

Societās Quālitātis

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1996 Deming Prize Awardees



DMING MEDAL

This picture is of the Deming Medal, given to those organizations and individuals that receive the Deming Prize. It shows Dr. Deming's profile with his words inscribed on the medal: "THE RIGHT QUALITY & UNIFORMITY ARE FOUNDATIONS OF COMMERCE, PROSPERITY & PEACE" The Deming medal was designed by late Mr. Yoji Yamawaki (formerly a professor at the Tokyo National University of Fine Arts and Music).

The 1996 Deming Prize Award Ceremony was held starting at 5:30 PM on Tuesday, November 19, 1997 at Keidanren Hall. Recipients and the reasons for their being awarded are cited below. No firm received the Japan Quality Medal for the year.

Deming Prize for Individuals

- Mr. Kenzo Sasaoka · Advisor, Japan Hewlett-Packard Corp.

Deming Application Prize

- Aishin-Shinei Co., Ltd.
- Ando Electric Co., Ltd.
- Konica Corp. Hino Production Division
- NEC Musen-Denshi Co., Ltd.
- Fuji Photo Optical Co., Ltd.

Quality Control Award for Factories

- Nissan Motor Co., Ltd., Tochigi Plant

Deming Prize for Individuals

Mr. Kenzo Sasaoka

Advisor, Japan Hewlett-Packard Corp.

As president of Yokogawa Hewlett-Packard Corp.

(now Japan Hewlett-Packard Corp.), Mr. Sasaoka introduced and promoted the firm's TQC program as a means to renovate its corporate constitution and he succeeded in transforming it into an excellent HP group company from its previous position as a subcontractee of US Hewlett Packard. Because of this, the firm received the 1982 Deming Application Prize. During the process, Mr. Sasaoka awakened interest of America's HP in TQC thus playing an important role as the main driving force in upgrading the level of quality control in the entire HP group.

While serving as president of the Japan Association of Quality Control for the 21st year, October 1991 to September 1992, Mr. Sasaoka has been devoting his energy in Japan and abroad to the development, diffusion and education of quality control through his writings, speeches and seminars.

Deming Application Prize

Aishin-Shinei Co., Ltd.

Pursuant to receiving the Deming Application Prize for Small Enterprises in 1991, the firm changed its name to Aishin-Shinei Co., Ltd., and since then has been conducting corporate management based on "Quality

first” with TQM as the core.

Coping with a stringent management environment after collapse of Japan’s bubble economy, the firm reviewed its SV-’93 long-range management plan and formed its SV-’95 long-range management plan, giving first priority to the transformation of its corporate constitution from the former “process type” to the present “product type”.

Concurrently with formulation of the plan, Aishin-Shinei drafted a “product type master plan” which clarifies the target year of selected main products after fully examining the feasibility of attaining objectives classified by product. In line with removing technical problems, the firm conducted companywide functional analysis and policy deployment obtaining the consensus of its entire workforce. As a result, it did exceedingly well, attaining a high technical level and fostering capable human resources.

Moreover, the company is improving business results deploying SV-2000 that aims to enhance its product type corporate constitution.

Ando Electric Co., Ltd.

Originally the Ando Research Institute, established in 1923 to manufacture communication measuring instruments, the firm took its present name in 1933. After that, the firm progressed along with the remarkable development of Japan’s telecommunications and semiconductor industries, and among other products has supplied the market with communication measuring instruments and IC testers, invariably serving the sophisticated needs of society. At present the firm has a capital of 7.6 billion yen and 1,547 employees. It develops, manufactures and sells communication measuring instruments, communications equipment, FA apparatus and IC testers.

After introducing TQC to the firm in 1989, it has made many improvements, overcoming problems that awaited solution and gained results that contributed immensely to corporate management by improving its quality assurance system that includes the planning of new products. Especially, to realize a “corporate constitution that can cope strongly with the environmental changes of management,” all employees including top executives are conducting under the leadership of the president activities precisely matching their own work place and have achieved remarkable effects.

Konica Corp. Hino Production Division

The division is positioned as a subsidiary of Konica for the production of photosensitizers. It drafts medium-range corporate management plans independently and conducts management activities aiming at realization of the plan. Since the start of its operation in 1937, the division has produced film for general and medical use and for printing as Konica’s photosensitizer manufacturing base.

As a result of production structure reform effected by a large-scale equipment investment program launched in 1982 as a ten-year plan, the influence of equipment on quality has been heightened. Accordingly, TPM activities started from 1987 as part of its TQC effort. Reflecting the outcome of the undertaking, the division recognized the need to conduct quality control more vigorously and started to restructure its TQC program in 1992, after which in 1993 policy deployment became a key factor. Under the leadership of the division manager, the workforce concentrated on improvement activities such as shortening production time, reducing stock on hand and upgrading quality, thus substantially adding to the profit of Konica Corporation, which altogether is highly commendable.

NEC Musen-Denshi Co., Ltd.

The enterprise got started in 1946 as Asahi Denki Kogyo Co., Ltd. It became an NEC affiliate in 1953, then changed its name to the present one in 1985 as an NEC affiliate production company. During its fifty-odd years of operation, it has grown from a firm engaged in the repair and remodeling of radio equipment to one that develops and manufactures satellite-related products making use of highly sophisticated technology to meet the needs of the market that comprises organizations representing both public and private sectors, including NEC. In 1990 it attained sales twice the amount recorded five years earlier but Q · C · D were still in an unsatisfactory state.

To deal with the situation, adopting a “Bright, spirited and enjoyable firm” concept, it promoted management through TQC under the mottoes “Customer first,” “Creation and development” and “Regard for mankind.” Consequently, the firm succeeded in improving Q · C · D, building wide-ranging human resources and gaining the confidence of customers and the community, while boosting the sales of new products, all of which contributed remarkably to the business results of the firm

as a whole.

Fuji Photo Optical Co., Ltd.

Founded in 1994 to expand and enrich the optical instrument business of the Fuji Photo Film group, the firm has supplied products to such diversified realms as broadcasting, medicine, industry and science, and of course photo-related fields. At present it retains 1,590 employees and has a capital of 500 million yen.

Reflecting its countermeasure toward rapid technical revolution, sophistication of consumer quality requirements, and the "New Fujinon Movement" carried out since 1988, the firm adopted TQC in 1991, aiming at the reinforcement of its corporate constitution through the improvement of quality as well as the improving of human resources and creating work places replete with vigor. It enhanced various managerial functions, positioning TQC as an important means of corporate management. The firm conducted quality control through functional management activities spanning its entire organization, including the introduction of policy deployment, restructuring of its quality assurance effort and upgrading its new product development system while endeavoring to substantiate Q · C · D.

As a result, the company has been able to offer products of the world's highest level to the market, thus gaining a high appraisal from users. It is most commendable that these products gained excellent results, contributing not only to an increase of individual sales

but also to sales of the whole firm thereby greatly enhancing corporate morale.

Quality Control Award for Factories **Nissan Motor Co., Ltd., Tochigi Plant**

The plant began in 1968 as a casting operation. It built an axle plant in 1969 and a car assembly plant two years later. Since then it contributed greatly to the development of the company as a complex plant. It has about 3,300 employees and produces some 137,000 cars a year, among them such Nissan models as President, Cima and Cedric, as well as principal automotive components like engines.

Under the severe corporate management circumstances after the collapse of bubble economy, the plant introduced TQM in 1993 to build corporate management capable of meeting the needs of quality assurance and environmental changes. Under the leadership of the plant manager, it undertook its major objectives of "Tightening liaison between departments," Strengthening the corporate constitution to effect better planning," Promotion of standardization and accumulation of know-how and its use." As a result, it gained remarkable results in solidifying departmental cooperation, recovering shipment amounts per person, reducing claim occurrence and production irregularity ratios, and improving the cost factor and its on-time delivery ratio. Moreover, it is praiseworthy that the continuance and enhancement of these achievements can be expected.

Dr. William Edwards Deming

Dr. Deming was born in October 1892 in Sioux City, Iowa, U.S.A. After graduating from the University of Wyoming, he assumed various positions, such as university lecturer, engineer for the U.S. Department of Agriculture, lecturer at the Federal Bureau of Standards, advisor to the Commander of the U.S. Army and professor at New York University. Since 1943, he was active as a quality control leader and as a consultant to many government agencies and private companies on the application of statistical methods for business improvement.

Dr. Deming was a world-renowned authority on statistics, especially the theory and application of sampling. He was one of the founders of statistical quality control (SQC) in the United States, and he greatly contributed to the development and progress of SQC in Japan since 1950. In recognition of his accomplishments, Dr. Deming was awarded the Second Order Medal of the Sacred Treasure by the Japanese government in 1960. On December 20, 1993, Dr. Deming died at the age of 93.

A “Sinking Game” for Production Department Worker QC Training



by Tamio Hirose, Deputy Counselor
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Foreword

Matsushita Communication Industrial Co., Ltd. (MCI), was established in January 1958 as the organization in charge of industrial electronics for the Matsushita Industrial Group. MCI has long maintained a production system specializing in limited quantity manufacture of diverse products, but in recent years the focus of its operation shifted to volume production of specific items centering on cellular phones and PHS.

In view of this, we launched a practical QC training course in the company’s techno-school, the objective being to boost the level of production department employee awareness regarding quality control. The purpose of this report, then, is to introduce the course and one of the QC games used in it as a training aid.

Table 1 : Characteristics of the Practical QC Training Course

- (1) Trainees gain experience in QC stories through practical exercises.
- (2) The ability of trainees to analyze is improved by the use of computer software.
- (3) Trainees learn by playing games and group discussions, which they find more enjoyable than conventional lectures.
- (4) Trainee skills improve through homework.
- (5) The course enhances exchange among trainees and between instructors and trainees and helps build esprit de corps.
- (6) Case records prepared by trainees are useful to strengthen their weak points and for diagnosing their progress in actual exercises.
- (7) One-to-one training under instructor guidance.

requiring them to prepare actual scenarios of QC problems they wish to solve and by giving them practice in the solution of each problem over a five-month period. Prior to commencement, we work hard to prepare a curriculum based on five key activities: actual practice, PC games, homework, person-to-person exchange, and linking case records under the theme “Enjoyable QC training by doing away with traditional lectures,” as characterized by the features listed in Table 1. Fig 1 shows the interrelationship of the five key activities.

The basic idea of using games as a training aid

1) The objective of using games for training

At the start of the Practical QC Training Course, trainees are taught about the seven QC tools and the new set of seven QC tools, among which the games play important roles. All of the games used have been prepared by instructors with the following aims:

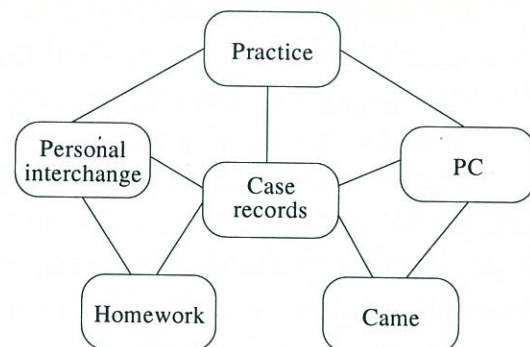


Fig. 1 : Six keys to forming a Practical QC Training Class

Outline of the Practical QC Training Course

The Practical QC Training Course aims to improve trainee skills as QC leaders in their workplaces by

(A) Quality Control

- (1) Trainees realize that the QC method is easily available and very effective.
- (2) Trainees actually feel that QC is enjoyable.
- (3) Games give trainees an opportunity to devise

ways to add enjoyable aspects to the QC training they will put to practical use when returning to their jobsite.

2) Features of the games

Games are intended to be played between two teams of two to three members who demonstrate their teamwork in three ways:

- (1) The players try to solve problems by cooperating with the other members of their team.
- (2) The members of each team try to grasp related facts as live data by jointly reviewing them.
- (3) They study their case well and gain a common understanding of its essence based on the raw data.

3) Criteria for preparing games

Games are designed to realize the aims mentioned above according to the following viewpoints:

- (1) To clarify details of the intended studies:
The processes to be studied must be clearly defined.
- (2) To clarify the aim:
The objective of the activities must be clearly defined.
- (3) Reviewing the objective:
The aim cannot be achieved unless the objective is well examined.
- (4) Plan and implement necessary measures:
Measures must be carefully studied and evaluated and should be simple to carry out.
- (5) Grasp the results:
The results must be easy to understand and available for PDCA in combination with the elements of the preceding paragraph.
- (6) Teamwork:
The game must be such that its results largely depend on teamwork.

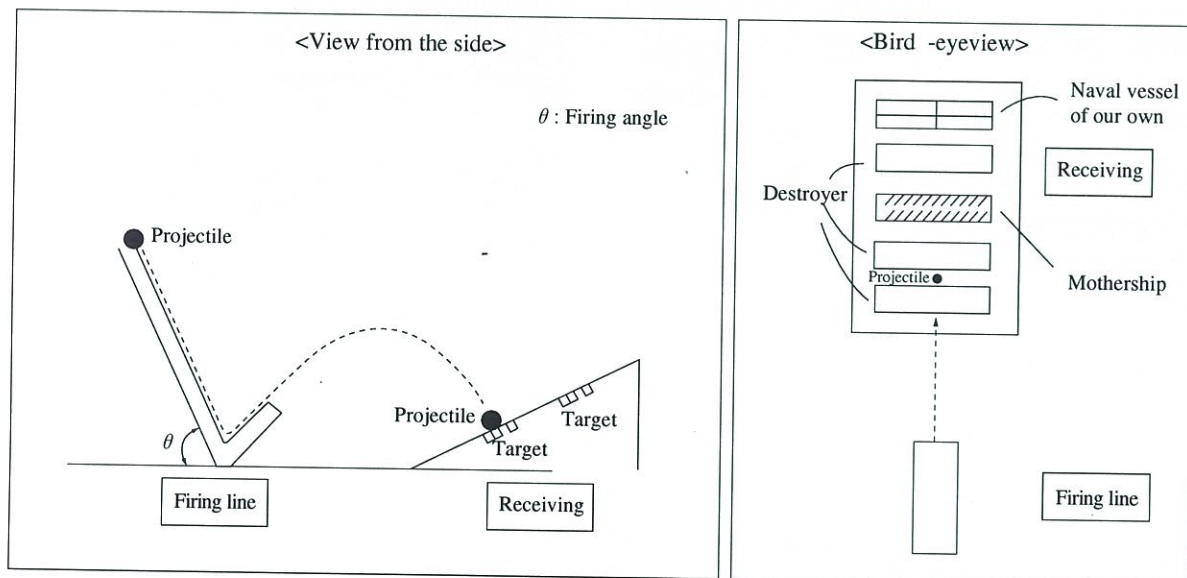


Fig 2 : Image of the sinking game

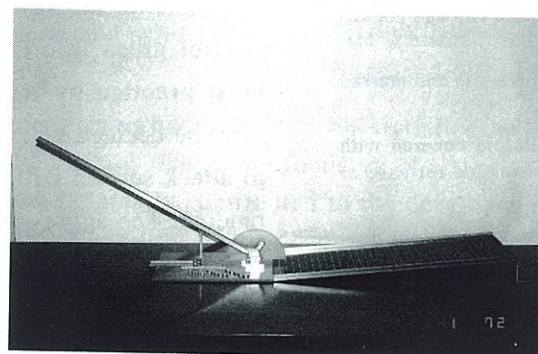


Photo 1 : Sinking gamesetop

(7) Simple rules:

Games should require no complicated knowledge or skills.

(8) Competition:

Games must contain an element of competition between the teams.

(9) Fair evaluation

Easy to make a fair evaluation.

Introduction of the Sinking Game

1) Outline

This is a shooting game using projectiles, a launching pad, a receiving mat and targets. As shown in Fig. 2. a projectile is loaded at the muzzle of the launcher. Shot into the air, it flies toward the target describing a parabola. The target sinks (falls) when hit. There are three kinds of targets: a warship of one's own side, the enemy's mother ship and three destroyers. The purpose of the game is to sink the four enemy vessels with the least number of projectiles.

2) Necessary Tools

The following tools necessary for the game were made by the MCI production engineering department at our request (see Photo 1 above):

Item	Quantity	Specification
Launchers	(one for each side)	Launching angles adjustable from 30° to 60°
Receiving mats	(one for each side)	Covered with magnetic rubber so that the target can stand by itself. The mat is marked with an equally spaced grid to enable recording the point of impact for each projectile.
Target A	1	Celluloid pinched with a clip and marked "Mother Ship."
Target B	3	Celluloid pinched with a clip and marked "Destroyer."
Target C	1	Celluloid pinched with a clip and marked "Our Own Warship."
Projectile A	5	A large piece of celluloid covered with transparent tape on one side for ease of sliding.
Projectile B	5	A medium sized piece of celluloid covered with transparent tape on one side for ease of sliding.
Projectile C	5	A small piece of celluloid covered with transparent tape on one side for ease of sliding.

3) Rules of the game

a) Target positions

- Targets are placed on the line shown on the receiving mat.
- Targets must be spaced with at least two lines between one another.

b) Firing rules

- A projectile can sink a vessel only with a direct hit.
- The mother ship cannot be fired upon until all three enemy destroyers have been sent to the bottom.
- When a destroyer is shot at and missed, the barrage must continue toward the same vessel until it is sunk (other destroyers will not sink even if hit until the first one shot at is down).
- The attacker will lose the game if hits and sinks the enemy's mother ship before sinking all three destroyers. (If the opponent has also failed in the same way, the side having sunk the greatest number of destroyers wins the game.)
- If the attacking side hits and sinks its own destroyer, any destroyers of the opposite side that have been sunk will revive.

4) How to play the game

a) Forming teams

Teams are formed before the game begins. Two players pick a side; one becomes its leader, the other will make a presentation after the game to explain how they won (or lost).

b) Practice game

Before starting the battle, a practice game is played to familiarize the teams with the rules and tools. Players are not given information other than the rules; they must practice by trial and error. To begin with, it must be decided which side will attack first. The team to attack second will place its vessels on their mat at random. The aggressor will select a projectile, set the firing angle and try to hit destroyers and then the mother ship, in that order. When the first team has sunk the opponent's mother ship, the teams trade places; the first team arranges their vessels on the mat, and

the second team launches their attack.

In the practice game, accidents are apt to occur when the mother ship is sunk before the destroyers are or one's own destroyer is sunk, reviving the opponent's destroyers. When both teams are sufficiently warmed up, a study begins using a histogram of the real game, trajectory stratification and a scatter diagram (see Fig. 2).

c) Judging the peculiar behavior of each projectile (see Photo 2)

As will be experienced in the practice game, projectiles do not necessarily fly as expected. There are three types: large, medium and small the shooting range varies depending on size and it may differ even between projectiles of the same size. So, the players are asked to judge projectile behavior according to the following format:

- (1) The angle of the launcher, θ , is set at 45 degrees.
- (2) Projectiles are loaded into the muzzle of the launcher.
- (3) Each team shoots five "A" projectiles four times to determine the range and record it.
- (4) The process is repeated the same way for B and C projectiles to record the data obtained.
- (5) Histograms are prepared from the recorded data according to type of projectile. Note that the B projectile is also recorded in two groups as they are pasted with sliding tape on one side only.
- (6) Judge the individual peculiar behavior of all projectiles from the histograms.

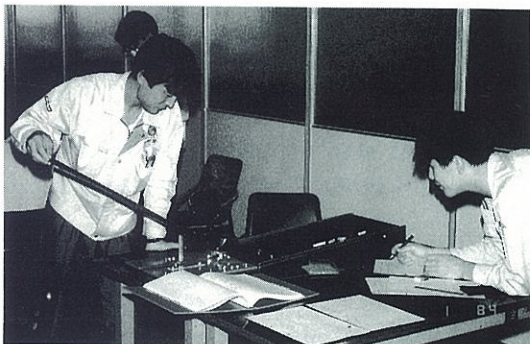


Photo 2 : Data being collected.

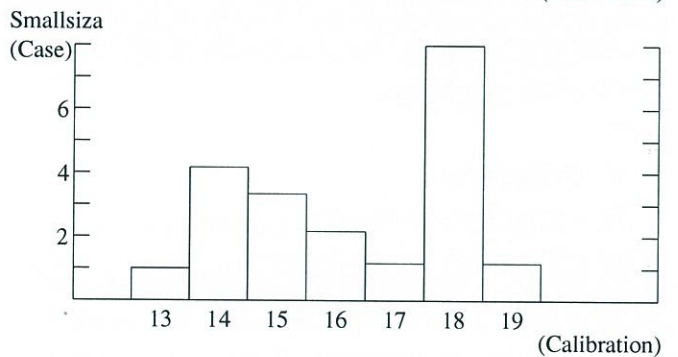
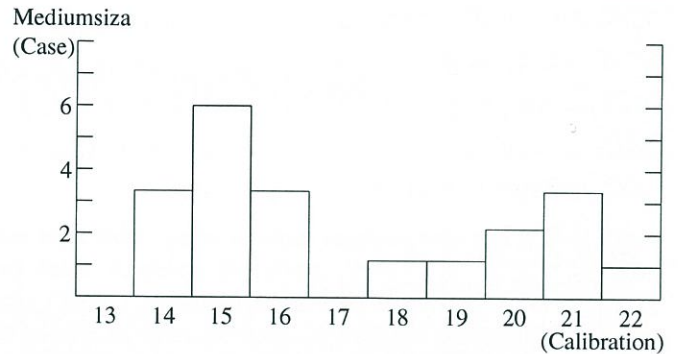
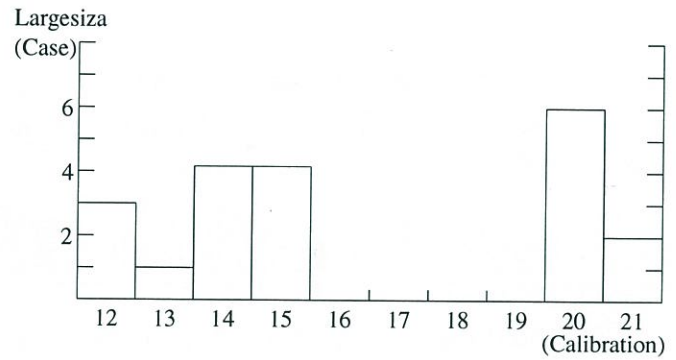


Fig. 3 : Firing range

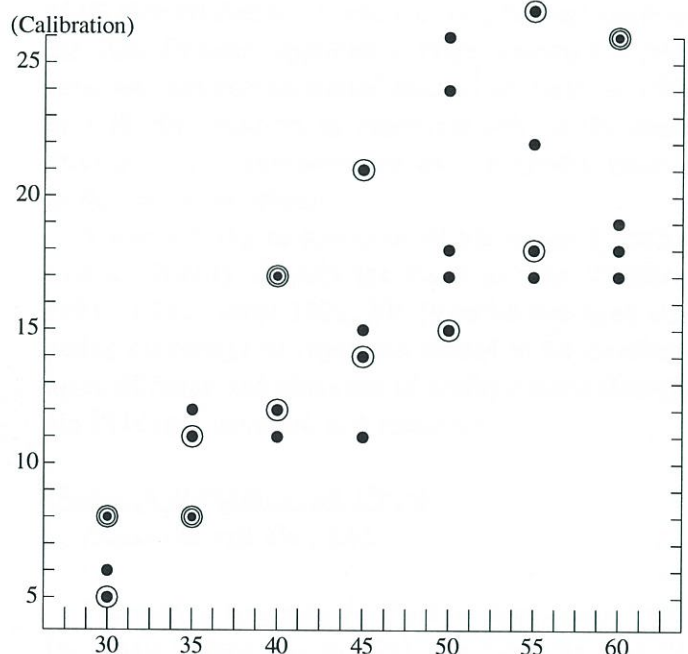


Fig. 4 : Relation between firing angle and range

d) Selecting suitable projectiles

The teams decide which projectiles they plan to use according to their reading of histograms.

e) Judging the relation between launcher angles and range

Even after choosing the type of projectile to be used, range will vary according to the firing angle of the launcher. Adjusting the shooting angle from 30° to 60° , the players fire 40 projectiles and record the angle and range for each, after which they prepare scatter diagrams from the data obtained.

f) Starting the real game

Now that all tools are ready for the real game with the projectiles and scatter diagram, the players start the real game. Results are entered on the score sheet as the game progresses.

g) Presentation

On completion of the game, each team makes a presentation of the results (winning or losing), using the histograms, scatter diagrams and score sheets.

h) Review

After the presentations of all teams, a review is made commenting on the fact that the results greatly hinge on the techniques used and dispersion.

Conclusion

The sinking game introduced was the first played by the trainees in the Practical QC Training Course and the success of the course may depend heavily on whether the instructors can make the trainees interested in it at this stage.

We have tried a number of other games in the Practical QC Training Course and trainees have always been engrossed in them, and seem to be looking forward to new games in the next session. We believe that our objective in adopting the game is being well attained, judging from the positive responses to the to the game by trainees as well as their favorable comments on the course in general, which we collect for our reference at the end of each course.

