DURING the past year the American Electroplaters' Society has been engaged in collecting from manufacturers funds to be used for cooperative researches on electroplating at the U. S. Bureau of Standards. Their goal is to obtain a fund of $10,000 per year for three years, based on contributions of $50 or more per year from each subscribing firm. To date about $4,000 per year has been raised, and the campaign is being continued by their Research Committee, of which R. J. O'Connor, Bridgeport, Conn., is chairman. W. P. Barrows, formerly of the bureau staff, has been appointed as a research associate on this fund and is starting an investigation of the causes and prevention of "spotting out" of electroplated finishes.

THE North Carolina Senate passed a bill on February 17 providing for the issuance of $2,000,000 of bonds for the purchase of land in the Great Smoky Mountains of western North Carolina for inclusion in a national park to be known as the Great Smoky National Park. The bill now goes to the House. The proposed park would lie in North Carolina and Tennessee and the two states would be required to furnish 428,000 acres of land before the U. S. Department of the Interior would take over the area for development of a park.

THE Arnold Arboretum of Harvard University has recently acquired as gifts to its library two rare volumes of unusual interest both for gardeners and horticulturists as well as for specialists in the earliest printed books. These are the first and second editions of a work called "Das Buch der Natur," by Conrad von Megenberg. The first edition of this rare volume, valued at $4,000, was the gift of J. P. Morgan, who owns the only other copy known in the United States. The second edition, also printed by Baemler at Augsburg, in 1478, was the gift of Mrs. J. M. Sears, and is the only known copy in the United States.

UNIVERSITY AND EDUCATIONAL NOTES

GIFTS aggregating $1,600,000 for additional new buildings and equipment for the Case School of Applied Science at Cleveland were announced on February 25. Charles W. Bingham, of Cleveland, gave $1,000,000; the alumni contributed $500,000. Ambrose Swasey, of Cleveland, gave $100,000 for equipment of the new mechanical laboratory.

PRESIDENT JAMES ROWLAND ANGELL has announced that pledges from 300 men totaling $6,000,000 have already been made, two months in advance of the date set for the formal opening of the $20,000,000 endowment campaign for Yale University.

PRESIDENT FRANK J. GOODNOW has announced that the Johns Hopkins University, after two years of preparation, is now in a position to operate primarily as an institution for graduate study and scientific research, with 80 per cent. of the collegiate work concentrated in the first two years of a college sharply segregated from all graduate departments. It is planned that the collegiate work, even in its curtailed and segregated form, will be continued only temporarily.

ACCORDING to press reports, the terms of the will of the late Hill S. Warwick, of New Jersey, provide that his estate of $100,000 is to go to the University of Pennsylvania upon the death or marriage of his sister. It is stipulated that the bequest be used in part for experiments upon the higher apes with a view to increasing knowledge of the cause, prevention and cure of disease.

THE Massachusetts Institute of Technology has been bequeathed the sum of $25,000 by the will of the late Russell Robb, vice-president and treasurer of Stone and Webster.

DR. EDWARD WILLIAM ALTON OCHSNER, assistant professor of surgery in the University of Wisconsin Medical School, Madison, has been appointed professor of surgery at Tulane University of Louisiana School of Medicine, New Orleans, to succeed Dr. Rudolph Matas, who is retiring from active teaching.

DR. LEE TRAVIS, for three years National Research Council Fellow in psychology and psychiatry, has been appointed assistant professor of clinical psychology and psychologist to the Psychopathic Hospital in the State University of Iowa. His work will be devoted mainly toward the direction of research within the field of speech correction.

NATIONAL Research Fellows in the Medical Sciences have received appointments as follows: Dr. Roy G. Williams, instructor in anatomy at the University of Pennsylvania; Dr. Jeffries Wyman, Jr., instructor in the department of zoology at Harvard University.

PROFESSOR C. E. HORNE, formerly dean of the College of Agriculture at Mayaguez, Porto Rico, has been appointed professor of mathematics at the University of Porto Rico.

THE title of professor of psychology in the University of London has been conferred on Dr. Beatrice Edgell, in respect of the post held by her at Bedford College.

DISCUSSION AND CORRESPONDENCE

SUMMER SCHOOL OF GEOLOGY AND NATURAL RESOURCES

DURING the past twenty years the increasing complexity of the university curriculum and the growing necessity for actual demonstration of principles,

facts and processes outside the classroom has drawn the attention of many educators to the necessity of "field trips" in connection with the regular resident courses and technical courses such as the different branches of engineering and more especially geology. While elementary and even advanced technique can best be taught in the class-room, laboratory or fixed camp, the actual demonstration of a mechanical process or natural phenomena can best be demonstrated in the "outside world," and preferably under the leadership of the man who is responsible for its success. There is nothing quite so stimulating to the conscientious student as the demonstration of a successful piece of work by the man who has helped to put it across.

In this very busy and "work-a-day" world there is an increasing necessity for showing our young men the relation of theory to practice. This statement applies as well to the cultural as to the professional studies. Further, the cultured man of to-day is expected to know a great deal more about the world that *he* lives in than was the case a quarter of a century ago, and every college boy should have some knowledge of his country's natural resources if only to make him a more conscientious citizen. The proper study of natural resources must include, not only the visualization of development of these processes, but also actual contacts with the men who have made the development possible. The principal problem has been how to conduct a "travel class" without seriously interfering with the necessary and regular work of the university, and without too great expense to the student. The Summer School of Geology and Natural Resources, with its headquarters at Princeton University, was created to solve this difficulty for American and European students and teachers. In the language of a New York newspaper, just before the trip started: "Fortunately the geologist can get among his rocks, as the astronomer would get among his stars if he could. But the geologist who stays at home is worse off than the astronomer, for the latter can at least see the moon, though he can not reach it; but the geologist can not see the great works of the earth forces without going where they have been displayed. Surely learning has not offered so pleasant an aspect since the days of Abelard and the waning scholars, who, by the way, might have been much happier and more useful if they had studied geology instead of philosophy." This statement would hold as well for history, politics, architecture and numerous other subjects, both technical and cultural.

When the work of the new school was planned it was fully realized that there would be a number of mechanical as well as educational difficulties. How could we give the class a reasonably good view of the United States in some six or seven weeks? It was soon discovered that an effective itinerary could be arranged with the American railroads and also with the men who were to form the extremely important "field faculty," but how were we to transport our party? It was not our aim to attempt to compete with the tourist agencies, but rather to afford the opportunities for travel and study to a group of individuals who needed this type of course. We quickly determined that we could not handle a party of over twenty-five men effectively in the field and that we should have to work with that unit if we wished to accomplish the best results. The first year's experiment has fully proved the strength of this conclusion and also that if the work of the school is to be extended it must be by working with units of twenty-five men, and not by taking out train loads. Now we come to the mechanical part of the problem. A special train of three or more cars, for such a small group, was too expensive. After much discussion with the officials of the Pullman Company a car was designed which should serve as the home, class-room and transportational agency for as close to twenty-five men as possible. We set the number at twenty-five in order to obtain the minimum excursion rates. Eventually we had to cut the number to twenty-three. But "the proof of the pudding is in the eating," and we did prove conclusively that we could take care of as many as twenty-three men in one car and do it comfortably. Probably this is the first time in the history of railroading that such an experiment has been successfully accomplished, and, as has already been pointed out, this type of car should prove invaluable for many purposes, especially, because of its excellent kitchen arrangement, it may be used with a standard Pullman and take care of fifty tourists. The car is of standard length ($73' - 7''$ over end sills) and contains a kitchen large enough to feed fifty men; a state room and office for the two traveling instructors; six wash basins; four toilets; shower bath; library; a lecture section twelve feet long with side seats or sofas; and a regular Pullman section twelve feet long. The combined lecture and Pullman section serves both as the dining section and sleeping section. The car is also equipped with large water tanks (400 gallon capacity) heater, radio, lantern slide projector, and translux screen, roller wall maps and ample locker space. The car turned out to be a veritable land cruiser with the one exception that it does not propel itself.

Imagine the comfort of traveling in such a car as this. For instance, our land cruiser pulls into Hibbing, Minn., late in the evening and is parked on an attractive siding. Instead of having to find a hotel, the party, having dined, listens to a lecture

on the next day's excursion. At ten P. M. the berths are made up and everybody tumbles in. Next morning we breakfast in the car, put our lunches in our knapsacks, are met by our local leader or leaders. After a full day's work on the Iron Ranges we return to the car for dinner. While we are dining our car is on its way to the next locality. There is another lecture in the evening, and so the schedule continues for over 10,000 miles of railroad travel, not including side trips of 1,000 to 2,000 miles. Most of the time that we are sleeping, eating or studying we are traveling, and so we make use of every minute of the day, and accomplish as much, more comfortably and more efficiently, in one third of the time that it would take to do the same work under ordinary traveling conditions. Wherever the car can not take us we either hike, or arrange for horses or automobiles to meet us. If we wish to see some important section between stations, the railroad company (as in the case of the Northern Pacific) stops the train so that we may "go and see." Sometimes we disembark at one station and take a four days' hike across country to where our car is waiting to take care of us once again. Imagine the delight of having your home, classroom and library always with you and never having to tug a heavy suitcase and a bag of rocks around a strange town or mining camp, or wrestle with an exceedingly varied and at times somewhat unpleasant diet. To those who say that this is altogether too luxurious a mode of travel for a geologist, we would reply that by keeping the party in the best physical and mental condition we are able to get more work done.

The mechanical difficulty of transporting small classes over great distances—of taking one's students to the mountain instead of trying to bring the mountain to the students—has been solved. We have succeeded in making the great railroad system of America an integral part of the university machinery, and we believe for the benefit of both.

The excursion this summer will probably be in Canada and the itinerary will be announced not later than April 1. Those interested in joining the expedition are requested to communicate with the director of the school as early as possible.

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THE COMPOSITION OF GEOLOGICAL PUBLICATION IN THE BIENNIUM 1921–1922

THE published matter relating to geology listed in U. S. Geological Survey Bulletin 758, Bibliography of North American Geology for 1921–1922, by John M. Nickles, was analyzed by the authors in 1924 as to its sources by individuals and institutions and its composition in relation to the principal branches of geology. On completion of the study it was recognized that the two-year period was too short to indicate clearly some of the important trends and plans were laid for extending the analysis over a longer period, partly before 1921 and partly after 1922, when later bibliographic material became available. Since the completion of the extended study is remote it is thought that some of the salient facts brought out for the biennium already studied are of sufficient interest to justify presentation here.

No effort will be made to describe methods in detail; it is recognized that many errors are inherent in attempting a brief objective survey of material so varied in quality and significance as published scientific matter. The facts presented constitute an analysis of printed pages of whatever size or quality as listed in the bibliography above mentioned and for the years in question. The authors recognize clearly that the value and quality of such published matter varies enormously and moreover that no two persons would agree as to the relative value or significance of different papers. Some will feel that too much matter is being published, others that no such limit has been reached. To some of these problems the present paper contributes data without presuming at present to discuss causes, express opinions or render judgments.

The total amount of geologic matter published in the biennium 1921–1922 was almost exactly 60,000 pages, or 30,000 pages a year. Of this amount about 25,000 pages was classed as Economic Geology, about 15,000 pages as Historical Geology (including much areal geology) and the remaining 20,000 pages as Physiography, Paleontology, and Mineralogy-Petrography in the order named. The largest source of this material is the university and college group which is responsible for practically one third of the total. Another third of the total is produced by the state surveys and the U. S. Geological Survey combined, each contributing about half, and the remaining third is due to foreign, consulting, and petroleum geologists, and miscellaneous U. S. and Canadian public bureaus, museums and societies.

Relative to the total the university product is low in Economic and Historical Geology and high in the other subjects and the output of the state and national surveys shows opposite characteristics. Obviously these features are interdependent since the two groups dominate the entire production.

The total of 60,000 pages was contained in about twenty-two hundred papers written by 877 men. More than half of these men produced but one paper in the two-year period. Seven eighths of them pro-