The medical schools of London have grown rapidly during the past century and a half. They originated in a system of apprenticeship, under which the students became attached to individual members of the staffs of the various hospitals. Later this system was terminated and organized schools were established. Early in the present century these schools became constituent colleges of the University of London.

The range of medical education has now become so wide and the subjects included in the training of a doctor so complex that the problems of the teachers are becoming more and more difficult. It is to meet this difficulty that the cooperation between the three schools mentioned has come about. The first steps must necessarily be slow. An executive council has been formed, consisting of the dean and four other members of the teaching staff of each school. Meetings, at which subjects of educational importance will be discussed, will be held throughout the year. The decisions reached will be referred to each school for consideration and such action as may be agreed upon. In order that the cooperation may be as close as possible the dean of each school will be invited to attend the council meetings of the other two schools when subjects of general interest are being reviewed.

A further step has been taken. Certain courses of study are being organized for which it is difficult to cater in an individual school, but which can be arranged without difficulty when the students of more than one school will benefit. Further, the students of each school will be permitted, under an arranged scheme, to avail themselves of the clinical facilities of the other schools.

In order to allow the scheme to develop gradually, in some instances the arrangements for an interchange of clinical teaching will be restricted for an initial period to St. Bartholomew's and St. Thomas'. When, after some preliminary experience, the organization has become stabilized, similar facilities will be extended to students of Guy's.

It is hoped that cooperation on these lines will be of great value to the cause of medical education, and it is felt that the wider outlook thus made possible for the students must be of real benefit to them.

Conferences have recently taken place between representatives of the London Voluntary Hospitals Committee and the London Regional Committee of the British Hospitals Association with a view to the establishment, if possible, of a strong central committee to deal with the affairs of the London voluntary hospitals.

COOPERATIVE RESEARCH OF THE BUREAU OF FISHERIES AND THE UNIVERSITY OF MARYLAND

RECENTLY the Bureau of Fisheries and the University of Maryland inaugurated a program of cooperative research to develop the fisheries of the Chesapeake Bay region. The following is quoted from this cooperative working agreement endorsed by Frank T. Bell, Commissioner, U. S. Bureau of Fisheries, and Dr. R. A. Pearson, president of the University of Maryland:

Recognizing the need for scientific investigations of the fisheries and the various commercial products of the fisheries of the Chesapeake Bay area, it is hereby agreed that the University of Maryland and the U. S. Bureau of Fisheries, in the interests of the fishery industries of this region, to promote the general welfare of the consumer, and to contribute to the economic wealth of the Nation, will conduct, under the general supervision of the president of the University of Maryland and the Commissioner of the U. S. Bureau of Fisheries, such cooperative scientific research as may seem mutually advisable in accompanying the above purposes. It is expected that these studies will include chemical, nutritional, general technological and biological investigations of the fishery products of the area above-named. The initial study will be devoted to the products of the crab industry of this region.

Unless otherwise arranged in the case of one or two special projects, the general program of research will be under the joint direction of Dr. R. V. Truitt, biologist of the University of Maryland, and John Ruel Manning, chief technologist of the U. S. Bureau of Fisheries. Certain phases of the actual experimental or research work will be carried out both in the bureau's laboratories in Washington, D. C., and in the laboratories of the University of Maryland, College Park, Md., and will be conducted, as far as possible, with the personnel now available.

In signing this agreement, the Commissioner of the U. S. Bureau of Fisheries and the president of the University of Maryland believe that these cooperative investigations will promote the development of the fishery resources of the Chesapeake Bay area and will be of general economic benefit. We believe that the cost of these investigations will be much less by this cooperative arrangement than they would be if either organization undertook them alone and we believe that, by pooling and coordinating the administrative and technical training of our respective research staffs, better results can be obtained. In developing this program of cooperative effort, we trust that it will point the way to similar cooperative work between public institutions of this character.

There are already under way two research projects in this general program of cooperative research. The first of these is a study of the vitamin content and other nutritional properties of crab meat. The other project is an investigation of methods for canning crab meat.

CONSOLIDATION OF NATIONAL FORESTS IN ARIZONA

THE Kaibab and the Tusayan National Forests in northern Arizona are consolidated into one forest by an executive order signed by President Roosevelt on August 4, transferring most of the lands of the Tusayan to the Kaibab.

The consolidation will effect economies in administration, making it possible to handle the two units under a single administrative office. Supervisor Walter G. Mann, of the old Kaibab unit, with offices at Kanab, Utah, has moved to Williams, Arizona, where headquarters will be maintained for the enlarged Kaibab National Forest, which lies entirely within Arizona. Former Supervisor G. W. Kimball, of the Tusayan, has been transferred to the office of operations at the southwestern regional office of the Forest Service at Albuquerque, N. M. W. B. Dillon, administrative assistant of the Tusayan Forest, has been transferred to the Ouachita National Forest in Arkansas.

It is the intention of the Forest Service to attach to the Prescott National Forest the areas of the Tusayan unaffected by the Executive Order. A few thousand acres entirely under private ownership will be eliminated from the national forest boundaries.

The Kaibab National Forest is famous for its large herd of deer. From 3,000 in 1906, the deer increased under State and Forest Service protection to an estimated population in excess of 30,000 in 1924. The range began to show serious overgrazing, and starvation conditions prevailed. The Forest Service agreed to the removal of numbers of the deer to other forests and parks by trapping. Hunting was also liberalized. As a result of these measures the deer population has decreased somewhat, relieving the range from serious overgrazing. Under the Forest Service game management plans, the deer population will continue to be regulated to the capacity of the range.

The Tusayan Forest also contains many deer. It grazes in addition approximately 80,000 head of livestock annually. Both the Kaibab and the Tusayan Forest units consist largely of plateaus 7,000 to 9,000 feet high, and mountain peaks about 10,000 feet. There are almost pure stands of ponderosa pine. Besides deer, wild turkeys and other game live in these forests, and the Kaibab squirrel, a large species with white plumed tail, is found in the part north of the Grand Canyon, but nowhere else.

The new Kaibab National Forest will have a gross area of more than 1,000,000 acres. The north and south sections of it are now joined by good roads and bridges and by airline across the Grand Canyon of the Colorado River.

THE THIRD INTERNATIONAL STEAM TABLE CONFERENCE

THE third International Steam Table Conference will be held in Washington, Cambridge and New York from September 17 to 22. Invitations to the conference have been issued by The American Society of Mechanical Engineers in the name of its Special Research Committee on the Thermal Properties of Steam. The conference will provide an opportunity for research workers from abroad to inspect the experimental apparatus at the Massachusetts Institute of Technology and the Bureau of Standards, where work has been in progress since the formation of the special research committee in 1921, to review the results of research in the thermal properties of steam that have been obtained since the last conference, and to agree upon new and narrower tolerances for the values of the international skeleton tables on which the detailed published tables of Callendar in Great Britain, Hausen in Germany and Keenan in this country are based.

In this country, under the auspices of the American Society of Mechanical Engineers Special Research Committee on the Thermal Properties of Steam, experimental work has been in progress at Harvard University, Massachusetts Institute of Technology and the Bureau of Standards. At Harvard University, Dr. Harvey N. Davis and Robert V. Kleinschmidt have conducted a series of experiments on the Joule-Thomson effect. At the Massachusetts Institute, Dr. F. G. Keyes has set up apparatus for determining the pressure-volume relations, while at the Bureau of Standards Dr. Nathan S. Osborne has constructed a calorimeter in which measurements of heat content were made. A high degree of precision resulted from the carefully constructed apparatus and thoroughly scientific techniques employed in all these investigations. Dr. Davis's work was completed first, and from his data and under his supervision Joseph H. Keenan, then an engineer with the General Electric Company, undertook the computation of the values for a complete set of steam tables and Mollier (enthalpy-entropy) diagram. This work culminated in the Keenan "Steam Tables and Mollier Diagram" published in 1930 by The American Society of Mechanical Engineers.

Throughout these investigations, annual public meetings of the Special Research Committee on the Thermal Properties of Steam were held under the auspices of the American Society of Mechanical Engineers and the results were reported year by year in *Mechanical Engineering*. In July, 1929, the first International Steam Table Conference was held in London, with representatives from all the countries in which scientific work on the properties of steam were under way. Tangible results of the conference were the definition, for its own use, of the international kilowatt hour as being equal to 860 international kilocalories, and a skeleton table with tolerances to which all investigators agreed. At the second International Conference, held in Berlin, in June, 1930, the tolerances were narrowed as a result of the experimental work which had been done since the first conference. It is expected that the third conference, to be held this September, will result in even narrower tolerances.