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Camera Repair in Japan

The Strange Story of Light

This ServiShops Business

Faculty Suggestion of the Month

Bellows

Renard Tweezers

Designed for working with small parts in tight places, where you can't use your hands. Swiss made, long lasting, chrome plated.

A-Soldering  .85
B-Clock .58
C-Assembly .85
D-Work .30

All Sizes Available

ServiShops Product

National Camera Repair School
Englewood, Colo., U.S.A.

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This Month's Cover:

S. L. Curl shows his camera shop located in Cumberland, Maryland. Mr. Curl is currently learning camera repair from NCRS in order to provide complete service for his customers. (A fine looking shop, Mr. Curl - good luck!)

Staff

Clair H. Schmitt ....................... Editor
Chester R. Bernard .................. Advertising Manager
Tom Holman ......................... Production Manager
Thomas Shevlin ...................... Art Director
IT PAYS TO LEARN MORE THAN CAMERA CRAFTSMANSHIP

Although there is no question about the amount of emphasis that must be placed on the technical plans of your training, your NCRS course is designed to develop more than just your ability to repair a camera.

Of course, even learning to repair a camera requires that you discover more than the location of the first screw to remove during disassembly. From the earliest lessons of your course, you must begin to think out problems. The camera repair field is certainly not a "remove-and-replace" craft. There is no question about the value to you of learning to use logic in your day-to-day repair work, but your NCRS work goes even a step further.

Whether you get the greatest thrill from problem solving at the bench or whether you would like to develop a repair shop with an increasing number of employees, two subjects may appear only vaguely connected with true camera craftsmanship. These are customer relations and management. They must remain ever important in your mind. Both are vital to your continued success, regardless of the direction you choose to travel.

Some men work at a job, regardless of what the job may be, with never a concern other than that the work be completed well enough to satisfy the boss and insure the receipt of a paycheck at the end of the week.

Even if you never saw a customer, you must realize early in your career that it is the customer's opinion of your work that counts.

Many men express real distaste for any job that smacks of being the "boss". Others dream of "being my own boss" but fail to realize that a man can be successful even with 20 rungs of the company ladder above him if he can honestly boss himself at his own job.

( Con't page 4 )
Whether you run a camera repair shop, operate a Photo Supply Store or just like cameras, you will find valuable information in this concise volume. Have everything at your finger tips.

This edition contains a great variety of valuable technical data for all types of cameras and its equipment, needed by the repairman in his daily operation.

- **FORMULAE:**
- **STANDARDS:**
- **SHOP RECIPES:**
- **SHOP PRACTICES:**
- **CONVERSION TABLES:**
- **PHOTOGRAphIC DATA:**

Compiled and Edited by the NCRS Staff

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**THE DIRECTOR'S NOTE CONT'D**

You see, there are two "bosses" in your life that are too rarely considered bosses. Probably most important is the customer whom you may never see. The second is yourself. It's easy to satisfy the first. The second boss is not so easily satisfied because you may not know what he wants!

Satisfying your customer "boss" means doing a job in the way that you would like to have it done for yourself. The Golden Rule certainly applies full strength here. Regularly ask yourself, "Would I buy it? Would I pay the price for it?" Being constantly more and more critical is the way to make this boss, your customer or your company's customer, satisfied.

The other boss, yourself, should be the one with whom you have the closest relationship. It is this boss that manages you and guides you in doing a job a little better than the customer might want. You usually determine how well a job should be done in order that a customer, later seeing it, will also accept it. You must manage yourself, organize your time, guide your steps toward advancement and establish the pace that is best suited to you, the employee. Learning to excel at this self-management job is a vital step you must take in the road to success.

But both skills, satisfying your customer bosses and managing yourself efficiently must be developed to the point where performance is natural. Watch for the phases of your training that emphasize these skills. Don't judge them unimportant as far as learning camera repair is concerned.

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**MR. HANSON JOINS THE SERVISHOPS HEADQUARTERS STAFF**

Eldon R. Hanson brings a wealth of experience to your ServiShops Headquarters!

Formerly with LaBelle Industries, Mr. Hanson held a responsible position in the Clarus Camera Division as well as the manufacture of the LaBelle projectors.

In addition, his early experience as a supervisor with the Allis Chalmers Manufacturing Co. will be felt in the Headquarters machine shop.

Mr. Hanson's presence has already been apparent to the many students who have started their camera repair shops. It is his tremendous help that has begun to cut shipping time of normal repairs to a maximum of 14 days after estimate OK's are received.

Your Headquarters ServiShop is growing fast as it continues to help you get started. Depend on Mr. Hanson and the staff to handle the repairs you find difficult in the beginning - that's why the Headquarters ServiShop exists!
Paul Ruminsky of Lorain, Ohio reports that his business from five sources amounts to $130.00 a month at the present time. This is still a part time business with Mr. Ruminsky and certainly shows good promise for future success.

Just a little note to let you know how I'm getting along with my lessons and repair work. Your lesson on X contacts came too late for me, as I've already installed contacts in my Rollie, my Ihagee with Compur shutter, and two Compur shutters, for the local camera store. But I still got some good ideas from the lesson.

I just finished changing a flash coupling on a Japanese camera from an unusable Japanese type to a Compur type.

Some place in your lessons you said we would get a cigar box full of parts and be asked to put them together. Well, this very thing happened to me, only instead of a cigar box it was a paper bag. I'm happy to say that when I took it back it was a properly operating self timer.

Carl Zielke  
Grafton, Ohio

The places that I asked about repair work outside of Columbus were ready to send me their cameras. Our city is pretty well taken care of by a local repair shop. When I stopped in to see him he almost had me in a chair working before I could get out of the place.

Lewis E. Temple  
Columbus, Ohio

I have been having some very good experiences repairing cameras with accessories and while the summer rush was on I thought that it would be wise to grab a little. In looking over my records for the last 2-1/2 months, the lowest week was a little over thirty dollars and the best week was over fifty dollars, which I think is doing very good for spare time.

Frank Phillips  
South San Gabriel, Calif.
CIRCUITRACER
A small dependable rugged tester

**easy-to-use,**

A NEW inexpensive electric circuit tester especially adaptable for camera repair work. It is capable of locating and identifying dead or live circuits at any voltage resistance.

- Checks electric photo-flash circuits
- Analyzes breaks and high resistance joints
- Tests flash wiring for breaks or bad connections

Put this handy unit into your carry-out case or pocket for quick tests anywhere. Tested and approved by "National ServiShops" for camera repair.

$4.50

Mr. Yamamoto and his Repair Shop - Tokyo

CAMERA REPAIR IN JAPAN
by Thomas Warren

Upon my arrival in Japan for duty with the Navy one of the first items on my check list "to see" was a Japanese camera repair shop. This may sound easy enough to readers, but in Japan the problem of language and then finding the shop is not so simple! On my first visit to a conventional photographic store (of which there are many) I was told that in the city of Yokohoma there were only three camera repairmen. I did not ask, "Where are they located?" The reason is simple - even if I had been told I wouldn't be able to find the place! Most foreigners to Japan are 100% illiterate as far as sign reading and language is concerned.

To become better acquainted with Japan, I subscribed to the English language Mainichi newspaper, and through this paper's classified ads, I learned about Yamamoto's Camera Repair shop in Tokyo.

Yamamoto's Camera Repair Shop, No. 5 1-chome Nishi Ginza, measures approximately 12 feet wide and is two stories high, yet despite its seemingly small size is the number one repair shop in the world's third largest city. In addition to all phases of photographic repair, his shop also performs developing and printing services.

The family of Yamamoto have been in business 30 years, the son at present actively managing the shop and a boon to Americans because of his command of English. There is no NCRS or formal school in Japan - training was handed down through the family. The elder Yamamoto learned the hard way by experimenting, and later taught his son.

Upon introducing myself, and explaining I was a student in camera repair taking a course through the mail, Mr. Yamamoto made his shop available to me. I believe our curiosity was equal - in my case a curiosity was equal - in my case a curiosity was equal (Con't page 12)
Productivity is a word that has been used a lot in the past few years. It has usually referred to production as it pertains to factory work. When a workman has been able to drill six holes a minute, and learns to drill seven or eight, he has increased productivity.

Similarly, when a farmer can produce a bushel of wheat in 10% less time than before, or 10% more wheat an acre, he has increased productivity.

In photo equipment repair, productivity is equally important. The big question is: how can productivity be increased in photo equipment repair? NCRS students know a lot about the answer to this problem.

When a student starts his training, he probably has little concept of the procedures needed in repairing complex camera mechanisms. His NCRS lessons bring him the condensed experience of some of the best minds in the photo industry. The skill acquired through this training make his hands worth more money each hour. Training is necessary.

There is a tired old story that is still worth repeating. It is about a man who called in an expert to repair a defective steam engine. The expert studied the job for a while, took up a heavy hammer and hit one of the cams a sharp blow, whereupon the engine worked properly. In a few days a bill came through for $350. The owner of the engine was madder than a motorist with two flat tires on a bridge, and demanded an itemized statement. The expert sent the statement as follows: Hitting with the hammer - $3. Knowing where to hit - $347. Knowledge and skill were the important ingredients just as they are in the photo industry.

Many successful people in this industry will remember a feeling of fear and doubt the first time a screwdriver was put to a camera. The next time that particular job was done, it was much easier. Each additional time produced greater confidence, knowledge and speed; yes, and productivity. Experience is necessary. (Con't page 8)
FACTORY REBUILT

SHUTTER TESTING

$65.00

FACTORY REBUILT

SHUTTER TESTER

- Accurately measures equivalent shutter speed of between-the-lens shutters giving immediate meter indication.

- Features a 4-1/2 inch meter calibrated in three speed ranges: 1-1/10 sec., 1/10-1/100 sec., and 1/100-1/1000 sec.

- An electronic instrument whose accuracy is not affected by line voltage variations or tube replacement.

- Enclosed in an attractively styled medium grey 8 x 8 sloping front panel cabinet.

$65.00

Fundamental knowledge of any job and the speed in performing that job will determine productivity and therefore, rate of pay. The following formula can be a guide to the chance for success in the photo industry:

$$\frac{T + E + A}{L} = P$$

In this formula let $T$ equal training, $E$ equal experience, $A$ equal aptitude, $L$ equal laziness and $P$ equal productivity.

Of factors $T$, $E$ or $A$, it is probably true that one could be successful without the possession of a high score in 2 of them. One other fact is apparent; a high score in $L$ can balance off all other values and leave NO productivity. The $T$ factor is highly important when you consider again, that training gives the student the benefit of the experience of others - in other words, fast experience.

When it is considered that productivity and rate of earning are closely associated, it will be realized that all factors of the formula are essential in analyzing chances for success. It simply means the difference between one dollar or several dollars of earnings for each hour of work.

Mr. and Mrs. Tony Everett spent their vacation in Denver this spring. Mr. Everett owns and operates Everett's Studio in Medicine Hat, Alberta, Canada, and is well advanced in his course in Camera Repair. While visiting NCRS Mr. Everett ordered a Motion Analyzer to further aid him in giving complete service to his customers.

Mr. & Mrs. Paul Ruminsky from Lorain, Ohio dropped in for a short visit recently. They were visiting relatives in Boulder, Colorado and stopped at the school on one of their side trips. Although Mr. & Mrs. Ruminsky could not spend more than a few minutes with us, their visit was appreciated.
HERE'S WHERE SERVISHOP CRAFTSMEN LEARN AND EARN

Made a change in your shop lately? Make a quick picture or two and send them in. Share your ideas.

Low Teck Mong
Bangkok, Thailand

Donald R. Humes
New Cumberland, W. Va.

Edward H. Oetjens
Houston, Texas

John R. Newton
San Francisco, Calif.

Raymond E. Warnke
Grand Rapids, Michigan

George E. Glisson
Dayton, Ohio

Charles A. Holts
Pontiac, Michigan

THE CAMERA CRAFTSMAN, JULY-AUG., 57
Close your eyes. Now imagine the world like that -- black, bare, bleak. Could you survive in such a place? Almost certainly not.

What would happen to you in a lightless environment? Naturally, you couldn't be able to see... but that would be the least of your worries. Consider these repercussions: Your food supply would wither in the fields and die on the plains, for without sunlight plants could not absorb the carbon essential to their existence. Your fuel supply would be endangered. Your wardrobe would soon be depleted for lack of raw material. You could not travel. Diseases defeated long ago would once again plague you, since you would lack sunlight, which is a natural germ-killer and source of our vitamins. Almost every form of entertainment and exercise would be closed to you forever. And if somehow you survived these physical disasters, your personality could not escape change--you would grow bored, irritable, moody and depressed.

HOW LIGHT AFFECTS YOU

Fortunately, the earth's sole source of natural light, the sun, promises to be with us for several billion years more. Thus our food, fuel and clothing supplies are in no immediate danger. Medical research will continue. We will go on visiting museums, libraries, theatres, athletic events. Our personalities will take their individual forms.

But even in the world we inhabit how, light can affect you more than you may know.

If you're average, you can read for six hours in a well-lit room with no noticeable strain, fatigue or increase in the size of your eye pupils. But thirty minutes of reading under inadequate lighting may leave you blinking, nervous, and irritable. Since all work requires the use of the eyes to some extent, sufficient lighting is a necessity during all working hours.

It's different if you want to relax. Anyone who has ever visited a dimly lit restaurant or ballroom can vouch for the restful effect of such an atmosphere.

Recently the color of light has been discovered to be just as important in establishing mood as the degree of brightness. Lights tinted green are soothing and cool, so they are employed in operating rooms and dental offices to allay the anxiety of patients. A suggestion of blue-green light, it has been determined by experiments, is conducive to efficient work, and this discovery is being utilized in factories across the nation.

A lighting innovation that flatters people and their surroundings has been pioneered by Duro-Test Corporation at its North Bergen, New Jersey laboratories. It's fluorescent lighting with a new, pleasing color: Candelite. Previous fluorescent lighting was harsh, and cold blue. Candelite gives the effect of the warm, soft glow of candle flame, at the same time fulfilling modern lighting needs with increased intensity. Complexions look healthier, and more natural under it and because of its combination of warm, soft, and effective lighting it does much to ease the strain of hard work and concentration in homes, offices, schools, factories and stores.

These facts explain why the creation of light was one of the first acts of God in the Bible. Indeed, the importance of light has been recognized by all religions through the ages.

Prehistoric men worshipped the sun. In Greek mythology Apollo, the god of light, is a beloved deity. A halo of light surrounds the saints of Christianity, Moslem prophets--Mohammed and El Khidr--are always shown with a light shining from their faces. Light beams from the eyes of the Norse god, Balder. And we are told that all the universe blazed with light when Buddha reached his perfection of knowledge.

. Light plays no less an important role in world superstitions. In Macedonia today, for example, three lights burning in one room are believed to presage the death of someone in the room. In Germany, a light that suddenly goes out is also a death omen. In the north of England, you have given away your luck for the coming year if you give someone a light--if only for his cigarette--on New Year's
STORY OF LIGHT

Day or Christmas Day. Our own culture is pervaded by the belief that misfortunes stem from lighting three cigarettes with one match.

Light has even penetrated our vocabularies. We speak of "sunny" dispositions, "bright" children, the "dawn" of a new era, and "beginning to see the light"—all expressions of favor. Our heroes are associated with brightness. Every girl dreams of her knight in "shining" armor. Millions of boys cheer the Lone Ranger's white steed, "Silver".

WHAT IS LIGHT?

The latest guesses about the nature of light combine an ancient concept with a modern one. To the Greeks, light was a stream of particles discharged by visible objects, and vision was the sensation produced when the particles hit someone's eyeballs. To physicists of 50 years ago, light was waves in an all-pervasive material called ether. Today light is regarded as waves, or bunches, of particles. This still is no answer to the question of what light is, because no one knows for sure what the particles are made of.

Scientists think the particles are produced when electrons are forced, somehow, to change their paths around an atom. Every time an electron jumps its tracks, a small quantity of energy is released. The small bundle of energy is called a photon. These photons get together and form waves, which are light. The sun, our solar system's source of life, releases incredible amounts of these photons every second.

Simple? Sure. But no one has ever seen a photon. And no one has ever visited the sun. Such is the stuff of scientific theory.

Light Through the Ages

Our primitive ancestors were notably short on theory, but keen on practical results. Earliest man languished in the darkness from the time the sun set until it rose again. Then, countless ages before recorded time, he discovered a means of creating light—and heat—through flame. There is no record that he worried much about the concept of light; he just squatted before his fire, contentedly admiring his cave drawings in the flickering illumination, or whittling his club for tomorrow's squabble with the little woman.

The story of lighting progress is the evolution of increasingly efficient light sources. It is a steady search for a compact, highly emissive, relatively cool instrument. The torch, candle, oil dish, and gas burner represent milestones in man's quest for better, brighter light.

With the advent of electricity, a world was transformed—literally and figuratively—overnight. When Edison devised a lamp that emitted light in the same way as the sun, with none of the disadvantages of previous instruments—danger of fire, flickering of light, and necessity for constant refueling—the most revolutionary development in lighting history had occurred and mankind had one of the secrets of the universe placed at his fingertips.

But man is seldom satisfied with what he has. He's always seeking means to improve his lot and the field of light is no exception. Edison's basic invention was improved to the point where a bulb could be counted on to burn 500 hours, and special types now last as long as 10,000 hours. Modern research has found that different light sources are better suited for particular lighting situations. Thus the introduction of fluorescent, mercury vapor and fluomeric lamps to perform tasks beyond the scope of incandescent lamps.

WHAT THE FUTURE HOLDS

As men learn more about the physical and psychological effects of light, we can look forward to a world in which we will be able to snap on a colored light that suits the mood of the moment. Within the realm of probability are lampless houses featuring electroluminescent walls that glow, solar batteries that store light energy and improved outdoor floodlights that can turn night into day. Man-made light has proven a boon to farmers and the time may well come when immense bins, artificially illuminated, will foil crop failure forever.
THE "QUICK-HOT"

ELECTRONIC
SOLDERING GUNS

120 V. A.C. — 60 CYCLE
1.1 AMP. MAX.

$5.95

Nothing like it on the market! This Gun gives AMPLE heat — quick! And quickly cools when trigger's released. WEIGHS ONLY 1-1/2 lbs! Has wonderful balance. Easier to use accurately — less tiring.

1. Extra long narrow tips make it easy to reach tight spots
2. And they are NEW TYPE STEEL NOSE LIFETIME TIPS! Properly used they're practically indestructible.
3. Tips easily removed by loosening set screws.
4. Built-in spot light angled to focus light on work at tip.
5. Gun is light, small, slips readily into tool kit or pocket.
6. Sturdy molded plastic handle and case are both heat and shock resistant.
7. Fine appearance. Cherry red plastic handle and case.

*ServicShops Product*

National Camera Repair School
Englewood, Colo., U.S.A.

(Cont'd from page 6)

Camera Repair in Japan.

... possibility to see his shop, and his in my course of instruction. I was led up a narrow stairway to the second story where his repair section was located. The repair bench faced ell-shaped frosted windows which afforded good lighting, and there was room enough for three repairmen. The Yamamoto's hire four assistants and their shop is open from 9AM to 7PM. Thinking about the American way of life and the "coffee break", I asked Mr. Yamamoto, "How much time do you take off for lunch?" He seemed surprised and smiling replied, "We cook our food right here!" I believe the most impressive point of my first visit was the accumulation through the years of defunct shutters and camera bodies - a wealth of spare parts in this business. One small box I was shown contained approximately 45 main levers from Compur shutters, another at least 30 twin lens reflex boxes, and countless numbers of large trays with literally hundreds of shutter housings, mechanism plates, retard levers and springs! This part of his inventory later proved to be what he classified as almost "completely junk parts", for I was later shown more carefully stowed winding knobs, retard gears, ground glass and viewfinder parts. Before departing I promised to bring in some of NCRS's text books on my next visit.

The second visit several weeks later resulted in a three hour visit in which Mr. Yamamoto took great interest in the NCRS course books. The most impressive item of this visit occurred when I showed him the multi-span wrench, and upon asking what he used to remove retaining rings, he showed me a very ancient pair of dividers! A string of questions and answers which I thought may be of interest to other students follow:

Q: In the repair of American made cameras, how do you get your parts?
A: Any part hard to get we have a working agreement with a nearby machine shop who makes them for us.

Q: What would you say the majority of your work is?
A: Shutters, mainly the retard gear being weak material. Gears also found to be ground out. (In Japan the retard is referred to as the "slow gear.")

Q: What are the popular screw sizes used in Japan?
A: 1.4 mm and 1.7 mm most often used, also 1.2 and 2.0mm found.

Q: On lens coating prices in Japan, say for example a 75mm optic, what is the cost?
A: Price would be between 1000 and 1500 Yen, ($2.77 to $4.25).

Before departing after my second visit I loaned Mr. Yamamoto two of the NCRS course books. They were the lessons on the Leica Type Shutter and Testing Shutter Speeds - the latter being the one which interested him the most.
The camera repairman will naturally develop an opinion, from the technical standpoint, of every piece of equipment that he repairs. He may consider that a certain camera is of poor design simply because he doesn't know how to disassemble it easily. Even though a camera craftsman can repair a certain make of camera and becomes very well acquainted with it, he may still regard it as a poor instrument for taking pictures. There are many reasons why he may have a low opinion of a certain camera, and a very high regard for others. Whatever the reasoning behind this opinion, it is never necessary to degrade a certain piece of equipment or a manufacturer.

The photographic equipment manufacturer who purposely produces a "piece of junk" is very rare and certainly does not stay in business very long. There has been some equipment made that is not of the best quality, that is very true. In some cases the original purchase price was much higher than should have been charged. Even so, if a man has paid a high price for a piece of inferior equipment, there is no reason for the repairman to tell him so. No one likes to be told that he erred because of his inexperience.

A camera repairman may have a low opinion of a high quality camera simply because of its complexity. This opinion is certainly of no interest to the photographer since he may prefer his camera because of the ease of operation, or some special feature he needs. Even though the photographer asks for the repairman's opinion of his camera from a technical standpoint, he certainly does not want a lecture on the mistake he made in purchasing that particular camera.

We cannot help but form our opinions but "a difference in opinion is what makes horse racing". No manufacturer can please every photographer with one camera. Quality compared with selling price is certainly a very good basis for an opinion and certainly should be considered when advising a customer before he has purchased a camera. Honest opinions given at this time are certainly worthwhile but once a customer has made up his mind and has actually made a purchase, there is no need to discourage him.

You don't need to praise everything to the skies, but if you can't say something good, it is best to say nothing.
**COMPREHENSIVE OUTFIT** — MODEL COM/10

Consisting of:

- Large wooden case (Model MA/CO3), containing the following:
  - BED 10° long - 254 mm, with adjustable swivelling foot,
  - HEADSTOCK complete with draw-in-box,
  - TAILSTOCK with runners, with male and female centre.

(Specify whether Standard Tailstock or Tailstock Ref. No. TA/8 mm. is wanted),

- TIP-OVER TOOL REST,
- CS/7 COMPOUND SLIDE REST, with 1 set - 6 (shaped) Cutting Gravers,
- VS/15 VERTICAL SLIDE,
- TD/18 TAILSTOCK DRILLING ATTACHMENT,
- LA/180 LEVER ATTACHMENT for above,
- CDA/2A SELF-CENTRING DRILLING ATTACHMENT,
- DG/21 DRILLING (graduated screw feed) ATTACHMENT,
- SF/31 SAFETY FRICTION PULLEY ATTACHMENT,
- CP/42 CARRIER PLATE,
- MP/51 MANDRIL FACE-PLATE,
- CC/2807A 30 off SPLIT CHUCKS from .2 to 4.6 mm.,
- SS/62 1 set = 5 STEP CHUCKS with 9 steps each,
- BC/71 1 BRASS CEMENT CHUCK, 10° dim.,
- BC/72 1 BRASS CEMENT CHUCK, 8° dim.,
- BS/710 1 set = 3 BRASS CEMENT CHUCKS with holder,
- FM/74 FEMALE CENTRE,
- MC/75 MALE CENTRE,
- ES/71 1 6-SCREW CHUCK (Bell Chuck),
- GE/9 SELF-CENTRING 3-jaws SCROLL CHUCK with 8 mm. Adapter,
  - AR/79 ARBOR 1½ in.,
  - AR/80 ARBOR 2½ in.,
  - RT/5 ROLLER T. REST,
- 2 keys.

Distance between centres: approx. 3° - 80 mm.
 Approx. weight of complete Outfit: 20 lb.
about 9 kg.

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**Our Students Speak**

I choose the Motion Analyzer on lesson #15 for my tester because it is the most convenient and simplest to use that I have ever found. It’s just tremendous and certainly eliminates the use of a darkroom, etc.

Mal Wood
East Weymouth, Mass.

I have been reading over the lesson material, and am about ready to begin the assignments. I am quite certain it is going to be very enjoyable and fascinating to further my interest in photography from the technology viewpoint. Several years ago I took a journalistic photography course, and often problems of a technical nature came up, which at that time no real solution was at hand. Now it appears your course will open up new avenues of approach. You can look forward to hearing from me within the next few days.

V. E. Jenkins
Tustin, California

As each lesson arrives my enthusiasm grows more and more. Having completed a course in photography I thought there was no other information I could use. But your wonderful course has proven otherwise. I’m not only learning camera repair but am also re-learning photography. Your text books are very nicely prepared and easy to understand.

I have nothing but praise for your course and believe that it is worth every cent. I would like to turn the tables and say “Keep up the good work.”

Rudy Grijalva
Tucson, Arizona

Mr. C. C. Crumrine’s article Cross Roads sure hit the nail on the head, and I’m sure your answer has helped many students on this same thought.

I certainly did enjoy the article in P.S.A. Technical Journal on the Servishop Motion Analyzer. Looking forward to this Unit, as it certainly is an asset to any shop or store.

Robert C. Stephan
Monterey Park, California
KITS

YOU'VE ASKED FOR THEM AND HERE THEY ARE...

1/4 Price!

Your TRANS-RAK Costs you only $1.00 with any ServiShops

Kit order totaling $20.00 or more!

KITS NOW AVAILABLE

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<td>Rivet Assortment</td>
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<tr>
<td>Wind Assembly Assortments</td>
<td>$6.95</td>
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<td>Synch Installation Kits</td>
<td>$9.75</td>
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<tr>
<td>External</td>
<td>$13.50</td>
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<td>Internal</td>
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<tr>
<td>Shutter Blade Assortment</td>
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*When TRANS-RAK is not ordered, KITS include P201 plastic tray for storing.
draftette

a portable drafting instrument
made of sturdy anodized aluminum
designed for: sketching
drawing
drafting, etc.

PRICE ONLY $4.95

Complete with 10 x 13" drawing board $5.95
Complete with 11 x 17" drawing board $6.50

check these features ✓

QUALITY — All aluminum construction — available in jet black — marked with gleaming, white-filled numbers and letters.

ECONOMY — Costs much less than other drafting machines — you can afford one for home, one for office, shop, school or field.

PRECISION — All scales machine calibrated to ± 0.0005 of an inch — scientifically engineered to retain its original accuracy, with 180 degree protractor.

RUGGEDNESS — Not a gadget — Draftette is a sturdy constructed instrument that will withstand hard wear and use indefinitely.

COMPACTNESS — Draftette (without board) folds like a jackknife — slips into drawer, pocket or briefcase. Draftette instrument complete with Draftette board also fits into briefcase, ready for use anytime, anywhere.

FACULTY SUGGESTION OF THE MONTH

by: Bud Fowler

Has it ever been your experience to open a shutter with which you were well acquainted only to find to your amazement, a jumble of levers and springs entirely foreign to your knowledge of that shutter? If your answer is yes to this question, it is probable that you also found, after making a closer inspection of the entire mechanism, that it was basically the same as what you originally expected to find.

But what about the portions that didn't hold "true to form"? Did it occur to you why the alterations had been made from the original design? What would be the necessity of modifying the design of a Synchro-Compur or Prontor SVS, as an example, when the modifications seem to have no obvious effect on the shutters efficiency or operation?

The reason for this is because such a wide variety of cameras employ shutters of the same type that it becomes apparent that certain design changes are sometimes necessary. Many of these cameras, being automatic or semi-automatic, require the shutter to be made an integral part of that operation. As noted earlier, the shutter will usually retain most of its basic characteristics of construction; but due to the many variations in methods of shutter cocking and linkage of release mechanisms, certain components of the shutter which are directly affected by these two operations will have to be altered. If the shape of a release lever has to be changed to accommodate a certain body release linkage, it will mean that the construction of time and bulb levers, springs, main lever latches or any other parts that are directly controlled by the release lever may also have to be changed. The same will be true in the cocking operation and all the parts related to it.

The alterations you will find may be very simple or extremely complex, but keeping in mind the reason behind these changes will enable you to "see the forest for the trees" and analyze any situations of this type that you may encounter.
IT'S A BOY!

May and June have been poor months for me to do much studying, I have done almost nil in repairs. My reason is - a SON- born Decoration Day, name, David Wesley, weight, football linesman 8 lbs 12 oz, both going good, that is mother and son- father, well, he is out of the clouds now and getting as near normal again as can be expected. Who knows, he may have a future camera repair man.

W. L. Weigand
Cleveland, Ohio

I think your lesson books are clear and plainly written and interesting to read. I am enjoying the course very much and only wish I could devote more time to it. Working the way I do makes it a little rough but I manage to do a little reading and reviewing during some dull moments at the refinery.

Joseph C. Poley
Alden, Pennsylvania

Not to be in competition with the school's supply, but if there happens to be any student who may need Japanese parts that NCRS can not supply I would be glad to try and find it for them out here. Just give me a good description of what is needed and what it came out of, no commission expected, just tell me what amount you expect to pay and the return postage.

In closing let me say I'd be pleased to hear from other students regardless of their needs, for we do have one interest in common!

T. Warren CTC USN
Navy 830 Box 14 c/o FPO
San Francisco, California

I have enjoyed working up this lesson and have found out just what the focal plane shutter is for and how it functions.

Woodrow E. Vest
Clifton Forge, Va.

I am presently operating the Ashland Camera Repair Service in Ashland, Ky. I represent most of the large manufacturers as a field repair station.

(Con't on page 19)
You can test photo equipment in a matter of seconds

Boost your earnings in less time

Because your Analyzer requires fewer adjustments to make a test, you'll save time and steps on every test you make. You'll actually need up to 50% less time than you'd use on even a single, high cost special purpose instrument. You can go from test to test with no complications — and without worry about calibration or accuracy! Savings of time and an increase in accuracy guarantee you higher earnings. The most expensive thing you own is your own time! Make a shutter or synch adjustment with half the testing time and you double your earning power! Your ServiShops Analyzer means more money for you!

National Camera Repair School
Englewood, Box 174C Colorado
BELLOWS
(Con't from page 17)

I have the only shop in a metropolitan area of 250,000 people in Kentucky, Ohio and West Virginia, and do service work primarily for photo dealers. I have eight regular accounts and pick up and deliver regularly on Mondays. Among these are two pawn shops, who incidentally, do a lot of business. In addition, I receive considerable mail order business from outlying points. My business is good and I have all I can handle so my advertising is nil. I opened these accounts by direct contact. In addition I have used the Camera Craftsman get-acquainted card to good advantage. I service for all the studios, professionals, churches, schools and colleges in the area - some on contact, some on call. T.V. studio work is also done. My shop is a side line in which I average 40 hours per week. I owe this all to NCRS.

I have a Dunn & Bradstreet rating and do business with suppliers all over the country and in two foreign countries as well.

I specialize in shutters, synchronization and optical work although I do everything in the way of repairs, including machine and custom work. I am building a new shop which I hope to occupy in the early fall - will send you some photos then.

Okie S. Green
Ashland, Ky.

Here's a shot of the new home recently purchased by Ray Dodge in Wichita. Looks like there's plenty of room in that basement! (Let's hear from more of you students about wonderful events like this. Address your news to "The Craftsman.")

NATIONAL CAMERA REPAIR SCHOOL
Box 174
Englewood, Colorado

I am interested in the opportunities and advantages of a career in Camera Craftsmanship. Please furnish me with complete information about your training program.

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