Chapter 9

Quality Control Starts and Ends with Education

9.1 Leadership in the Establishment and Management of Various Seminars of JUSE

Since the "QC Basic Course" was created at JUSE in 1949, the number of QC Seminars developed, has amounted to more than 20, up to the present. There is no seminar course which does not include the name of Prof. Ishikawa.

In his book, *What is Total Quality Control? The Japanese Way,* Prof. Ishikawa says:

> "Physics, Chemistry, Mathematics etc. are common in the world. In "Quality Control" on the other hand, which includes the term as "Control", human and social elements have a profound impact, and no matter how superior a way the U.S.A. and the U.K. deploy it, it would never go well, in Japan as it is. In any case, we must develop the method, called the Japanese Way."

The goal of Prof. Ishikawa seemed be to establish the Japanese way in Quality Control. His active career and success in the field of Quality Control was implemented mainly through JUSE.

At the "QC Basic Course", Prof. Ishikawa called into account how to foster QC engineers and QC instructors in the company, and at the "QC Seminar Special Course for Senior Management "(1957–) held in Karuizawa, he emphasized the necessity and the efficacy of Quality Control. At the "DOE Seminar Introductory Course" (1962–), Prof. Ishikawa showed a knack for making use of statistical methods and design of experiments in the workplace, and at the "QCC Basic Course for Foremen" (FBC, 1967–), he taught QC methods and roles for foremen and supervisors, which fit in the front line of the workplace. In the late 1960's, and early 1970's, where QC expanded on a company-wide level, Prof. Ishikawa served as the steering committee chair for the "QC Seminar for the Sales department" (ETC, later EQC, 1968–) and the "QC Seminar

for the Purchasing and procurement departments" (KTC, later KQC, 1971–). When it comes to seminars for QC Circle, as the President of "QC Circle Cruising Seminar" (1973–) and at the "QC Circle seminar for Top Management" (1973–), he talked passionately about respect for humanity, and self- and mutual development.

In addition to the above mentioned seminars, his guidance and cooperation were extended to the "QC Seminar Manager Course" (MC, 1955–), the "Design of Experiment Seminar" (DE, 1955–), the "QC Seminar Special Course for Top Management" (1962–), etc. as well as courses other than QC. (Yoshihito Soma)

(1) The QC Basic Course and the Ishikawa School

As described in 8.1, this seminar, which was derived from the Quality Control Research Group started in 1948, was conducted with 39 participants from 13 companies, for the duration of 30 days, in total, 2 or 3 days each month from September, 1949 to August, 1950, in the form of a Research Group. The course is commonly known as BC, representing the initials of Basic Course. After that, the course has continued to take place to this day as one week a month for 6 months duration with the accumulated number of participants at over 20,000, which is regarded as the core of QC education in Japan.

The names of Prof. Shigeru Mizuno, Mr. Masao Goto, Mr. Shin Miura, Mr. Eizo Watanabe, Prof. Tatsuo Kawata, Prof. Heihachi Sakamoto, Prof. Masao Kogure, Prof. Eizaburo Nishibori, Prof. Sigeiti Moriguti, Mr. Takeshi Kayano, Prof. Kinichiro Saito, Mr. Den Hanada, Prof. Motosaburo Masuyama, Prof. Hidehiko Azuma, etc. can be seen as lecturers of the first program, who established the present day Japanese Quality Control. In the course, literature which came from overseas, was mainly introduced.

Prof. Ishikawa participated from October, in the 1st BC. His first lecture was mainly to introduce W.B. Rice's book *Control Chart* on 21st July, 1950. Along with the start of BC, the "QC Research Group (QCRG)" meeting was held every month to prepare the course materials and workplaces.

There were note-takers in BC who took a record of lecture summaries, which were compiled to be distributed to participants as a monthly report, on the following month. The report was 40 to 50 pages long, mimeographed on coarse paper. The monthly report, of which front cover was titled "Statistical Quality Control," included, not only records, but also a series of articles. It is not clear why this note-taker system was introduced in BC. In most cases, pupils of the lecturers or promising young students were requested to serve as a note-taker, who could join the seminar free of charge, in return for preparing

the minutes, called the monthly report. Among note-takers, a motivated person of quality was appointed as a lecturer for team-based research group activities, from the second term. We established a system of adopting the best of the selected, to take charge of the lectures for the courses later. This became one of the major reasons why this course continued successfully for over 40 years. Incidentally, the note-takers for the first course were Mr. Ikuro Kusaba, Mr. Masumasa Imaizumi, Mr. Kumpei Nakahara and Mr. Kaoru Fujita. The monthly report prepared by them, became the foundation of the *Hinshitsu Kanri* (Statistical Quality Control) magazine, first published in March, 1950. Following monthly reports contained mainly the minutes of lectures, as well as other articles, succeeded in the *Hinshitsu Kanri* (Statistical Quality Control) magazine (Refer to Section 8.3).

From the second course, BC was characterized as fostering QC engineers, which became a course of 180 hours in total, using 5 days each month for duration of 6 months. Although the formality was different from the present, textbooks were prepared, and team-based research group activities, social gatherings, workplaces, homework, etc. were incorporated in the curriculum. From the fifth time, the BC course in Osaka started. From the seventh offering, the course got on the right track and became more content-rich, with 216 hours in total, using 6 days each month. In the event of the 10th course in 1955, a lecturers' association chaired by Prof. Shigeru Mizuno, was put into place. At the same time, the Control Chart Research Group (Chaired by Prof. Ishikawa), the Statistical Method Research Group (Chaired by Prof. Mizuno), the Sampling Inspection Research Group (Chaired by Prof. Asaka), the Statistical Theory Research Group (Chaired by Prof. Moriguti), the Sampling Research Group (Chaired by Prof. Ishikawa) (the Management Method Research Group was added, which was later renamed to the Executive Method Research Group), and the Student Test Committee (Chaired by Prof. Sotojima) were established, as the executive bodies of lecturers' meeting. Later the Implementation Method Research Group (former the Control Method Research Group) joined this course and the foundation of the present course was almost fixed at this time. Actually the Control Chart Research Group and the Sampling Research Group were frequently combined, which commonly called the Ishikawa School.

Prof. Ishikawa played a major role in implementing seminars as a lecturer for workplaces team-based research group activities, and lectures of each subject. Moreover as the chair of the "Control Chart Research Group" the "Sampling Research Group", Prof. Ishikawa imposed tough guidance on research group members with indomitable spirit through investigation and research activities. His tolerant and impartial association,

with a respect to humanity, and personal magnetism attracted people to gather. The outcome was summed up in a number of textbooks and his books, such as Courses on Quality Control, *The Control Chart Method* (JUSE, First edition in 1955) and *Sampling at the factory* (Maruzen, First edition in 1952).

At the same time, (based on Prof. Toshiro Kusaba's suggestion) Prof. Ishikawa and Prof. Mizuno discussed seminar operations, and adopted a two-lecturer system, positively, for implementation, in order to foster young lecturers. More specifically, a drastic method was introduced to foster a lecturer, that is, a less experienced young lecturer was responsible for the former part of the lecture, and a veteran lecturer made the latter part of the lecture by supplementation. Strangely enough, there were no complaints from participants at that time, however, it was considered that allocated young lecturers made advance preparation, with religious care, by referring to the monthly report (minutes of the lecture) of the previous month (Refer to contributions by Mr. Takanori Yoneyama in Section 4.3 and, by Mr. Katsuhiko Tsunoda in Section 9.1).

While Prof. Mizuno was committed, as the chair, to operate and develop the course from a holistic point of view, Prof. Ishikawa encouraged lecturers and the Secretariat not to allow the execution of a series of young lecturers' fostering system, such as the two-lecturer system, clerical assistant system, guidance of team-based research group and research group activity to stagnate.

Note: Special thanks to Prof. Ikuro Kusaba and Mr. Yosihito Soma for organizing this article.

"You cannot think that I cover Your Back"

Hiroaki Nakazato

I had the pleasure of meeting Dr. Ishikawa when I served as the secretary for Quality Control Basic Course. Since then, I have had numerous opportunities to learn from Dr. Ishikawa through JUSE's Ishikawa sectional meetings, various committees such as the control chart sectional meetings, quality control seminars, and corporate counseling, and for these I feel much honored.

Dr. Ishikawa taught me not only quality control but many other things in every field. In particular, I cannot forget one experience. This was when I was just starting to learn quality control.

Back then, I was often in-charge of the same course credit for QC Basic Course as

Dr. Ishikawa. I would be in charge of the first half of the lecture, and Dr. Ishikawa the latter half. When there was some insufficient coverage in my first half of lecture, Dr. Ishikawa would supplement that insufficient part during his time of the lecture. Through this experience, I learned what to deliver for a lecture as well as how to guide our juniors. I felt safe in that I could speak freely what I wanted, and Dr. Ishikawa would cover the rest and put the lecture in order.

At that time, Dr. Ishikawa and I were counseling quality control at a company. Dr. Ishikawa's belief was that one can do it if you let him do it. Once Dr. Ishikawa decided who instructed what, Dr. Ishikawa left a lecturer to his own even he was a novice. Dr. Ishikawa always had a grasp of company's quality control status. Thus, I believed that I could proceed as I wished if Dr. Ishikawa didn't mention anything. One day, I mentioned to Dr. Ishikawa that I was fortunate to have him covering my back. Immediately he scolded, "Nakazato, what are you saying? You cannot think that I cover your back. Establish your own QC". His words are engraved on my mind. I can't forget this forever.

(Advisor, JUSE,
Former Professor of Tokyo University of Agriculture and Technology)

This is How the Diagnosis Should Be Done

Bunteru Kurahara

I had an opportunity to learn QC when I participated in the 12th QC Basic Course (12BC) held in Osaka, as a transcriber, in 1956. The venue was the Chamber of Commerce in Nakanoshima. On the very last day of the course, Prof. Ishikawa and I rode in the same car on the way back to Osaka Station. In the car, Prof. Ishikawa suddenly said to me, "For the next year's BC (13BC), you must support JUSE as a lecturer. Study hard for that."

I got back home and thought carefully about it. I could probably apply Prof. Ishikawa's teachings to the everyday work that I am in charge of, but being a lecturer and teaching what I had just learnt to business people was a whole different story. I was anxious, at first, as I was not sure if I could take on that kind of responsible role.

The experience changed my life significantly. I am grateful to Prof. Ishikawa for giving me such a life-changing opportunity. If I had not met him, I would not have been who I am today, being able to put everything I have, into QC.

In order to put into practice what Prof. Ishikawa taught me, I tried as hard as

possible to find time and acquire the skills to counter the practical issues of QC in the workplace. Later on, I had a chance to accompany Prof. Ishikawa to diagnose a company.

The most memorable diagnosis was the one we carried out at Chuetsu Metal Works Co., Ltd. in Hokuriku. He showed me, by himself, how the diagnosis should be done. When we arrived back at Tokyo Station, in the early morning, after taking the same overnight train back home, we went to the public bath in the underground arcade, had a bath together and ate breakfast together. I recall these memories shared with Prof. Ishikawa fondly.

When I asked him about his view of life, he shared with me his experience and taught me many valuable lessons. His teachings are etched in my mind deeply, and will always shine brightly in my life. May Prof. Ishikawa's soul rest in peace.

(Advisor, Union of Japanese Scientists & Engineers;
Formerly of Japan Electric Meters Inspection Corporation)

The Ishikawa School

Katsuhiko Tsunoda

It was from 1962, when I graduated from the "QC Basic Course," and joined the Control Chart Research Group and the Sampling Research Group, that I was taught Quality Control, personally by Prof. Ishikawa. Prof. Ishikawa served as the chair for both research groups. Prof. Ishikawa, at that time, was very well and was all fired up, with a loud voice.

My first assignment when I joined the Control Chart Research Group in 1962, was to make a lecture for the 22nd QC Basic Course. Prof. Ishikawa told me out of nowhere, "Tsunoda of NTTPC[†], you lecture the last practice case of the control chart." I declined by saying "impossible," but I was not forgiven. I did not know what questions would come up, as it was the last chapter of the control chart. For six months, from then, I kept walking with that thick text book, *The Control Chart method*, every day. As Prof. Ishikawa always called me as Tsunoda of NTTPC, for appointment of tasks during the research group meeting, I was frightened every time Prof. Ishikawa started to say NTTPC. When I recall now, I appreciate it very much, as it was his way of encouragement for me to study, where I bore the name of NTTPC.

[†] Nippon Telegraph and Telephone Public Corporation

Around 1965, a joint research group meeting between the Control Chart Research Group and the Sampling Research Group was held for the duration of one night and two days twice a year. Location-wise, the Aoi-so rest house of NTTPC was often made use of.

Arriving at Aoi-so the night before, we stayed up all night to discuss Quality Control over a drink. Prof. Ishikawa complained me at around 2 a.m., because no alcohol was left, and toughened me up for the presentation meeting, which started at 8:30 a.m. on the following morning, at 8:30 a.m. It was really hard but these days were enjoyable and fulfilling.

It was on "Quality Control for Construction Work" that Prof. Ishikawa praised me at one joint research group meeting. It gave me confidence and brought joy, as I was recognized by Prof. Ishikawa.

For your information, the document for the Control Chart-Sampling Joint Research Group meeting, held in December, 1965, shows the following topics for presentation and study:

Sampling Research Group

1. The relationship between the intrinsic technology model and the DE model
   Instructor Kano
2. The application of ratio estimation at work sampling
   Instructor Kume
3. An Application of Computer for Process Control in Steel Industry
   Instructor Imaizumi
4. About business trend indicator
   Instructor Takesue

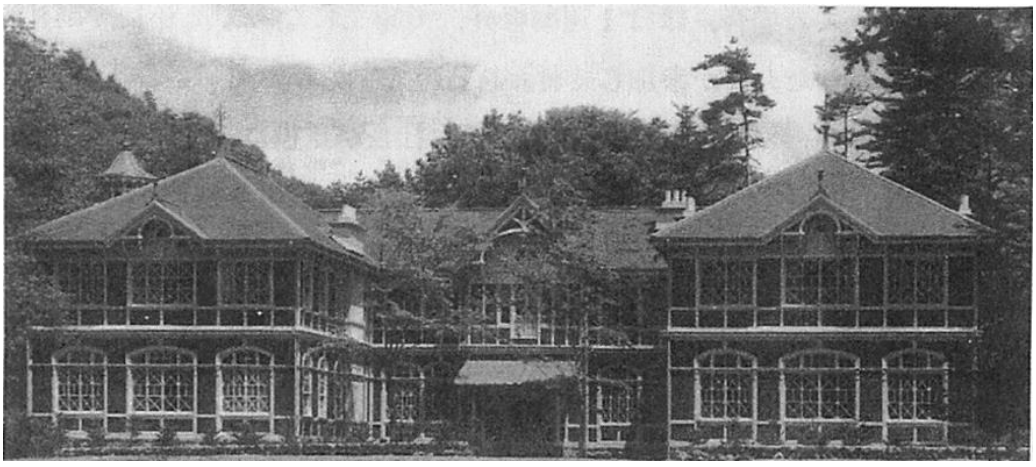
Control Chart Research Group

1. Two level or three level Multi-way layouts and orthogonal array
   Instructor Maeno
2. One observation of "Cause and Effect Diagram" and "Process Chart"
   Instructor Ezoe
3. About cusum control chart
   Instructor Takahashi

(Counselor, Union of Japanese Scientists and Engineers;
Formerly of Nippon Telegraph and Telephone Public Corporation)

(2) QC Seminar for Executives

In 1954, Dr. J.M. Juran visited Japan for the first time and gave a series of lectures: the QC Seminar for Executives (a two-day course held in Hakone and Kobe) and the QC Course for Managers (a ten-day course in Tokyo and Osaka). These lectures were the catalyst for the Union of Japanese Scientists and Engineers (JUSE) to hold the QC Seminar for Managers (MC) the following year (with a program designed by Shigeru Mizuno, Okizo Kamio, Hiroshi Matsumoto, Rintaro Muramatsu, and Eizo Watanabe. Many of the participants in this course said that they would like JUSE to offer another seminar, to provide management executives with an understanding of quality control. In response to these requests, JUSE considered the matter, and the QC Seminar for Executives was established with the primary objective of providing a forum in which management executives could gain a deeper understanding and awareness of quality control, in order to ensure that Japanese quality control could be useful in corporate management. With the cooperation of Professor Shigeru Mizuno, Professor Tetsuichi Asaka, and Professor Kaoru Ishikawa, the course was held for the first time in July 1957, at the former Mikasa Hotel (now an Important Cultural Property) in Karuizawa.



The former Mikasa Hotel (before it closed in October 1970, bringing down the curtain on 64 years as an hotel, it was used as the venue for the QC Seminar for Executives for 13 years, right through to July of that year)

The fully residential program lasting five days and four nights consisted of the two classes, A and B. Due in part to the fact that all three professors were around 40 years of age at the time, the relationship between lecturers and participants was most congenial,

like siblings or other family members, and the residential course proceeded amid a harmonious atmosphere.

Thereafter, for 27 years until the 27th seminar, this program was planned and run by these three professors. Professor Mizuno retired after the 27th seminar, while Professor Ishikawa continued to give lectures every year, for 32 years in total, until 1988. When the 30th seminar ended, Professor Asaka approached Professor Ishikawa and suggested, "30 is a good round number, so why don't we retire and pass the baton on to the younger generation?", but Professor Ishikawa replied, "I'm carrying on, so you should keep going for a bit longer too," and continued to be a mainstay of the seminars (tale related by Professor Asaka). This anecdote really does demonstrate Professor Ishikawa's passion for QC. Professor Ishikawa also always used to say, "Unlike other courses, the Seminar for Executives at Karuizawa is where I spend a full day talking enthusiastically to the executives about my views on QC, my own experience, and future approaches to QC."

As of 1991, this seminar has been run 35 times (for 35 years) and around 5,000 executives have participated in it to date. It is often said that the main reason for the progress of quality control in Japan is the fact that executives, particularly company presidents, took the initiative in promoting it. All three professors were invariably unanimous on this point. The first thing that a president must do to demonstrate leadership is to study. Merely listening to a short lecture or attending an impromptu one- or two-day course is not enough. I have heard that in the West, it is usual for courses for management executives to last only a day, or three at most. In addition, the majority of the "management executives" who attend these courses are apparently those at what in Japan would be company director or departmental director level. In contrast, this seminar truly is a seminar for executives, as the name suggests, with company presidents, vice presidents, managing directors, and executive directors cooped up in a hotel in Karuizawa for about a week. Even within a company, the fact that the president has spent a week taking part in the Seminar for Executives seems to have a major impact in terms of promoting TQC.

I believe that it would be no exaggeration to say that it is the practice of TQC at each company—driven by the leadership provided by participants in this seminar—that has led to the international competitiveness of today's Japanese companies in the area of quality. In this sense, one could say that the question of how this seminar will develop in the future is of paramount importance to the future of the quality provided by Japanese companies.

Professor Mizuno and Professor Ishikawa have passed away and Professor

Tetsuichi Asaka is the only one of the three original lecturers left, but thanks to the support of Professor Shoichi Shimizu, Professor Tatsuo Ikezawa, Professor Hajime Makabe, Professor Kenji Kurogane, Professor Hitoshi Kume, and Professor Noriaki Kano, we are able to offer five classes a year.

Professor Asaka says, "I'm the last of the three. If only old Ishikawa were still with us. While I'm still in good health, I'd like to do my best, for the sake of those who have been kind enough to carry on the history and traditions at Karuizawa, for the sake of the QC world in Japan, and to convey Ishikawa's last wishes." (See contributions by Professor Tetsuichi Asaka in Section 3.2 and by Kenzo Sasaoka in Section 4.4)

(Masami Mita)

(3) QC Seminar for Marketing

Launched under the title "JUSE Course for Marketing," with the primary goal of instilling a scientific approach among salespersons, the first course took place from August to November 1968 for 16 days in total, with one four-day session being held each month for four months. The organizing committee was chaired by Professor Ishikawa.

Chairman	Kaoru Ishikawa (Professor, the University of Tokyo)
Coordinator	Hajime Karatsu (Director, Development Department, Matsushita Communication Industrial Co., Ltd.)
	Shuji Hayashi (Professor, the University of Tokyo)
Committee Member	Tatsuo Ikezawa (Assistant Professor, Waseda University)
	Yoshio Ohno (Director, Marketing Department, Shiseido Co., Ltd.)
	Saburo Suganami (Director, Data Processing Division, Mitsubishi Atomic Power Industries, Inc.)

The distinctive features of this course were as follows:

Hitherto, the seminars organized by JUSE were what might be described as horizontally-structured seminars, consisting of separate seminar programs for the themes of quality control and operations research, for which participants from all corporate departments with a connection to these themes were accepted. However, this "Course for Marketing Staff" was the first vertically-structured seminar, teaching salespersons everything that they needed to know as salesperson, rather than being confined to a specific theme. Consequently, the curriculum comprehensively covered

the essence of a variety of themes, as shown below. The relationship between the courses can be depicted in the form of the following diagram.

<table>
<tr><th colspan="5">JUSE seminars to date</th><td rowspan="7"></td><th colspan="2">QC Seminar for Marketing</th></tr>
<tr><td rowspan="6">QC course targets</td><td>Shop floor staff</td><td rowspan="6">OR course targets</td><td>Admin staff</td><td>OR techniques</td><td rowspan="6">Targeting marketing staff</td></tr>
<tr><td>Planning staff</td><td>Data processing staff</td><td>QC techniques</td></tr>
<tr><td>Design staff</td><td>Shop floor staff</td><td>MR techniques</td></tr>
<tr><td>Marketing staff</td><td>Marketing staff</td><td>Design of experiments</td></tr>
<tr><td>Development staff</td><td>Accounting staff</td><td>Computer techniques</td></tr>
</table>

In addition, experts in fields that had not previously had any connection to quality control were asked to join the ranks of the seminar instructors, and, as described above, elements that differed from those used in other JUSE seminars were incorporated into the methods used to train the seminar participants. The Japanese name of the course, Eigyō no Tame no Cōsu, was abbreviated to ETC, after the English-language abbreviation "etc."

By the time of the sixth and seventh courses in the 1970s, the number of course participants had declined, and plummeted further to just 25 at the time of the eighth course, due in part to the oil crisis. With this decline in participant numbers, it was becoming difficult to continue running the course; during a committee meeting around that time, the secretariat and the majority of committee members voiced the opinion, "Perhaps we should take a year off next year and wait for the economy to recover." Having listened intently to these views, Professor Ishikawa declared in a loud voice, "It would be easy to take a year off or to give up. Let's think about how we can turn it into a course that will be useful for marketing staff, and how we can increase the number of participants to ensure the survival of the course." With these few words, it was decided to keep the course going and the committee members deliberated long into that night about the way forward. As a result, the course underwent a complete makeover to transform it into a "QC for Marketing" course.

Consequently, the courses up to and including the eighth course (1974) were held under the name "JUSE Course for Marketing," and was renamed the "QC Seminar for Marketing" (EQC for short) beginning with the ninth course. In conjunction with the change of name, the content was also completely reorganized to create a course that would enable marketing staff to study quality control. This reorganization was a great success: the number of participants began to increase the following year, from the ninth

course onwards, and it continued to expand steadily thereafter. The approach adopted till then during the course was primarily based on group discussions focused on specific themes, but it was revised to introduce small study groups that considered individual themes contributed by each course participant based on experiences at their own workplace. This too helped to ensure that the course ran smoothly. Ultimately, Professor Ishikawa served as chairman until the 16th course (1982). Tatsuo Ikezawa took over the reins as chairman from the 17th course, when we received so many applications to participate that we could not accept everyone, so we established a new course called "Introduction to QC for Marketing."

As of 1991, we are holding the 25th course (130 participants, once a year) and the 19th introductory course (140 participants, three times a year). Looking at how these courses are thriving today, I am particularly struck by the words of the Committee's current chairman, Professor Ikezawa, who said, "If Professor Ishikawa hadn't spoken up that time, our current marketing courses might not have existed." Professor Ishikawa truly was both the birth parent and the foster parent of this course, creating it and nurturing it over the years. (Masami Mita)

Introduction of QC to the Marketing Department

Kosuke Kuji

I learned a great deal from Professor Kaoru Ishikawa regarding a variety of things, but more than anything else, I cannot forget his tenacious efforts to introduce quality control in the marketing department. I do not know when he began thinking about introducing quality control to the marketing department.

The first time I officially had the opportunity to work with Professor Ishikawa was the JUSE Course for Marketing (ETC), which began in August 1968. This 16-day seminar held over a period of four months provided marketing staff with an introduction to the essence of various seminars that JUSE was organizing at that time, in order to teach them scientific techniques and ways of thinking. Accordingly, the course lecturers were drawn from the ranks of the instructors for the existing seminars, including quality control, market research, operations research, and design of experiments, and were organized appropriately. At that time, I was a lecturer for the market research seminar and became involved in the running of the ETC seminar, taking on responsibility for the lectures on market research.

In September that year, organizing committee chairman Professor Ishikawa wrote

Quality Month Text No. 34, *Quality Control in Distribution Systems*, in which he described the application of QC to sales, as well as a number of QC-related maxims relevant to sales. Furthermore, the October 1971 edition of the *Hinshitsu Kanri* (Statistical Quality Control) contained a special feature that highlighted "distribution systems and quality control" as a key theme, in which he strongly advocated the application of quality control to marketing, sales, and distribution.

At that time, I myself was anti-QC (my "anti-QC thesis" was published in Quality Month Text No. 48, *Quality Control in the Marketing Department*, which was issued in September 1970) and argued in favor of the proper practice of marketing. Thinking back now, I blush to recall how narrowly I viewed the concept of quality, but Professor Ishikawa nevertheless accepted me with great magnanimity and patiently guided me.

Given that the work I do today sprang from "Quality Control in the Marketing Department" to some extent, I would say that this is the result of my having been nurtured by Professor Ishikawa.

The ETC was subsequently reorganized into the QC Seminar for Marketing (EQC) and as of today (the 25th seminar), there have been 2,311 participants. One would have to say that Professor Ishikawa's efforts have borne fruit magnificently.

(Lecturer, School of Pharmacy, Showa University)

(4) QC Seminar for Purchasing

This seminar was launched in 1971 under the name JUSE Course for Purchasing (KTC), as a sister course to the JUSE Course for Marketing (ETC). Professor Ishikawa served as chairman of the organizing committee and the "Invitation to Participate" for the first seminar describes its purpose as follows:

> "Today, one of the problems common to most manufacturing companies is the issue of strengthening the capabilities of the purchasing department. The reality is that across Japan, on an average, 70% of the manufacturing cost of a product is accounted for by items purchased from other companies, so the purchasing department occupies an extremely important position in terms of both quality and cost. Hitherto, this department tended to be regarded as fairly low-key in comparison with the technology and production departments, but awareness of the role that it plays and the importance thereof has grown as corporate management overall has improved. Most notably, quality improvements, the reduction of costs among producers, the integration of management functions, innovation in materials, and pricing policy are being placed under the microscope as new issues that must

not be overlooked.

From this perspective, QC, OR, IE, design of experiments, computers, and other scientific techniques and technologies that JUSE has developed and disseminated over the last 20 or so years are effective tools in relation to the management technology to be employed by purchasing departments. Accordingly, we have planned the JUSE Course for Purchasing (KTC), in order to foster a scientific viewpoint by using these techniques to introduce a common "language" between the technology and purchasing departments..."

Four years later, in 1975, the course was reorganized under the name QC Seminar for Purchasing, in order to highlight the important roles of the seminar in company-wide quality control activities. I am struck once more with admiration for Professor Ishikawa's foresight, which really was demonstrated in the timing of this name change. Subsequently, with the advent of the TQC boom, the purchasing department rocketed in importance, and today, now that materials are also purchased from overseas, expectations regarding this course are growing further still. Under Professor Ishikawa's leadership, this seminar underwent several reforms to meet the needs of the times, and it continues to be held today, as a course that is without parallel in teaching the knowledge and practical skills that all purchasing staff need to master.

Apart from this seminar, Professor Ishikawa also assisted as the main instructor for courses including the QC Seminar for Executives, the QC Seminar for Senior Management, and the QC Seminar for Managers, and one of the things that he always covered in his lectures on all of these courses was the "Ten QC Principles for Vendee-Vender Relations," which he had put together at a panel discussion at a QC conference in 1960 and then re-examined and revised at the fourth Quality Control Symposium in 1966. In these lectures, he would talk passionately about the Ten Principles in relation to importance of the purchasing department in TQC activities. The content of his lectures seem to suggest that he was keen to highlight the importance of this field, which had hitherto been regarded as rather low-key, as the aforementioned "Invitation to Participate" also states.

Each time, at the beginning of the seminar, it was customary for Professor Ishikawa, as chairman of the organizing committee, to give a lecture entitled Purchasing and TQC. When I went to ask him to give this lecture at the 18th seminar to take place in August 1988, he had a slight cold and sounded rather hoarse; so on behalf of the Secretariat, I said, "Why don't we move your lecture to a later date?, " whereupon the Professor roared, "I know my own body! There's no need to worry, I'll do it as planned!" On the day of the lecture, we took great care of his state of health and listened

attentively to Professor Ishikawa via a monitor. Although his voice was a little weak, there was barely any trace of hoarseness and he sounded clearer than when I had heard him before. He seemed a little tired after the lecture, but I'll never forget the sight of him enjoying a cigarette, as if to say, "Didn't I tell you there was no need to worry?" His lecture at the International Seminar on TQC the following month was unfortunately his last lecture at a JUSE seminar. (See contribution by Mr. Koji Morooka in Section 10.3)

(Katsuhiko Okada, Deputy General Manager, First Operations Division,
Union of Japanese Scientists and Engineers)

(5) Introductory Course for Design of Experiment

The Introductory Course for Design of Experiment (6-day course) was launched in Tokyo in April 1961 by Professor Ishikawa, along with fellow academics Hiroshi Matsumoto, Shizuo Ito, and Hiroaki Nakazato.

During the year or so before the second course was held, they revised the overall curriculum and compiled a textbook to be used on the course, as well as reorganizing the schedule to make it an eight-day course split into two halves, both lasting four days. The textbook was published under the title *The Elementary Design of Experiment Textbook* (JUSE Press, first edition published in 1963; 88,500 copies have been published as of February 1992).

The authors of this textbook (aforementioned four academics) demonstrated perfect teamwork in taking charge of the lectures on the second to eighth courses. The course was timetabled so as to ensure that participants gained a deeper understanding, tailoring the exercises according to the progress of the lectures, something that is a distinctive feature of JUSE's seminars today. This too was Professor Ishikawa's idea; in addition, he actively promoted young lecturers from the Basic Course to provide instruction during these exercises, thereby helping to cultivate their skills in practical situations. New lecturers joined the team from the ninth course onward and the course content was improved to reflect the needs of the times. Today, it survives as the only introductory course with an established reputation for training researchers and engineers who study experimental design for the first time.

(Takamichi Endo, Manager, Second Operations Division,
Union of Japanese Scientists and Engineers)

9.2 Lecturing All the QC Courses Organized by the Chemical Society of Japan

In the chapter on the round-table discussion (Section 3.3), Koichi Ohba, Tatsuo Ikezawa, and Yoji Akao have all described the tremendous impact of the courses organized by the Chemical Society of Japan (CSJ). Fortunately, articles about the courses were published in *Kagaku to Kōgyō* (Chemistry and Chemical Industry), the journal of the CSJ at the time, so a summary of the articles is included as the reference material at the end of this chapter and the following paragraph provides an overview of the courses.

The first course was a three-day course held in 1950, which was co-hosted by the Kanto Branch of the CSJ and the National Museum of Nature and Science. Attended by 345 people, it was deemed "a huge success," so the following year the course duration was doubled to six days and it was co-hosted by the Kanto Branch of the CSJ and the Union of Japanese Scientists and Engineers (JUSE). A cumulative total of 750 people attended and the journal described it as "a rare example of overwhelming success, to the extent that although additional collapsible chairs were set out, it was impossible to meet demand from those wishing to attend." Word of its success spread to the Kansai region and in 1952, the CSJ's Kinki Branch and JUSE co-hosted a course entitled Statistical Methods and Quality Control. Thereafter, articles on the course held in Tokyo (co-hosted either by the Kanto Branch and JUSE, by the Kanto Branch, JUSE, and the Association of Chemistry-Related Academic Societies, or by the CSJ's headquarters and JUSE) appeared every year until 1958, while articles on the course in the Kinki region appeared every year until 1954. The title of the course also varied each year, with names including "The Course on Statistical Methods and Design of Experiments", "The Course on Experimental Design", and "The Course on Quality Control and Design of Experiments". The main lecturers were Professors Shigeru Mizuno, Tetsuichi Asaka, Kaoru Ishikawa, and Sigeiti Moriguti. Professor Kaoru Ishikawa lectured at each of the courses. Until around 1955, the number of participants ranged from 300 when attendance was poor, right up to 400 or even 500.

According to him, Ikuro Kusaba became a lecturer at the Kinki Branch's course at the invitation of Professor Ishikawa, who, along with Professor Shigeru Mizuno (who had also majored in chemistry), undoubtedly spared no effort in the planning and running of the course. As can be understood from Yoshitaka Ogiwara's contribution concerning the courses in Gunma Prefecture, it would seem that the runaway success of the courses in Tokyo and Osaka led to their being held elsewhere as well.

"Don't Miss the Bus!"

Yoshitaka Ogiwara

I first met Professor Kaoru Ishikawa at a regional meeting of the Chemical Society of Japan that took place in Kiryu in 1950 or thereabouts. At the time, all I knew about him was that his field of specialism was the same as mine: chemistry. In 1953, my boss at Gunma University, Professor Isao Shimoda, who had the view that the engineers of the future would need to study statistics in order to survive in the face of the dramatic progress being made in industrial technology in the USA, decided to invite Professor Ishikawa (then an assistant professor at the University of Tokyo and already at the very forefront of his field) to Kiryu to offer us lecture. A close friend of Professor Shimoda's was Professor Ishikawa's direct supervisor, so we miraculously managed to organize the Kiryu Quality Control Class, with Professor Ishikawa as the instructor.

These classes continued for several years. The number of QC disciples at Kiryu exceeded the 100 mark. The professor also began a course in design of experiments in 1963 and many alumni who took this course are at the vanguard of industry today.

It goes without saying that everyone who took his courses was completely fascinated by the Professor's powerful lectures and their fresh, exciting content. "If you don't master quality control now, you'll miss the bus!" The professor's words rang loudly in everyone's ears. I am certain that the path that I have followed until now has been entirely guided by these words.

The alumni who took his courses, who have already reached the mandatory retirement age at their companies, have often said, "I don't really remember what he taught us, but ever since, I've been proud to have been able to study under such an eminent professor."

I had one more key encounter with him, in 1972. I ran into the Professor in a corridor at JUSE. "Have you heard of QC Circle? It's no good just sitting there in the countryside, with your nose in a book! This is your last chance to get on the bus!" And so that was how I heard about QC Circle for the first time, as he encouraged me to participate in QC Circle activities.

Since then, I have had the feeling that my entire concept of manufacturing, which was up to that point merely having bandied theories around in my ivory tower, completely overturned. I discovered that quality control is not something that can be achieved by rigorous theory alone and that a richness of spirit is also essential. This was such a revelation to me that I felt as though the scales had fallen from my eyes.

It seems to me that the Professor always explained the most important things in the

simplest terms. I believe that the Professor's easily understandable, powerful beliefs that "if you progressively move forward with improvement using statistical techniques, quality will improve without fail and the company will flourish" and that "no matter what the theory, it's useless if you don't put it into practice!" bore fruit magnificently, creating the splendid "worldwide QC" that we see today.

I take a tremendous pride in the fact that I had the good fortune to encounter such a great professor, and I feel quite keenly the weight of responsibility to do what little I can to pass on his countless precious insights to the next generation.

(Professor Emeritus, Gunma University)

Reference Material: The following are the Courses organized by the Chemical Society of Japan (CSJ) on statistical methods, design of experiments, and quality control

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"A Simple Course on Statistical Methods and Design of Experiments"
Organizers: Kanto Branch of CSJ/National Museum of Nature and Science
Date: December 7–9, 1950 (3 days)
Venue: Auditorium, National Museum of Nature and Science
Course Topics and Lecturers:
Design of Experiments (1st-3rd lectures),
Motosaburo Masuyama, the University of Tokyo
Statistical Concepts and Simple Testing Methods,
Kaoru Ishikawa, the University of Tokyo
Analysis of Variance, Correlation, and Graphical Methods,
Shigeru Mizuno, Tokyo Institute of Technology
Number of applicants: 345

Source: A 1951 article on p. 121 of Vol. 4, No. 3 of *Kagaku to Kōgyō* (Chemistry and Industry), the Journal of the Chemical Society of Japan.

"Second Course on Statistical Methods and Design of Experiments"
Co-organizers: Kanto Branch of CSJ/JUSE
Date: December 3–8, 1951 (6 days)
Venue: Large Auditorium, Building 2, Faculty of Science, the University of Tokyo
Course Topics and Lecturers: The course was divided into elementary and intermediate levels.

Elementary Course
Basic Distribution in Mathematical Statistics,
Tetsuichi Asaka, Faculty of Engineering, the University of Tokyo
Statistical Thinking,
Shigeru Mizuno, Tokyo Institute of Technology

Correlation Analysis,
Shigeru Mizuno, Tokyo Institute of Technology
Analysis of Variance,
Kaoru Ishikawa, Faculty of Engineering, the University of Tokyo

Intermediate Course
Design of Experiments,
Genichi Taguchi (on behalf of Motosaburo Masuyama, Faculty of Medicine, the University of Tokyo)
Sampling,
Kaoru Ishikawa, Faculty of Engineering, the University of Tokyo
Participants: Around 750 in total

Source: A 1952 article on p. 468 of Vol. 5, No. 9 of *Kagaku to Kōgyō* (Chemistry and Industry), the Journal of the Chemical Society of Japan.)

"Elementary Course on Statistical Methods and Quality Control"
Organizers: Kinki Branch of CSJ/JUSE
Date: August 18–23, 1952 (6 days)
Venue: Faculty of Engineering Auditorium, Osaka University
Course Topics and Lecturers:

Statistical Methods and Quality Control
Control Chart Techniques,
Eizaburo Nishibori, Senior Advisor, JUSE
Distribution of Statistics,
Tetsuichi Asaka, Assistant Professor, the University of Tokyo
Testing Methods and Correlation Analysis,
Shigeru Mizuno, Professor, Tokyo Institute of Technology

Analysis of Variance and Design of Experiments
Sampling,
Kaoru Ishikawa, Assistant Professor, the University of Tokyo

Course fees: Members: ¥1,000, Non-members: ¥1,200, Participants from universities/research institutes: ¥600
Textbook fee: ¥500 (limited to one copy per participant)
Textbook only (not attending course): ¥600 (postage: ¥40)

Source: A 1952 article in Vol. 5, No. 7 of *Kagaku to Kōgyō* (Chemistry and Industry), the Journal of the Chemical Society of Japan.

Note: In putting this section together, Professor Ikuro Kusaba of Nagoya Institute of Technology and Professor Masahiko Munechika of the Department of Chemical System Engineering at the School of Engineering, the University of Tokyo, provided a great deal of assistance in the gathering of information.

9.3 Quality Control Courses on Radio and TV

Professor Kaoru Ishikawa helped to spread the concept of quality control using the mass media, serving as the principal lecturer for the *Quality Control Course* broadcast in July 1956 by Nihon Short-Wave Broadcasting, the *New Management and Quality Control* program broadcast on NHK Radio 2 for six weeks from July 15, 1957, and the Quality Control and Standardization segments on The Factories of the Future, which was televised on NHK Educational TV for a year from April 1960. One person from NHK said, "I'm amazed that the textbook has been selling so well. I didn't realize that so many people were interested in quality control." (Tatsuo Sugimoto)

(1) Nihon Short-Wave Broadcasting

It was in 1956 that the first course on quality control was broadcasted on Japanese radio. It was organized by the Union of Japanese Scientists and Engineers (JUSE) and co-organized by JUSE Press and Nihon Short-Wave Broadcasting. This course aimed at managers working in front-line manufacturing was divided into six semesters (Semesters I–VI) and ran for a year and three months from July 1956. It was a broadcast for 15 minutes from 16:15 (to coincide with the time when factories finished work in those days) every day except Sundays.

This project was implemented under the leadership of JUSE managing director Kenichi Koyanagi, with the assistance of Professor Mizuno, Professor Ishikawa, and other learned members of the QC Research Group. The themes and broadcast schedules for each semester are shown below:

Semester I (July–September 1956): Quality Control Course for Shop Floor Managers
Semester II (October–December 1956): Quality Control Course for Shop Floor Managers
Semester III (January–March 1957): Preventing Defects
Semester IV (April–June 1957): Preventing Defects (Intermediate Class)
Semester V (July–September 1957): Quality Design of Products That Sell Well
Semester VI (October–December 1957): Cutting Manufacturing Costs

The textbook for this course was edited by JUSE Press, but unfortunately no reliable record of how many copies were sold is available today.

In January 1959, the *Elementary Quality Control Textbook* (published by JUSE

Press) was compiled based on the structure and content of Semester VI, i.e. Cutting Manufacturing Costs. This long-selling textbook (as of January 1992, there have been 193 impressions and 310,000 copies issued) is still used today by many companies and universities. As soon as it was published, it was adopted as the textbook for the 6-Day Introductory Quality Control Course (JUSE), which had been launched in 1956, and continued to be used until 1974, when this course was renamed as the Quality Control Seminar Introductory Course (lasting eight days, divided into two halves) and the curriculum was revised. (Katsuharu Arai)

(2) NHK Radio 2 and NHK Educational TV

The first radio broadcast on NHK was the Radio Program: NHK Course for Commerce and Industry *New Management and Quality Control* on NHK Radio 2 in 1957 (18:25–18:40 every day except weekends of July 15–August 30). It opened with an introductory greeting from Meitatsu Takamine, then President of the Japanese Standards Association (JSA), and offered the curriculum shown below:

Quality and Management (Week 1)
Quality Control of Raw Materials and Ingredients (Week 2)
Process Control and Quality Assurance (Weeks 3–5)
Management of Equipment (Week 6)
Approaches to Quality Control (Week 7)

The two main lecturers were Professor Kaoru Ishikawa and Mr. Shin Miura. Two days (August 28 and 29) out of the last week of the seven-week broadcast were devoted to questions from listeners, which were answered by Professor Kaoru Ishikawa, Mr. Hirokazu Aiwa (Itagaki Ltd.) , and Mr. Shin Miura (Mitsui Chemical Industry). On the very last day, the course was brought to a close with a special lecture by Takeo Kato (Mitsubishi Electric), then principal of the JSA's Quality Control and Standardization Seminar. One can see how much interest there was in these courses among listeners by the fact that the textbook went through reprint after reprint, eventually breaking through the 100,000 copy mark. Naturally, one of the factors behind this was the assistance of the JSA's sales department, particularly the partnership between veteran JSA sales department member Matsuo Yoshida and Katsumi Miyachi, Secretary-General of the National Association of Principals of Technical Senior High Schools, who together promoted the textbook to technical high schools nationwide.

The fact that it was possible to launch this kind of quality control course on NHK

was entirely thanks to the proactive approaches made to the broadcaster by the JSA's Masahiro Ohnishi. While Mr. Ohnishi was lobbying NHK, he sought advice from Professor Ishikawa, who responded positively and provided vital backup that enabled the broadcasts to come to fruition. Professor also provided his full assistance in the planning of the broadcasts, including the structuring of the curriculum, the selection of lecturers, and the preparation of the textbook. The textbook for this course received the Nikkei Quality Control Literature Award in 1957. The presence of NHK executives at the award ceremony helped to increase NHK's awareness on the status of QC in industrial circles, which had the fortuitous side-effect of making it easier to broadcast QC-related programs on NHK thereafter.

Following the overwhelming success of the first QC course, NHK broadcasted the *Basic Course on Production Management* (18:20–18:40 every day except weekends of April 7–August 29) on NHK Radio 2 in 1958, extending the length of each broadcast and the duration of the course, and expanding the content to include production management, with a primary focus on QC. Under the guidance of Professor Ishikawa, one day was again set aside for questions at the end of each chapter (10 chapters in total) and there was also a discussion between the lecturer in charge of the previous chapter and the lecture in charge of the next chapter. This was because the Professor thought that this would facilitate a smoother transition between chapters. In addition, again at the suggestion of Professor Ishikawa, the broadcasts were recorded in front of an audience of invited listeners like an entertainment show, to break free of the traditional mold of simply speaking to a microphone in a studio. The first program took place in NHK's Studio No.1 on Sunday, June 22, 1958, and the second in Waseda University's Ono Memorial Hall on Sunday, August 17 the same year, with around 200 course participants attending each recording (application in advance). Such public recordings were very unusual at the time. The textbook for this course was revised and expanded before being published by the Japan Broadcast Publishing Association in August 1959 under the title *New Production Management* (jointly authored by Koichi Aiba, Tetsuichi Asaka, Kaoru Ishikawa, Kotaro Ito, Masahiro Ohnishi, Tadashi Kasaishi, Takeshi Kayano, Hidehiko Azuma, Hikaru Furukawa, Motosaburo Masuyama, and Sigeiti Moriguti; Shigeyuki Nakai and Shinichi Watanabe also announced during the program when the course was broadcasted).

The success of this course was the catalyst for programs about QC or production management with an emphasis on QC to be broadcasted on the radio each year under Radio Program: NHK Course for Commerce and Industry (subsequently renamed NHK Course for Industry, and then NHK Course for Management). These programs are listed

below:

1959 Radio Program: NHK Course for Commerce and Industry: *Introduction to Production Management*
(19:00–19:15 every day except weekends of August 3–October 30)

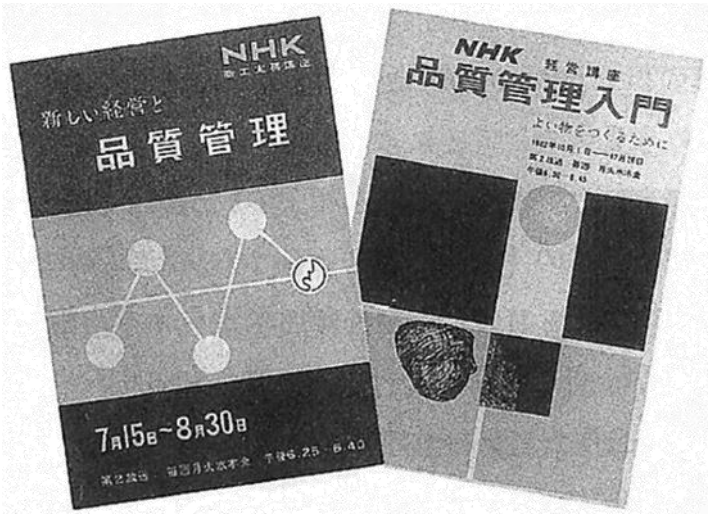
1960 Radio Program: NHK Course for Industry: *Production Management Made Simple*
(19:05–19:15 every day except weekends of April 4–July 1)

1960 Radio Program: NHK Course for Industry: *Introduction to Quality Control*
(19:05–19:15 every day except weekends of July 7–October 31)

1961 Radio Program: NHK Course for Industry: Quality Control Made Simple
(18:35–18:50 every day except weekends of April 3–July 31)

1961 Radio Program: NHK Course for Industry: *Approaches to Quality Assurance*
(18:35–18:50 every day except weekends of October 2–December 22)

1962 Radio Program: NHK Course for Management: *Introduction to Quality Control*
(18:30–18:45 every day except weekends of October 1–December 28)



In addition to lectures, four of the programs broadcasted as a part of this course included footage recorded on visits to factories, which were arranged with the coordination of Professor Ishikawa. Professor Ishikawa took charge of about two thirds of the course, with most of the rest being presented by Professor Tetsuichi Asaka.

The 1962 course was the last NHK course concerning QC; Professor Kaoru Ishikawa was the only lecturer who had appeared on all of the aforementioned radio courses. When bringing these courses to a close, the Professor did a kind of overall

review of the course by reciting 40 sayings concerning quality control, which one might describe as the collection of Dr. Ishikawa's quotes.

In addition to the aforementioned courses, a number of programs focusing on QC appeared as a part of Radio Program: NHK Course for Educational Features (mostly about 55 minutes long), between 1957, when the first QC course started on NHK Radio, and 1962. These included the following:

Radio Program: NHK Course for Educational Features (recorded segments and discussion): *Management in Daily Life*
(20:05–21:00, February 19, 1958, NHK Radio 2)
[The discussion segment featured Motosaburo Masuyama and Haruko Mitsuaki]

Radio Program: NHK Course for Educational Features: *Corporate Management and Mathematics*
(20:05–21:00, December 19, 1958, NHK Radio 2)
[Tatsuo Kawata, Saburo Suganami, Katsuyoshi Yokoyama, Teiji Yokobori, Fumihiko Hayashi]

Moreover, in November 1960, Quality Month was established under the guidance of Professor Ishikawa. At the instigation of Professor Ishikawa, the JSA successfully lobbied NHK for a program to be broadcasted as a part of Quality Month and the following program went out on NHK Radio 2.

1960 Radio Program: NHK Course for Educational Features: The Quality of Japanese Products
(20:05–21:00, Friday, November 18)
[Quality Month broadcast; Discussion among Professor Kaoru Ishikawa, Noboru Yamaguchi, Hidehiko Azuma, Kenichi Koyanagi]

The fact that the public recordings in 1958 had been so well received suggested that QC might be of interest not only to radio listeners, but also to television viewers as well, so the following television program was broadcasted in 1960.

NHK Educational TV: *The Factories of the Future*
(21:00–21:30 on Tuesdays, April 1960–March 1961)

At the Recording Studio for Quality Month Broadcast, Radio Program: NHK Course for Educational Features: *The Quality of Japanese Products*
Yamaguchi, Azuma, Ohnishi and Koyanagi (from the left) (November 5, 1960)

This program mainly focused on QC and standardization. While Professor Ishikawa provided guidance on everything from preparation for establishing the television course, to selecting and providing introductions to locations, and the overall running of the course, Kotaro Ito, Hajime Karatsu, Tetsuichi Asaka, Hirokazu Aiwa, Seikichi Miyagi, Masakuni Tahara, Hidehiko Azuma, Sachio Maeda, Shin Miura, Masumasa Imaizumi, and Yasuichi Matsukawa served as lecturers. Professor Ishikawa appeared nine times, taking charge of the Purchasing Management, Shop Floor Management, Overview of Factory Inspection Tours, and Approach to Internal Standardization sections of the course, as well as giving a lecture entitled "Management and Standardization" to round off the course in the final program. One of the problems encountered in planning this program was that while it was possible to film on location at workplaces that served as examples of good practice and success, it was not possible to film at workplaces that were examples of poor practice. Professor Ishikawa's view was that examples of failure and poor practice must also be included, to ensure a proper understanding among viewers, so there were cases where a set was built in the studio to record inserts. For example, one of the "bad examples" that was used was that of a manager or supervisor who, if a worker with a query asks for guidance, always scolds them, saying, "Do you really not know?", but then, if the worker acts without seeking guidance, scolds them for failing to consult them. It was the Educational TV channel, so

it was not possible to get anyone really famous to appear, but there were secret episodes that actors were actually eager to appear, because they could make up their own lines. Such episodes really delighted Professor Ishikawa.

Subsequently, even after Educational TV began to broadcast in color and video recording became the norm (the majority of television broadcasts were live in the early years), this television course was the catalyst for short educational spots about QC to be made, with the backing of Mr. Sano. The main programs of this nature included the following:

Sensory Evaluation (1971), *Next Process Surveys* (1973), *Quality Label Systems* (1975), *TQC in the Housing Industry* (1976), etc.

That is the history of the broadcasts about quality control on NHK radio and television. It was a period when educational programs appeared on the radio and television broadcasting was in its infancy (television broadcasts began in 1954), so the fact that it was possible to put together programs of this nature was primarily thanks to the assistance of the learned instructors from the world of quality control who were kind enough to take part and, above all, to the unstinting efforts of Professor Kaoru Ishikawa. Also, one must not forget the kind support received behind the scenes from Kentaro Sakae, Group Leader in the Industry Department at NHK's Education Bureau, and from Ichiro Sano, who had not long joined the company before the radio course began.

Note: In assembling information for this section, I received a great deal of assistance from Masahiro Ohnishi of the JSA, who was not only a bridge between the world of quality control and NHK, but also served as presenter and commentator in the actual broadcasts.

QC Courses on NHK Radio and TV

Masahiro Ohnishi

In 1951, when I was working in the Quality Control Department of the Japanese Standards Association (JSA), I was tasked with helping to organize the Quality Control Committee (QCC) and this was when the Professor first got to know me by sight and by name.

In addition, he provided me with support and guidance in a variety of ways when I was organizing seminars and courses about quality control and standardization. He was of particular assistance when we established the JSA's Standardization and Quality

Control Seminar (1953), as well as in editing the Guide for Managers: *Quality Control Guidebook (Vols. 1 & 2)* (1958) and launching the Quality Control Course for Managers based on this Guidebook. Moreover, he provided a great deal of practical guidance from the outset when we were holding meetings to prepare for the launch of Quality Month, which began in 1960.

As well as providing advice regarding events directly organized by the JSA, the Professor was kind enough to give me the benefit of his knowledge concerning negotiation methods in 1957, when we were urging NHK to set up a quality control course on the radio and I was placed in charge of promoting the idea to the program editors. When that first radio course started, the Professor took charge of the "Process Control and Quality Assurance" section, which took up almost half of the timetable; even now, I clearly remember the exercise in the first broadcast, which involved searching for the character "の"[†] in the textbook. The Professor did this in order to demonstrate to students the "unreliability of inspection."

The textbook sold 100,000 copies when the course was first run. And as a result of this, NHK ran the Quality Control Radio Course seven times in total. The Professor did not only provide guidance as a kind of general manager when I was negotiating with NHK; he also intervened when various problems arose between NHK and those appearing on the program, resolving the issues in a way that saved face for both sides. He gave me a variety of new ideas about how to run these radio broadcasts; what is more, he told me, "Make sure you understand it fully and then explain it to NHK as your own idea. Don't tell them it came from me." Many of these ideas ultimately came to fruition, but the people at NHK thought that they were my idea, so I came to be highly regarded at NHK and that was the main reason why I ended up being regularly chosen to be a presenter or commentator on NHK Educational TV.

The first program about quality control began on NHK Educational TV in April 1960. The Professor was of great assistance from the planning stage and was one of the main people to appear on the program. In addition, he was kind enough to point out problems with my presenting style.

[†] の=one of the Hiragana phonetic letters in Japanese language, commonly appears in the text. It is similar to search for the letter "d" in around 200-word text. Through this exercise, people would learn to recognize how difficult to find them all.

NHK Educational TV: *The Factories of the Future* (Broadcast March 21, 1960)

In the studio are 2–3 TV cameras, which the TV crew members switch between to show different images on the TV screen; when the nearest camera is broadcasting, the rule is that you should not get too close a view of the face. However, demonstrating his forward-looking personality during the camera rehearsal, the Professor gradually moved further and further forward, and when one of the crew said, "Your face is going to be off the edges of the screen," the Professor replied, "It won't have any impact unless that happens."

In July 1982, we happened to be on the same China Airlines flight to Taipei and the Professor was kind enough to show an interest when I talked about QC problems in the construction of government offices, which I was managing at that stage. I told him, "The Board of Audit is being really picky about the quality of concrete and the standardization of windows at the moment." Unfortunately, that was the last opportunity that I had to talk at leisure with the Professor.

He subsequently sent me a photograph that he had taken on the flight, along with a letter saying, "I enjoyed chatting with you." I treasure that letter and photograph as cherished mementos.

(Senior Advisor, Japanese Standards Association (JSA);
formerly a director of the JSA)

Image and Reality/Professor Ishikawa on TV

Ichiro Sano

QC first appeared on NHK Educational TV in May 1960. Amid criticism from those who scoffed that nobody would watch something so difficult, we embarked on this new endeavor, feeling our way uncertainly.

During this period, it was Professor Ishikawa who served as both our pilot and our captain. He patiently explained the ABC of QC in a way that I—a youngster in my second year with NHK—could understand, and was even kind enough to appear on the program as a commentator. Almost all television broadcast at that time was live and although the program was only once a week, prior preparation and meetings meant that I needed to go to the Professor's office almost every day to discuss the structure of the program and have him explain its content.

On the day of the broadcast itself, the place would be thrown into turmoil. This was because there were restrictions on the number of characters that could be used on a single screen for explanations, as well as on the thickness of the lines in the illustrations.

However, to the eyes of our experts, the diagrams looked too simplified and the terminology and figures were too abbreviated, so we never got the OK the first time. That is when the war of attrition between the academics and the production team would begin. This was the cause of all the fuss and it would be repeated every single time. However, although he was regarded by the production team as the most formidable opponent, Professor Ishikawa was always the most flexible in his response and was even kind enough to intercede on our behalf to try to talk round the others appearing on the program. I thought that he demonstrated a really professional approach. The production team did repeatedly complain about the Professor's characteristic tendency to speak rather quickly. Later on, saying that he was convinced because that was what experts in the media said, he surprised us all by practicing and mastering the art of speaking at a pace of about 200 characters a minute, which was easier for the audience to listen to and understand. I recall with great fondness the time, several years later, when the Professor was kind enough to say, "I really have to thank all of you for showing me how to speak, what expressions to use, and how to structure my talk."

Contrary to his appearance, the Professor was rather shy, so his open-hearted manner did not really come across on screen. This was entirely the responsibility of the inexperienced, novice director, and I am embarrassed to think of it even now.

In any case, I would like to close by recalling what had been said to me by the Professor, who described himself thus: "When I'm standing, I'm compiling a

cause-and-effect diagram; when I'm sitting, I'm making a control chart; and when I'm walking, I'm looking for defects."

He said, "The reason I'm glad I studied QC is that there is no better approach for looking at what is necessary and sufficient satisfaction and getting close to that level of satisfaction in the most efficient way possible."

Thank you for everything, Professor.

(Chief Director, Lifelong Learning Program Team,
Program Production Department, NHK)

9.4 Counseling Activities at Enterprises

Requested by Fuji Iron & Steel Co., Ltd., Wanishi Iron Works (currently Nippon Steel & Sumitomo Metal, Muroran Works), Prof. Eizaburo Nishibori, Prof. Shigeru Mizuno and Prof. Kaoru Ishikawa delivered their lectures in August 1950 accompanied by Prof. Masumasa Imaizumi and myself, Ikuro Kusaba, as their assistants. In addition to the classroom lecture, gathering of data from the actual work place and its analysis were also part of the training. Result of analysis was introduced during the lecture. I was surprised by the way that Prof. Ishikawa acted and made decisions based on his field experience and that there was a lot to learn from this approach. This must have been how the on-site quality management training first started in Japan. Owing to Prof. Ishikawa's way of teaching, Japanese quality management became something more practical and effective than just a theory, resulting in realizing a joint effort between industry and academia.

Whenever Prof. Ishikawa visited companies for counseling, he used to say "It is not us who practice TQC. It is to be implemented by all the employees under the leadership of the president", "What needs to be done to improve this company?", "What are you going to do to make this company better?", "Is this place a warehouse?", "You have your plant in a warehouse?", "Why is a file necessary in a machine assembly plant?", etc. Instead of teaching specialized skills, Prof. Ishikawa first thought about what was necessary for the company and then instructed focusing on the specific items that needed to be dealt with. Whenever running into an issue that was beyond his own area of expertise, Prof. Ishikawa willingly introduced a professional in that field. He was flexible and proactive about using any resources and people who could be helpful, whether or not they had QC tools or were QC experts, and he was good at incorporating them into the field of quality, as tools and QC specialists. Quite a large number of QC

experts today are in the field of quality, as a result of being invited by Prof. Ishikawa.

Prof. Ishikawa made substantial effort in fostering young future lecturers for company counseling activities as well. Companies seeking for counseling usually asked for well experienced lecturer however, Prof. Ishikawa often had young trainees accompany an expert lecturer, as an assistant to a counseling activity. It seemed that companies had no choice but to accept this because it was Prof. Ishikawa's idea. There are many people who became quality experts after being given such opportunities by Prof. Ishikawa. Some companies did not welcome inexperienced lecturers at first, however, it started to work out as it was easy for the company people to get into a conversation with young lecturers in a casual manner and to ask small and simple questions. It was also a valuable opportunity for young lecturers to enhance themselves. The more they engaged in consulting activity, the more they become attached to the company, thankful for having them, despite their lack of experience, and enthusiastic to show their gratitude in return. Companies started to understand and accept the way Prof. Ishikawa assigned young lecturers, as it eventually worked out effectively. Prof. Ishikawa's way of thinking was very logical. But at the same time, he took into consideration how to build a mechanism that was based on people's kindness and understanding. (Ikuro Kusaba)

"It's Important for People to Interact Frankly and Without Concealment"

Rokuichi Yamada

I was deeply shocked and saddened by the news of the sudden passing of Prof. Ishikawa on 16th April. It was shortly after we gathered at QCG, a golf competition we often held, in Sobu Country Club on 8th April. We were saying that Prof. Ishikawa may not be able to play golf next year, but he can still join the party. Despite his busy schedule, Prof. Ishikawa loved QCG so much that he appointed himself as leader. He was hardly ever absent and participated in the competition as many as 174 times. It was an outstanding record. Including Prof. Ishikawa, members were quite enthusiastic about QCG and they never called off the competition, no matter how bad the weather condition was. Prof. Ishikawa truly loved golfing and the QCG without him, was no longer what it used to be. It was 1972, when I first met Prof. Ishikawa at the Top Seminar held in Karuizawa. After his lecture, I decided to formally implement TQC and

asked him to form a team of lecturers. That's how we started our journey toward the Deming Prize. He never failed to participate in the Steering Committee meetings, twice a year and taught us, passionately. In the evening, we spent time together deepening our bond, having frank and honest conversations over drinks. It was his important message to tell us that TQC is not just about theory, but about having a real interaction.

It is also unforgettable how Prof. Ishikawa lectured for QC Circle members. He got together with frontline workers, and taught very compassionately and warmheartedly.

Owing to Prof. Ishikawa's support, we won the Deming Prize in 1976. We have continued to promote TQC since then however, we still have much to achieve, to meet the expectation of Prof. Ishikawa. I truly believe that what motivated post-war Japan to accomplish significant industrial growth, was Quality Management, as the United States has announced. And Prof. Ishikawa's tremendous effort that made it happen, will always be remembered. (President, Sankyo Seiki Mfg.)

"Without Steady Improvement of Quality, No Progress Can Be Expected for the Company."

Kiyoshi Tani

First of all, we would like to express our sincere gratitude for this opportunity to write a reminiscence essay in memory of Prof. Kaoru Ishikawa.

With the support of Prof. Ishikawa, we launched TQC activity under the slogan to "establish efficient and lean management by enhancing the quality of work across the organization" in 1977, as a company-wide effort.

The economy was entering to a period of low growth at that time. It was also when the competition among companies in the clock industry became more severe due to rapid electronics innovation, cost competition with the use of crystals and the launch of new products. In order to overcome such a difficult management environment, drastic improvement of the company's constitution was the key to survival.

Being given the privilege to receive guidance from Prof. Ishikawa, a worldwide-recognized Quality Management expert, at a difficult time like this, was very fortunate for us, both in the business and in personal settings.

His to-the-point theory and advice, based on his ample experience, as well as his frank personality, remain strong in our minds. Thanks to Prof. Ishikawa's guidance, we were able to ensure understanding of TQC throughout the company, enhance quality

awareness, and revitalize voluntary circle activities, which led them to become an award-winning team at external conferences. In the end, we all came to the conclusion in the organization, that a company cannot grow without a unified effort to promote TQC. We attempted to obtain the Deming Prize, participated in by the president, and all employees. As a result, we were able to win the prestigious Deming Prize, in 1982. Gaining appraisal widely, from society, helped us to significantly improve our business performance afterwards.

We greatly owe all these achievements to Prof. Ishikawa, and are deeply thankful for his guiding us. Businesses today still face hardships and uncertainties. Under such circumstances, we will be sure to keep in mind the value of quality through TQC promotion and "without steady improvement of quality, no progress can be expected for the company", as Prof. Ishikawa taught us. For our company, TQC promotion is an everlasting challenge, and we strongly believe that is what makes a company prosper. We are determined to put our utmost effort continuously, to achieve company growth and to contribute to society. By doing so, we hope to show our gratitude to Prof. Ishikawa for his kind support.

His words which guided us will live on forever in our company management. Thank you, Prof. Ishikawa, from the bottom of my heart.

(Director and Senior Adviser, Former President, Rhythm Watch Co., Ltd.)

Memories of Dr. Ishikawa

James A Henderson

I met Dr. Ishikawa in 1983. Mr. Ryoichi Kawai, Chairman of Komatsu, took me aside on a visit one day and told me Dr. Ishikawa had been a class mate, and had been influential with him personally and instrumental in Komatsu's success. Mr. Kawai recommended that I become acquainted with him. We met Dr. Ishikawa in his Tokyo office and realized that he indeed had wisdom and experience that would be very valuable to our company. Even though his schedule was very busy, he agrees to help us. He visited our plants and technical center, and trained our senior management at our headquarters in Columbus, Indiana, in November 1983.

Dr. Ishikawa was a memorable person. He made his points simply and forcefully, with easily understood examples. He consistently lectured us on the cross-functional nature of work, keeping the orientation on the customer, using data and statistics—not opinions, focusing on the "vital few" as opposed to the "trivial many," process control,

and the importance of education and training—especially in technique and method, not just concept. I well remember his insistence that I, as the president, must participate in company-wide quality control, especially through the presidential audit process. His counsel was always not to accuse, but to ask why and for the data, and, above all, to "not get mad" at the person involved in a quality problem.

It was instructive that before training our senior managers, Dr. Ishikawa toured our plants and technical center, asking very detailed questions of workers, engineers and managers. His approach to preparing for the training session was a vivid reminder of how our managers had to approach the whole issue of quality if we were to improve.

We have made much progress in quality since Dr. Ishikawa launched us on our way in 1983. He counseled that it would take several years to install company-wide quality control. He was right. We have persevered and basically stayed on the course he helped us to set. We call it "Customer Led Quality." While we have much room for improvement, we have many of the basics he taught us now in place, putting us in good stead for the 1990s.

I will always remember both Dr. Ishikawa's firmness and his understanding as he worked with us. I will also always remember his simplicity—both in message and in teaching approach. He was a man of integrity—telling you what you needed to hear, not what you wanted to hear. His examples were timeless, and you knew he had been there. He did not bring a lot of people and equipment or an elaborate process as many consultants do. He brought himself and a vital message. Although he was legend, he never behaved as if he knew he was.

Finally Dr. Ishikawa was a joy to be with. He sparkled with enthusiasm as he taught. He was curious about our business and its details. In one way or another through his interest and method of inquiry, he was always teaching. We feel fortunate and privileged to be one of the many companies in the world which he influenced so positively.

(President and Chief Operating Officer,
Cummins Engine Company, Inc.)

Product Liability Prevention: The Most Important Issue

Yoshijiro Soda

In 1971, I had succeeded my father, the founder in our company. Leaving the good traditions in place, we aimed to get rid of our conventional ways to become a modern company in order to advance. We decided to ask for the guidance of Dr. Ishikawa, the then leading authority in quality control. At that time, he was a professor at the University of Tokyo. For 18 long years since then, we had the pleasure of directly receiving his direct vivid influence. During that time, we dispatched research staffs to his laboratory, participated in JUSE's courses, promoted improvement suggestion system by small group activities, and strived to improve our business performance. To this day, we have continued these activities.

Dr. Ishikawa always said, "Quality control is doing normal things in normal ways." However, for us, this was difficult to practice. When solving problems, Dr. Ishikawa himself would deeply analyze raw data until he was fully satisfied. Then, from among the stack of issues to be studied, he would give us sound solution strategy and also some homework to be tackled. His guidance was strict, but his personality was plain and humane with a true Tokyoite. On the way to our Okayama factory, he would spend most of the time in the dining car, constantly smoking and drinking, having lively chats, and go back to his seat almost nearing the destination.

One of his advices that left a deep impression on me is the indication on PL issue. Nowadays, PL issues have finally become a topic for discussion, but Dr. Ishikawa had warned about this topic 20 years ago with an example of the USA. I cannot repress my awe anew towards Dr. Ishikawa's foresight still now. In recent years, it had been a joy for me to visit Dr. Ishikawa at the president's office in Musashi Institute of Technology. During our chats on my company, our line of business, and other matters, I learned the way of thinking, judgment criteria, and life lessons from Dr. Ishikawa, the master of the world.

I commit to endeavor to contribute to the society through our business and through our industry's activities, holding Dr. Ishikawa's teachings as my moral guide, even when I can be of limited help.

(Chairman and Executive Director, Soda Aromatic Co., Ltd,
Chairman, Japan Flavor and Fragrance Materials Association)

That Was Worth Doing

Taiji Sayo

I cannot forget the time when we applied for the Deming Application Prize in 1982. Prof. Ishikawa gave advice on mental preparations as follows:

"Do not apply for the prize for the sake of the award. QC will become merely a formality through this approach. If TQC is properly practiced, good results are achieved, and it shows on everyone's face that we've made it happily, you will naturally be awarded the Prize.

In order to make this situation, you must keep in mind the followings:

1. Each and every one clearly understands why Kajima implements TQC.
2. You identify the characteristics of Kajima's TQC of each department and each branch, and build confidence about them.
3. PDCA is properly rotated at the corporate level, each branch office, each department and section, and in the construction sites, over 3–5 years. As a result, its outcome gets better and better. Quality analysis and process analysis are made in a statistical manner, and preventive control is carried out well.
4. Capability and mechanisms to promote TQC autonomously are established, even after being awarded the Deming Prize.
5. Sectionalism is eliminated, cross-functional control is organized in a systematic manner, and the system is successfully executed.
6. Each and every one makes utmost efforts at their best and has a confident face showing what they have done."

Like this, I remember the way Prof. Ishikawa always taught lessons of the essence frankly, and I am truly convinced that we were happy to practice TQC under his guidance.

In the end, I pray sincerely for the repose of his soul.

(Former Vice President, Kajima Corporation)

"New Product Development Is the Only Way to Get Out of the Recession"

Atsushi Yamagata

My first encounter with Prof. Ishikawa was when I visited the President's office of Musashi Institute of Technology on a cold day with snow falling from time to time from the morning, in February 1981. Accompanying the company president, I came to request Prof. Ishikawa's guidance as we wished to improve our company's structure which had been weakened by the two oil crises. Prof. Ishikawa quietly lent his ear to the president's ongoing worries and his enthusiasm, of being at the top, to reform the company by any means necessary. Since Prof. Ishikawa, himself, had a background of applied chemistry, and there were only few companies working on TQC, in the raw materials industry at that time, he willingly accepted our request. After that, Prof. Ishikawa chose the top instructors in the TQC world for us, and even after our company won the Deming Prize in 1985, many of our employees continued to receive his kind guidance, directly.

In the first 2 years, Prof. Ishikawa scolded us at SUTEKON (the steering committee) and guidance meetings, "The promotion headquarters is not studying enough and weak to support each division to find and solve problems. It is only promoting superficially," and I remember that the president and I struggled together each time. When it comes to communicating with a great professor, we had a tendency to behave modestly, but Prof. Ishikawa preferred a straightforward manner, and often admonished us for "dawdling."

On another occasion, we sometimes made an excuse by using the word "exception" pointing out that the raw material industry was different from other industries, but Prof. Ishikawa particularly hated that and encouraged us by saying "No progress can be made in the technology, if you make an exception." Above all, with saying, "New product development is the only way to get out of the recession," Prof. Ishikawa advised us widely on business management issues themselves, such as how to anticipate the needs of the customer, product planning, elaboration techniques and production process analysis, with regard to high functional specialty synthetic rubber used around the automobile engine, and on the materials for developing fuel efficient tires which we were working on at that time. I believe that as a result of the effort made by the president and all those involved, in return for his guidance, led to a positive outcome. We are very grateful, and sincerely appreciate Prof. Ishikawa.

Over the last two or so years ago, our company has acquired companies in Europe and the U.S., and started to operate as a conglomerate. In the course of pushing forward improvement, Prof. Ishikawa's advice, "It is important to have people understand the Japanese way of QC gradually, and proceed along with the local national character," is truly sinking into my heart, as of late.

I feel that I still hear him saying, in his guttural voice, while chain smoking and coughing, "Is new product development going well?" Though it was a short period of time, I still would like to put into practice the numerous valuable lessons taught by Prof. Ishikawa. (Representative Managing Director, Zeon Corporation)

"QC Is Not Something to Be Done by the QC Department."

Katsuyoshi Ishihara

I was given guidance directly from Prof. Kaoru Ishikawa for the first time in May 1963, when I presented my research at a QC Conference, held in Sendai.

At that time, Matsushita Electric Industrial Co., Ltd. was already receiving guidance from Prof. Ishikawa on a regular basis. However, I, myself, never had the opportunity to be taught by him until that conference. I remember Prof. Ishikawa introducing Matsushita's quality management to the conference participants.

In 1964, the Device Business Department decided to attempt the Deming Prize. Long term guidance by Prof. Ishikawa himself, started from that point. I am deeply grateful to Prof. Ishikawa, as I would not be what I am today without him.

Prof. Ishikawa used to say "quality management is not something to be done by the QC Department. It needs to be done by everyone." Now I look back and regret how uncreative my method of quality management was. I feel embarrassed about the approach I took.

Though I don't drink or smoke, I joined dinner with Prof. Ishikawa.

Sometimes we enjoyed talking so much that it went on till 2 or 3 a.m. in the morning. When that happened, Prof. Ishikawa said "how can you manage staying up with me, without drinking." At times like this, he also mentioned a certain department and said "their quality management was not clear." Actually, things he pointed out were very important lessons. We analyzed those issues, established a promotion system and I asked Prof. Ishikawa for advice at the next counselling session. His feedback was

"uh-huh, uh-huh, I see," which made us wonder if we had taken the right measure or not, but it was under the guidance of Prof. Ishikawa, so we believed in ourselves enough to go ahead with what we came up. By continuing to achieve goals and produce results, we were able to win the Deming Application Prize for Divisions in the fall of 1966.

From then, till the day I retired, Prof. Ishikawa guided us for over twenty years. My respected mentor passed away on 16th April. He will be missed immensely. May his soul rest in peace.

(President, Quality Engineering Institute;
Formerly of Matsushita Electronic Components Company)

A Great Professor with a Warm Heart

Isao Itsukage

Deeply moved by Prof. Kaoru Ishikawa's speech at the QC Conference in the fall of 1956(held at the University of Tokyo), along with a suggestion from the person in charge of promoting quality control at Iwabuchi Mill of Honshu Paper (Deming Prize winner in 1954) at that time, I proposed to a board member, who was my superior, to receive a guidance from him, as soon as I returned to the office.

This turned out to be the trigger, Suntory (then Kotobukiya) received its first guidance from Prof. Kaoru Ishikawa and Prof. Ikuro Kusaba on Feb. 16, 1957, at Fujisawa Plant in Fujisawa City. I attended this guidance meeting as a promoter of quality control.

After the guidance meeting, in the daytime, at the so-called "*nomunication*" held at a Japanese-style hotel with Japanese cuisine dining, I was taught by Prof. Ishikawa, "It is not to control quality. It is to control production processes and business management through quality, elaborate quality, and control quality as result. It's the same with cost control. It is not to control cost, but by cost," and I felt as if the scales fell from my eyes. I can still clearly visualize the scene even now, after 34 long years, and his voice still lingers strongly in my ears.

Prof. Ishikawa often mentioned "QC-wise sense," but he never treated me, who lacked the sense separately, and he always encouraged me and rendered me, warm care, even on personal matters.

When I spoke as a curtain raiser to Prof. Ishikawa, at the lecture during Quality Month in Hiroshima, he said "Itsukage's lecture was thought-provoking," to the audience. It helped me gain great confidence.

Looking back now, the dinner meeting on Jan. 11, 1988, in Nagoya with Prof. Tadakazu Okuno and Mr. Taro Okawa, the president of Sungrain, turned out to be the last "*nomunication*" with Prof. Ishikawa, and on the way back to the hotel, I was deeply touched by his concern for my life, after retirement from Suntory.

Prof. Kaoru Ishikawa, thank you very much, for such a long time.

(Contract Counselor, TQM Promotion Department, Suntory)