before Congress.

My answer: Cannot do. Reasons: All research results and basic facts do not support H.H. Bennett's theory — "Hold all precipitation where it falls" — Your farm plans, ~~of all basic facts~~, fall far short of that object. If you want to support that theory you will need extensive research to develop mechanical storage methods. It can't be done with diversified farm crops. Your S.C.S. ended co-operati Erosion Experiment Station work at end of the 10 year period. Apparently do not place high value on research.

At time of review of the damage of Bayfield flood in 1942, I gave "Mary" a rather complete outline of cause of floods that I am confident convinced him that my position was sound. "Mary" never again asked me to misrepresent flood control facts. But S.C.S. work that I have seen and featured in their present publicity presists on that feature.

I believe that distracts essential farmer interest

(over)

My main object in troubling you with the recent contacts is to make you want to study and evaluate realistically, to extent of available time and interest, ~~to study and evaluate realistically~~ the limited sound research and well established facts, in order to avoid tacit approval of assumptions that easily applied, moderately effective erosion control practices by rearrangement of agricultural crops and contour field operations, will control floods and provide effective control of soil erosion. Endorsement

There is ever present danger of back fire from exaggerated claims