

## HONOR TO DR LAN JEN CHU (朱蘭成)

T. C. Tsao (趙會珏)

Dr Lan Jen Chu has been awarded the Webster Chair of Electrical Engineering at Massachusetts Institute of Technology in succession to retiring Prof. Guillemin, as formally announced by Dean Gordon Brown, Dean of Engineering, M. I. T.

CIE feels proud of Dr. Chu and offers to him heartiest congratulations for this rare honor which Dr. Chu well deserves as described by Farye Finn in the June 1963 issue of "Microwave Journal", and reproduced herewith.



The attached picture, taken at M. I. T. Commencement last June, shows Dr. Chu with his son, Yuan Hou just graduated from the Physics Dept.

"My approach to any problem is to take a good look at it, from time to time, see what changes must be made on the original objective and change direction accordingly."

Using this analytical approach, Dr. Lan Chu has changed not only his direction, but also that of many things in the field of energy transmission and radiation. He has become, as Dr. Peter Elias, Chairman of the Department of Electrical Engineering at MIT, observes, "a leading figure in

半，內容豐富，雖老饕也够充飢，水淇淋細潔適口。飽暖後，從後窗看到另一招待所前凌校長與夫人，正在樹蔭下，托着便當，笑談慢食，我走過去候叙，才知他們，昨天就來住此，豪興可佩，凌校長出鳳梨款待，敬頌盛情，不敢久佇，恐妨休息，道謝回去，擬訪李敬務長，已是休息時間，未便騷擾。

我斲然入睡，醒後，黃壽嘜同學來，引導至餐廳前聽鐵路樂隊演奏。吳國炳校友與夫人等，從浴場走來，吳夫人挽我同立，喊着：「國炳！過來！給我們照相！留念！」吳校友成爲臨時攝影記者，其他校友，也請他照相，攝取各種鏡頭，口歌足舞，返老還童，他自己就是絕妙鏡頭。

下午三時，我和吳夫人，先步行至車站，不久吳府大隊人馬，都來集台，汽笛一聲，專車入站，大家爭先恐後，擠上車廂，我和吳夫人等讓許多兒童先上車，所以較遲，已無空座，好容易坐下，一校友過來，說是：「他有皮包放在座上，早定此位，我歉然讓坐，起立找座，卻是坐定無空位。張錦義同學，見我站着，急令他兩孩讓座，我留一孩同坐，但其妻抱着嬰兒，站倚座旁，真是感到不安，幸車抵八堵，基隆校友下車，張同學一家到前面車廂，去找座位，謝其盛意。及抵臺北車站，我和吳家各位告別，並謝同學會籌備諸校友，尤其是黃壽嘜同學，招待周到，特再誌謝！

## 南和營造廠

承辦土木建築各種工程

經理 何錦南

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## 新建和營造廠

承辦一切土木建築工程

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as required. Dr. Chu worked out the fundamental theory of such an antenna and its limitations, and soon had the work published in 1950-51. He was interested in the traveling wave tube and electron beam technology. By observing experimental results, he worked out a kinetic power theory for electron beams which contributed to a better understanding of them.

Two events, both of which resulted in the publication of a text book, are considered great milestones in the career of Dr. Chu. Through the effort of the department on undergraduate education at MIT, he was able to work with Dr. Robert Fano and others to develop teaching material which has resulted in a much better understanding of the electromagnetic theory. The outgrowth was a text used at the junior level at MIT, "Electromagnetic Fields, Energy and Forces," published in 1960 under the authorship of Dr. Chu, Robert Fano, and Richard B. Alder, all of MIT, and published by John Wiley and Sons of New York and London.

"Professor Chu is an extremely clear thinker," comments Dr. Fano. "He always thinks in terms of synthesis, never in terms of analysis. And in terms of teaching, the whole reason for writing the text, it is a lot easier to teach synthesis than it is to teach analysis."

"Primarily an engineer," says Dr. Fano, "Prof. Chu is interested in seeing things done which are of a practical interest, and in the process he often clarifies some fundamental idea. He is not after scientific research; however, it does become a means to an end. He is always practical. In trying to make sense out of electromagnetics to be able to teach it, he realized a better understanding of it was needed—and the end result was the textbook."

In 1955 Dr. Chu tried a new field—business. Chu Associates, an independent research firm in Littleton, Mass. was formed. The firm began with a small group of scientists who

the country, and probably in the world, in the field of antenna theory and design, as well as in the exploration of electromagnetic theory."

Born in Hweiyung (淮陰), Kiangsu, China, in 1913, his early education was at the Chiao Tung University in Shanghai where he received a bachelor of science degree in electrical power in 1934.

Now a prof. of electrical engineering, Dr. Chu has been studying and working in the U. S. since he entered the MIT graduate school in the fall of 1934. By 1938 he had earned both a master's and doctor of science degrees. While a student at the PhD level, he studied under Dr. Wilmer L. Barrow, currently vicepresident in charge of research and development with Sperry Gyroscope Co. and Dr. Julius Stratton, president of MIT, who introduced Dr. Chu to waveguides and horns at a time when the field was practically brand new. Most of his early publications are in that field.

Two years after receiving his PhD, he was selected by Radiation Lab at MIT to work on radar. The same year, Radio Research Lab was founded at Harvard and Dr. Chu acted as a consultant to both labs on problems of microwave radiation and transmission. He has been a consultant, although on a lesser scale, in problems connected with antennas for a large number of government laboratories, agencies and private companies all over the world.

In 1942, when the Allies were seeking a way to map Berlin at night, Dr. Chu made an important contribution to the national defense. His antenna beam shaping technique was based upon a simple idea and the result was universally used in mapping antennas.

The doors of "Rad Lab" closed with the war. Dr. Chu was now associated with the Research Laboratory of Electronics, an outgrowth of "Rad Lab." Here the need arose for super-gain antennas which would give a beam as narrow

being, and is a tremendously loyal friend. He also worries untiringly about his students."

Along with the "co-op" plan, Dr. Chu has been chairman of the Departmental Educational Policy Committee on Graduate Students which supervises the graduate program, including the writing of theses and advice on studies.

Generally, one day a week, and more frequently, if necessary, he spends several hours at Chu Associates to discuss policy questions with Mr. Faigen, give general advice, look at technical work, review progress with engineers plan for new contracts, and whenever possible meet new accounts.

"My role now is essentially that of a person with research experience for counsel," says Dr. Chu. "I am more an engineer than a scientist. I answer a need; I don't really do experimental work. I enjoy working with enthusiastic students and professors at all levels who work intensely. And when I look at their faces and see an idea register, I have a feeling of accomplishment. It is a great reward to feel that I was able to show them a way," says Dr. Chu. "But still, as in the past, I continue to work with the fundamentals and application of electromagnetic theory.

In 1950, Dr. Chu was elected a fellow of the Institute of Radio Engineers and became a member of the American Academy of Arts and Sciences. He had been a fellow of the American Physical Society since 1946. In 1959, he received the achievement award from the Chinese Institute of Engineers, N. Y., and was also elected a fellow of "Academia Sinica (Taipei) 中央研究院", the Chinese equivalent of the National Academy of Science in this country. For his work at Radiation Lab during World War II, he was awarded a Certificate of Merit by President Harry S. Truman.

For relaxation, Dr. Chu enjoys reading old Chinese classics, and occasionally turns to philosophy. "But when one gets too involved in any area as consuming as my work at MIT, it leaves little energy or time for much else," says the confirmed Bostonian. He likes the Greater Boston area better than any other part of the country, "principally because of the intellectual environment, and the continual activity in my field of scientific interest."

desired a small laboratory where they could express themselves. It is owned by Dr. Chu and managed by Ivan M. Faigen.

In seven years, Chu Associates has grown to a company devoted to research, development and manufacture of antennas, antenna accessory items and microwave devices in addition to the study of problems in electromagnetic theory. There is also a branch in San Diego, Cal., equipped for research, development and design of antennas. Together, both branches employ over a hundred people.

Mr. Faigen refers to Chu Associates as "the hardware end" of the business. With Dr. Chu as the theoretician, so to speak, the company finds a problem and then solves it with hardware. Built on ideas generated from within, it is continuously improving on or developing new antennas, and has been responsible for advanced concepts in the study, design and manufacture of antennas for both the military and commercial markets.

Dr. Chu is basically an idea man, into a detail and. He comes up with a solution and gets others to work out the details. Once the idea is projected, someone, quite often a student, picks it up and works out the details.

Some five years ago, Dr. Chu initiated revisions of the cooperative (work-study) plan at MIT in an effort to bring better rapport between teachers, students and industry. About a dozen firms were hand-picked, and a well-selected group of students were allowed to partake in the plan. The object of the revision was to provide more advice and more profitable opportunities for the students, and more time for the faculty to consult with students. The companies in the plan have been delighted with the progress. "The program is seeking to produce better educated engineers able to make finer contributions to engineering," comments Dr. Chu.

"Dr. Chu is very fond and extremely sensitive of his students," says Dr. Fano. "He has devoted much thought to the welfare of other people, taking very seriously his post of senior professor by advising younger faculty members with great care. He takes great personal interest in their well