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**Thomas J. Dankowski**  
Kennedy Space Center, NASA, Florida

## *Biography: Thomas J. Dankowski*

Born in 1962, Thomas J. Dankowski is presently employed at the Kennedy Space Center in Florida, currently working with NASA's Space Shuttle program and the assembly of the International Space Station. With the utilization of visual and navigational landing systems, he has been training astronauts and cosmonauts how to land, for the past 15 years. Previously, Thomas was a Naval nuclear powered fast-attack submariner.

Thomas purchased his first metal detector in 1972. Then, in 1973, he found his first 'significant' find; a rare 1856 Flying Eagle U.S. one cent coin. At the age of eleven, he sold the penny for \$700.00 and never told his parents. From that point forward, he was "hooked" into this wonderful hobby of treasure hunting. With this specific experience Thomas claims: "This is where I learned money-management. It took me 2 years to spend the \$700.00. Grateful for this positive incident, however, I regret selling such a rare coin - as I no longer have 'proof' in my custody with this key-date coin".

At the time of this writing (July 2002) Thomas has accrued 30 years of detecting experience. It has simply been a fanatical hobby for him, until recently. In more recent events, Thomas has helped locate murder weapons for FBI and police depart-

ments who have all but given up on feudal searches; helped NASA locate metal items in certain, specific projects; located iron spikes and nails in lumber logs entering industrial saw-mills; located a projectile/bullet in a gunshot victim for an ambulance crew (pin-pointing accuracy took on a new meaning!); Found the usual domestic-dispute "lost" wedding & engagement ring sets; located a 'misplaced' buried cache for an individual; and the list goes on.

Thomas' primary treasure hunting interests are finding the extreme depth older coins. A good relic hunt occasionally piques his interests. Thomas claims that launching Space Shuttles is his hobby and that treasure hunting is his profession. He has trained hobbyists and professionals how to use a metal detector in a wide variety of applications. Frequently, Thomas gives educational lectures at seminars and local treasure hunting clubs. He has written many 'very technical' articles pertaining to the hobby, produced a professional training video, and works with Fisher Research Laboratory R&D department on current production and future metal detector concepts. — Who knows, using a metal detector on Mars to find mineral deposits and metals might be in our space programs future! **®**



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I've witnessed thousands enter this hobby. Only a few succeed. Why? EDUCATION! (Or the lack thereof). You would not want your mechanic performing heart surgery just as you would not want a newcomer to the hobby, looking for your lost diamond engagement ring. Education is paramount. Learn, learn, learn -- practice, practice, practice! Your aptitude to 'attention to detail' in the preceding chapters will dictate your detecting success ratio and your test grade will be reflected in the lining of your pockets after each hunt. Too often I hear metal detecting success stories attributed to 'luck'. Statistically and proportionately, a well educated treasure

hunter will nearly always outperform the occasional "luck" hunter. Even if your brain may process the detectors headphone audio output at a 486 Pentium I rate & your hunting partners rate may be a 586 Pentium IV processor speed, your higher educational level will prevail. In this hobby, speed is not necessarily welcomed; educational efficiency rules. I strongly recommend rereading this material semiannually, more if you are on a power learning curve. LEST PRIDE SUPERSEDE EDUCATION, STATISTICAL OBSOLESCENCE WILL ENSUE.

**Happy Intelligent Hunting!**

Thomas J. Dankowski,  
Kennedy Space Center, Florida

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- #1 • HUNT WISELY pg. 1
- #2 • UNFORGETTABLE EXPERIENCES pg. 2
- #3 • ID DISCRIMINATION vs ALL-METAL - Pro's & Con's pg. 3
- #4 • CREATING THE CZ-3D FOR THE REAL WORLD pg. 5
- #5 • CZ-3D UNIQUE OPERATING INSTRUCTIONS pg. 6
- #6 • SOIL CONDITIONS/SINKING TARGETS pg. 7
- #7 • CONDUCTIVITY: A CLOSER ANALYSIS pg.8
- #8 • UNMASKING BEGINNINGS pg. 9
- #9 • COIL SIZE MYTHS pg. 10
- #10 • GROUND MOISTURE CONTENT & THE HALO PHENOMENON pg. 11
- #11 • KNOW YOUR DETECTOR pg. 12
- #12 • SENSITIVITY TRAINING pg. 13
- #13 • INFINITE UNTAPPED HUNTING OPPORTUNITIES pg. 14
- #14 • CZ-70 PRO, ADVANCED OPERATING TECHNIQUES pg. 16
- #15 • CZ-70 PRO FIELD TEST pg. 17
- #16 • MAXIMUM PERFORMANCE - THE HUMAN FACTOR pg. 18
- #17 • FINDING RARE, KEY DATE & GOLD COINS pg. 19

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Front Cover & Above: Thomas J. Dankowski & Pete Sabatini  
training with the CZ-70 Pro in Florida

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Thomas J. Dankowski coin finds  
from one "Unforgettable Experience"  
- read the complete story on page 2.

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## HUNT WISELY

**“The 1962 strata of dirt was located at 9.22” deep. What good is this data? Well... many decisions & conclusions can be formulated with such information.”**

It seems that every time I go hunting, I can never just simply ‘hunt’ and enjoy a basic coin-shoot. Rather, I always turn it into a research project or a experiment. This usually includes spending large amounts of time recovering many ‘trash’ signals. Occasionally, my hunting partners will wax me in the volume of “keeper” finds, then commence boasting - to playfully ruffle some feathers.

It was late in 1999 when I took on such a project. My quest was to find; “At what depth was the 1962 dirt strata”. This was the year that a detectorists nightmare debuted; the aluminum pull-tab. --- Thousands of targets were dug and depths were carefully measured. Initially, I thought that it would be the coins (because they are dated) that would give the best and most conclusive data for dating the depth stratum — especially from the coins that were nearly uncirculated when they were lost. However, unexpectedly, the pull-tab with its many differing varieties provided the most precise data. Some certain style pull-tabs had a life-cycle of only a few weeks. It is safe to assume that these specific pull-tabs were lost during their active life-cycle; a 8 month old RC Cola may not taste so good --- expiration date aside. The sink-rate of differing density metals must be taken into consideration along with ground moisture, cumulative foliage, grass root structure, dirt density/composition, ground activity and any other data altering occurrences, so as to remove as many variables in order to ascertain quantified research validity.

Conclusive analysis was achieved in May, 2000. The 1962 strata of dirt was lo-

cated at 9.22” deep. Several places in Florida, Georgia and California supported this data. In some areas, the sink rate was worse and in other areas the soil provided greater stability with the older targets being located at shallower depths as a resultant. This sink-rate data represents the median average. At the time of this writing (April, 2006), I surmise the 1962 median average soil strata is at approximately 9.5”.

What good is this data? Well..... many decisions & conclusions can be formulated with such information. In bullet form:

- \* Use a deep seeking unit.
- \* Find areas where soil has a slower sink-rate.
- \* Recover only the deep targets under these high sink-rate conditions.
- \* Use a large coil in areas where targets are sparse.
- \* Recover the pull-tab signals at the pre-1962 dirt depth strata’s.
- \* New England States are lucky! (Slower sink-rate dirt).
- \* Sink-rates can vary dramatically from site-to-site and State-to-State.
- \* A superior detector may not be the answer.
- \* You may experience that 9 out of 10 places you hunt will produce nothing old — only clad coins at deeper depths.
- \* Promise yourself NOT to get discouraged.
- \* Accept the fact that many premium looking, ‘prime sites’ have sink-rate soil failure conditions.
- \* You may experience conditions where

*UNFORGETTABLE EXPERIENCES*

**“The attitude you carry into the field  
can make all the difference in the world.”**

It was one of those days where, due to life's events and demands, I had been deprived of "time". Detecting time. Nearly a full month since I had last detected. So, the fever was extraordinarily high, the temperature was cool and the time was finally available. Good sites were becoming increasingly sparse, but my attitude that day was: "I'm POSITIVE I will succeed". The attitude you carry into the field can make all the difference in the world. And indeed, on this particular hunt, "positive attitude" fully validated itself.

The area was a 4 acre field in Oak Hill, Florida where I was informed a country store once stood. The store burned down in the Fall of 1920, was never rebuilt and the property abandoned/uninhabited since then.

I had detected the property twice before, fairly extensively, to no avail. Only a few clad coins were found, speculating from passer-by transient hunters. I was certain of the tip that I received in 1997 from a man of whom was born in 1911 and worked at the store in 1919 & 1920 as a helper. In fact, in 1997, it was my CZ-6a that verified a ton of charred nails in the ground, exactly where the man claimed the structure once stood. I could not successfully detect where the structure once stood because the volume of nails were excessive and anything else would be completely masked.

As I walked a path directly away from the iron nail pit, the amount of detectable signals in my headphones diminished rapidly - to the point of virtually pure silence about 60 feet away from where the structure once stood. Only a few very deep

mid-tone trash items existed along with a few sparse rusty nail signals; exceptionally quiet soil. I recall being surprised with the silence of nearly no metal objects in the ground, yet I wrote it off in my mind as a target-poor, clear site.

Flash-forward on the time continuum to February, 2004. Armed with a new CZ-3D, a positive and demanding attitude, I went back to this pounded site. Positively knowing there just had to be something worthwhile at this site that would be indicative of the era, I began hunting.

I started the search about 70 feet away from the nail infested area where the building once stood. Targets were few and far in-between in this area, and mostly consisting of sparse low-tone nails. Then I detected a very weak, nearly consistent high-tone (zinc penny) reading. In my headphones, the target sounded very deep and also large; about the size of a crushed beer can. Nearly certain it was a piece of tin or copper roof flashing from the old building, I decided to dig it out of the way anyway.

As I began to dig, I suddenly remembered that I had started to dig this exact same target in 1997, but changed my mind due to the fact the older CZ-6a read the target as a trash mid-tone at a labor-intense depth. The CZ-3D read high-tone, so I dug a 12" x 12" x 12" cube of sod out of the Earth. Sweeping the coil over the removed plug yielded nothing. Dunking the 8" coil into the hole, the detector would then report an expected large target in the bottom of the hole. Digging about another half-foot of dirt out of the hole, then sweeping the

*ID DISCRIMINATION vs. ALL-METAL - Pro's & Con's*

**“There is a wealth of information only provided in the all-metal mode that speaks a language of extreme intelligence all unto itself.”**

Yesteryear versus bells-n-whistles is becoming a controversial issue, once again. ID (especially tone-ID) is here to stay, yet all-metal mode of operation suits a critical function that technology may not be able to suppress.

If you are from the old school where you were born and raised from under the headphones of all-metal mode of operation for 40 years, you will know for a fact that no type of artificially buttered-up, pre-processed, synthesized, artificial intelligence ID system could ever replace all-metal raw data. There is a wealth of information only provided in the all-metal mode that speaks a language of extreme intelligence all unto itself.

With experience; size, shape, depth, density, target orientation and other datum can be derived from the all-metal mode of operation. A rusty, ferrous nail will produce a elongated double-blip. A token, ring or coin will give a smooth, short, sharp, clean, symmetrical, distinct, highly differentiable audio report. Priceless data. Personally, when and IF time permits, I prefer the all-metal mode of operation, HOWEVER; let's face modern-day reality. Realistically, time poses much more of a constraint. Furthermore, it would be absurd to expect a new-comer entering the hobby to put the next 40 years into the all-metal mode option, in an effort to ascertain grade 'A' proficiency skills.

Enter the modern-day ID detector. Examining the pros & cons of this technological advancement via a realistic approach should help clarify the gray areas. Facing the facts, you CAN take a modern ID de-

detector of nearly any brand, and go 'cherry-pick' coins out of a modern-day park with a fairly high degree of success and accuracy. This is also to say that you CAN avoid digging most trash items. A detector in the all-metal mode could perform these same tasks in highly skilled hands; however, it would be excessively time consuming. So, this is one major attribute of a ID detector; "time-conservation".

Analyzing the lifestyles and requirements of our present era, most people are required to multitask to retain a job and sustain life. Both husband and wife are now in the workforce - possibly even having multiple jobs. Free time is becoming a rare commodity; hence, design engineers must invent things (metal detectors) that target current lifestyle conditions and demographics. The fact cannot be argued that a ID detector can save a tremendous amount of time.

Will the ID detector miss good targets that may have otherwise been recovered with a all-metal detector? NO! Absolutely not. It is the operator that has become complacent on "cherry-picking" certain select tones. Chances are; what a all-metal detector can detect, so can a ID detector. Now, the ID unit may give different tones in the headphones - but it will still detect the same targets that the all-metal unit (or mode) will acquire.

I once had a friend, a long-time detectorist, who joined me on a hunt. He had never used a ID detector in all of his 37 years of detecting. Stubborn and defiant, to say the least. I believe he called his unit a all-metal



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CZ-3D "high tone" Coin Finds  
- mid tone/trash tone on other detectors  
- Thomas J. Dankowski

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## CREATING THE CZ-3D FOR THE REAL WORLD

**“the CZ-3D is an absolute “must” for the serious ‘old coins’ hunter, especially if you take into consideration that most places we detect have been “hunted out”.**

### FIELD EXPERIENCES

The creation of the CZ-3D has been a long and fascinating road. As I accrued years of detecting experience with a standard CZ, I knew that I had one of the best detectors that current times and technology could offer. The CZ had been an awesome deep coins detector; very possibly the best detector on the market. The FRL staff had performed a wonderful job.

As more and more detecting experiences lined my cash/trash apron with a standard CZ-5, I would always continue a heavy analysis of each and every hunt, seeking for more data, and also seeking for answers to questions that seemed irrelevant. Nearly every time that I would go on a hunt, it was, in actuality, more in line with experimentation and theory testing rather than just simply “cherry-picking”. I would look at the ratios of the items that I recovered. It was commonplace to find say; 23 wheats, one Buffalo nickel, 4 Mercury dimes and a silver quarter. Sounds like a very good days hunt, however; I was not satisfied with the ratios. Where were the nickels? There should have been a few more nickels. And the one Buffalo nickel that I did find bounced between ‘foil’ and ‘nickel’. Clue number one!!! There were just too many hunts and areas that I searched and would find plenty of pennies, dimes and quarters, yet empty-handed with older nickels. I also looked at my collection of coins that I had recovered with all of my (different brand) detectors. I had more Barber dimes than ‘V’ nickels, more Seated Liberty’s than Shield nickels, more Mercury dimes than Buffalo nickels. Something was definitely wrong

with every single one of these ratios.

Another day, and a different and much older site, I found 3 Barber dimes and one Indian Head penny. This was an old school. Where were the hoards of pennies and the kids lunch money; usually in the form of nickels? And that Indian Head penny that I found, it bounced between ‘Zinc’ penny and ‘square-tab’ and if the coil was quite a bit off center, it would then read a constant square-tab. Clue number two! Other brand detectors would read the ‘difficult’ Indian Head pennies as pull-tabs and the nickels as a foil target. Clue number three! Yes, the CZ series detectors has the narrowest/tightest ‘nickel’ window in the industry, allowing for the least amount of trash to be recovered while searching for nickels, yet, something was still deficient

So, now my intent was to take the CZ-5 to this same old school and go “relic” hunting – seeking to find some neat old trinkets. Feeling this particular old school had now been “cherry-picked”, all of the coins and high-tones had been recovered, and now only the medium tones remained; I felt that if I ‘selectively’ chose the correct sounding mid-tones, I may score a nice token, or possibly even a ring. – Let the hunt begin.

To my surprise, the very first four targets out of the ground were 3 ‘V’ nickels and a 1913‘D’ Variety II Buffalo nickel. Every single nickel read a constant mid-tone (foil) while in the ground. Out of the ground, three of the four nickels STILL read as a mid-tone! The fourth now read high-tone ‘nickel’. After a few more mid-tone trash targets, I then found 2 Indian

## *CZ-3D Unique Operating Instructions*

**"How do you know what you are missing,  
if you do not know that it even exists"**

CZ-3D primary purpose = Enhancing the detection of specifically old coins.

If you are new to the CZ series of metal detectors, place the 'Salt-Enhanced' switch in the 'Salt' mode and follow all of the standard operating instructions provided. For advanced hunting, and for those who are seasoned CZ operators, follow the unique operating instructions provided below.

Congratulations on the purchase of your new CZ-3D! You are in for a bit of an 'eye-opener'. With the new CZ-3D placed in the 'enhanced' mode, here are your operating instructions:

- Select your oldest detectable areas
- Sweep coil
- Find 'high-tones'
- Dig

It is that simple. The CZ-3D looks like and nearly sounds & operates like a standard CZ. The largest attribute of any CZ are the tones - and since we detect nearly exclusively by the audio tones, this is also where the CZ-3D accelerates. Just a few simplistic audio tones keeps this unit free from "mental fatigue". You will not notice any physical or dimensional differences from a standard CZ, however, your luck will "appear" to be greater with the CZ-3D, by no accident. Additional operating tips:

- Do not 'air-test' the CZ-3D in the 'enhanced' mode. It needs the entire dirt matrix (with older generation coins) to operate as designed.

- It is **STRONGLY** recommended that you do NOT look at the meter for ID purposes while detecting, for (at minimum) the first 3 months of operation. There is le-

gitimate justification behind this reasoning and, after some quantified hunting time, you will see why. Invoking the 'enhanced' mode, the detector enters into a exacting/customized special program. In consort, the meter also enters into a different set of operating parameters. Your primary concern will be to detect by audio.

- The CZ-3D is designed to find more good metals such as brass, bronze, copper, silver and certain gold reporting it as a high-tone. When you recover a target that registered as a high-tone (zinc penny or high-coins ID) you will notice that it is of high conductance. While you are detecting, your intent is to find good metal targets with the CZ-3D -- hopefully, they will be older coins.

- With this specific detector, performance and ID can be further enhanced by a slower coil sweep speed, more so than previous CZ models, especially in trashy areas.

- A site that is c1950 is where you will just start to see the benefits of the 'enhanced' mode.

- A site that is newer than c1950, there are no benefits. In fact, the 'enhanced' mode can be a bit of a hindrance. It is strongly recommended to use the 'salt' mode at these newer sites. Reasoning, there are a few certain 'modern day' trash items that may cause the CZ-3D to identify a higher ratio of trash as a "high-tone" good target.

- A site that is c1920 or older, you will ascertain maximum benefits from the old-coin 'enhanced' mode. The key year for you to remember is "1950" -- the turning-point year for you to make the decision of choos-

## *Soil Conditions/Sinking Targets*

**Soil stability is a easily overlooked,  
possibly never even realized,  
critical part of the equation to success.**

You may wonder why other detectorists seem to have all the 'luck'. Or you may question why you have a streak of success at erratic, infrequent intervals. Having the best detector in the world, optimum control panel settings, proper coil control and a location where good targets are guaranteed is a major help, but is still no guarantee for success.

Soil stability is a easily overlooked, possibly never even realized, critical part of the equation to the successful detectorist. If you are detecting an area where fairly new coins such as zinc pennies are being recovered at deeper depths, say 8", this is a good indication of soil stability failure. The assumption that; "If I pass my coil over it, I'll get it" is incorrect. There are Egyptian pyramids, sunken cities and vanished towns deep inside the Earth never to be seen again. Technology has come a long way with today's detectors, yet, as with everything, there are inherent design limitations. Understanding your capabilities and limitations equates to a happy marriage of success.

Specifically, there are two distinct methods to 'read' your soil conditions; visually and electronically. Either one of the methods should fulfill your ulterior motive of success.

Electronic analyzation of soil conditions is the easiest method and is performed with your detector. Using your detector, take a sample of the deeper targets to identify the era (age) of the items. If the deeper items are fairly new, assuming the soil is not fill-dirt or bulldozed, then move to a different area where the deeper targets show

greater age with fairly repeatable consistency. Keep in mind that soil conditions can vary dramatically in short distances. Electronic analysis is, by far, the best method due to the requirement of positive verification through actual recovery. You needn't sample only the coins to 'date' a site. Trash, including iron nails, will identify the era of the property to be detected. For best results, it is recommended to sample all of the non-ferrous items such as foil, pull-tabs and coins. Priceless tip; Soda pull-tabs were introduced in 1962. If the era of the area being detected is older than 1962 and has seen no human activity/travel since 1962, recover ALL pull-tab readings and foil. Gold coins, bullets and jewelry almost always read 'foil' or 'pull-tab'.

The second method for soil analysis is performed visually. It is a art in itself, yet is a critically valuable tool when mastered. The worlds soil conditions provide infinite possibilities and dramatically varying scenarios, but the laws of physics remain constant.

For the areas on this Earth that present exposed rock/granite/coral or any other similar hard surface, it is obvious that items will not sink. This is not categorized as a "soil condition". For the areas of the Earth that do have soil, here are a few general tips to enhance your analysis: 1. Thick, carpet grass generally has a rapid sink rate due to soft, water saturated, organic soil with a high level of accumulated grass clippings. 2. Areas where grass is having difficulty growing or bald spots of dirt with no grass is a indication of fairly stable soil.

## *Conductivity: A Closer Analysis*

**“Because a metal detector’s ID circuits utilize conductivity to help identify detected objects, this conductivity chart should enhance the advanced treasure hunter’s performance.”**

All metals are at 20 degrees Celsius with copper being the international base reference of 100. Each manufacturers processing techniques can alter the conductivity of a metal, especially if alloyed. Never assume that the conductivity of a metal increases when the base metal is alloyed with a higher conductivity metal. Notice the conductivity of nickel-silver alloy verses nickel. United States silver coins are 90% silver and 10% copper. The United States nickel is only 25% nickel and the remainder is 75% copper. Sterling silver (most silver jewelry) is 92.5% silver and 7.5% copper. Copper pennies are not actually copper; they have always been bronze. There’s one exception; 1944-1946 pennies are made from melted brass bullet casings, left over from WWII, hence, three years of brass pennies.

Because a metal detector’s ID circuits utilize conductivity to help identify detected objects, this conductivity chart should enhance the advanced treasure hunter’s performance. Conductivity, coupled with mass, can give dramatically varying results. Example; A 1/5 oz. lead fishing sinker will ID as a low foil reading, whereas a 5 oz. lead sinker is identified as a higher zinc penny reading. Reason; The level of conductivity remains the same (lead 7), but the volume of conductivity is much greater, hence a larger eddy current is attained by the heavier sinker giving a higher detected reading. The opposite holds true, comparing a piece of thin copper foil the diameter of a penny vs an actual copper penny. Both items are highly conductive, but the copper foil will ID as foil because it lacks the mass

<b>METAL</b>	<b>RELATIVE CONDUCTIVITY</b>
Copper (Annealed)	100
Silver	106
Gold (Not alloyed)	65
Platinum	15
Lead	7
Brass	28
Aluminum (heat treated)	30-45
Iron (Cast)	2-12
Iron (Wrought)	11.4
Iron (Pure)	17.7
Mercury	1.66
Nickel	12-16
Nickel Silver (18%)	5.3
Zinc	28.2
Tin	13

of a penny.

A nickel has a larger mass when compared to a penny and can be detected at a greater distance, but because the conductivity is substantially lower, the ID reading on the nickel is also lower.

Transmit frequency and ground mineralization are other factors that can alter the above data, but the intent here is to convey a few basic ground rules.

Remember, detected depth is usually dictated by mass; ID is usually dictated by conductivity for similar sized objects. **Ⓔ**

## *Unmasking Beginnings*

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**“Over 90% of the items we seek to find, still remain in the ground. The two primary reasons are due to masking/target separation failure and inaccessible depths.”**

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Well over 90% of the items (total averaging) we seek to find, still remain in the ground. There are many reasons, but the two primary reasons are due to masking/target separation failure and inaccessible depths. Most detectorists are completely unaware of these statistics, due to the fact that “good finds” are still being made. The common detectorist will ‘write off’ a piece of property as being “completely searched”. It becomes a surprise when this same detectorist purchases a better, newer, deeper seeking detector and learns that his/her “completely searched” area suddenly seems like virgin ground again. Yet, so many good items, unsuspectingly, still remain unrecovered, even after being searched with newer technology.

Unmasking requires some special training and also requires a certain level of patience as your learning curve grows. With today’s modern, higher technology detectors, all too often it is so easy to become complacent and “cherry-pick” the easy targets only. Facing the facts, the cherry-picking, easy targets are becoming few and far in-between. The concept of unmasking and increasing the success of enhanced target separation is coming of age and maturity. Due to its identifiable significance, unmasking can have great rewards. In most cases, digging everything is not practical, but there are methods to increase your success.

For the relic hunter, this procedure is fairly simple. A relic hunter normally attempts to recover the lower conductive non-ferrous items such as small buttons. These low-conductive items normally read within

the ‘foil’ range of most detectors. Typical relic hunting sights contain a high level of rusty iron ferrous contents that will easily mask the lower conductive ‘good’ items. Having the knowledge of what you are trying to ascertain and understanding the conditions in which you are confronted with, is the first critical step. The next step is just as critical. It is the requirement of having a detector that has the ability to adjust/fine-tune the amount of iron to be discriminated. The intent is to discriminate the small ferrous/iron objects such as small nails. This suits a dual purpose. First, it allows the detectorist to remove/recover the medium size iron objects such as pistol barrels and the head of a hammer and also allows for the recovery of large iron items such as axe heads and rifle barrels. A positive side effect of removing medium and large iron objects from the ground is that a large amount of unmasking will ensue. Secondly, having the detector ‘fine-tuned’ to discriminate only the small iron items gives the detector a tremendous advantage of “seeing” a lower conductive non-ferrous item amongst/in much closer proximity to a iron/ferrous item. This enhanced target-separation and better unmasking ability is critical to a relic hunter.

For a coin hunter, unmasking is fairly tricky and requires more patience and perseverance. A coin that is in extreme close proximity to a aluminum soda pull-tab or chewing gum foil may not read ‘coin’ on a detector. What it will normally read is on the very high end of the pull-tab range - and on extreme occasions, it may read ‘zinc

## *Coil Size Myths*

**“It is a common misconception that a larger coil will most always ascertain greater depths.”**

It is a common misconception that a larger coil will most always ascertain greater depths. A large coil can be a tremendous help, but only in a few remote scenarios. Without being too scientifically technical, a few explanations and ground rules must be explained.

First, a metal detectors coil does not look at only the ‘surface area’ underneath the coil. Do not try to calculate the surface area underneath a 8” concentric coil and then try to compare it to the surface area underneath a 11” concentric coil. A metal detector does not look at surface area. It looks at a “VOLUME” of soil.

Now with this in mind, utilizing the appropriate variables and doing the math, a 8” coil views roughly one gallon of soil underneath the coil. Think of this as a upside-down one gallon plastic jug of milk under the coil. Again, doing the math, a 11” coil views approximately 7 gallons of soil at any given time under the coil. You are, at minimum, 7 times more likely to get into trouble with the larger coil AND NEVER EVEN KNOW IT! Here is why; With the large coil viewing 7 times more soil, it is a physical guarantee that the greater volume of soil will most likely have multiple targets in it, confusing the detector. Add yet another variable; mineralized soil. With no metal targets in the ground, the electronics of the metal detector now must compensate for 7 gallons/7 times more feedback of mineralized soil. Combine the two scenarios; mineralized soil AND multiple targets underneath the coil. SERIOUS problems ensue. Most places we hunt have a fair amount of trash and would render a large

coil useless.

Now, the question is: How much patience will the detectorist have using a tiny coil that takes seemingly ‘forever’ to complete a small area? Justification is validated when the detectorist starts to find good targets again in ‘completely hunted-out’ areas. Remember to keep the velocity slow on that small coil.

So, when is a larger coil effective/beneficial?

1. When metal targets are very sparse.
2. When ground minerals are low.
3. When target masking and target separation are inconsequential.

Since the United States dime has become the national test standard for most general purpose detectors, let’s use the dime for comparison. In an air-test, a 11” coil may give 10% greater detection range vs. a 8” coil. Now, burying the dime in moderately mineralized soil, it is common to discover that the 8” coil has greater “EFFECTIVE DEPTH” on the dime due to the larger 11” coil electronically struggling to stabilize with the existing mineralized soil conditions (excluding pulse induction detectors). This is a perfect example of “depth” (11” coil) vs. “effective depth” (8” coil). Also, a smaller coil will ‘look’ deeper between trashy targets vs. a larger coil. “Effective depth” vs. “Depth” respectively.

Another easier way to understand/visualize this phenomenon would be explained as follows; A 5”, 8” and 11” coil are all capable of detecting a dime at ranges greater than 8” in an air-test. Now, burying the dime between a few trash items, the 11”

## *Ground Moisture Content & The Halo Phenomenon*

**“It is assumed that greater moisture content in the ground equates to enhanced detection performance. This is true in nearly all cases...”**

It is assumed that greater moisture content in the ground equates to enhanced detection performance. This is true in nearly all cases, but characteristically, the circumstances may be wanted or UNWANTED. As with most things in this dynamic world, there are a multitude of variables to metal detection performance in varying moisture conditions. Fortunately, there are common denominators to help simplify the learning curve of the vast volumes of variable data concerning ground moisture content.

Air-testing the detection range of different targets is fairly repeatable & consistent because most variables are removed. In the ground, many things need to be analyzed. First, the halo/bleed/decomposition rate of a metallic object dramatically affects the range at which it can be detected. Metallic items that have the largest decomposition rate, hence, producing a metallic ‘halo’ in the soils immediate vicinity surrounding the object, will have the greatest detectable range. The oxides in the soil produced from the decomposing object (characteristically identified by a reddish/brownish color surrounding the object) cause this surrounding soil to become semi-conductive AND allows the metal object to “electrically connect” better with the soil. Either one of these conditions enhances the detectable range of any object and obviously, both of these conditions combined has an even greater effect. This also explains why a freshly buried object may be a bit more difficult to detect. If you are creating a test-garden, you can expedite the process by simply pouring a brine solution (saltwater) on the metal object being buried as well as

the surrounding soil. This will rapidly aid the “electrical connection” (grounding) of the object with the soil, however, the halo will not exist.

Iron is a metal that can produce a very large oxidation halo (caused by water & oxygen). Copper coins can produce a fairly large halo, silver items a very small halo and pure gold produces no halo. Therefore, old rusty iron with a large halo, proportionately, has a greater detection range then, say a silver coin that has been in the ground for the same time frame.

With all of this information in mind, an increasing amount of moisture content in the ground will also enhance the detection range of all metal objects, but NOT proportionately. Moisture will have the greatest effect on iron items and objects with the largest halo and have the least effect on silver and gold items in reference to detectable range. With a greater moisture content in the ground, the greater the electrical conductance (and electromagnetic conductance) of the soil. Also, moisture causes metallic items to electrically (electromagnetically) conduct better in the Earth. Hunting for old silver coins in a iron nail infested area should be performed under extremely dry soil conditions. Rainwater would ‘electrically activate’ the iron nails at a much greater rate then the silver coins, giving the iron a much better detection advantage; a very unwanted condition. Hence, the reciprocal holds true; If your quest is iron items, saturated soil conditions presents the greatest detectable range capabilities.



*Know Your Detector*

“In general, a metal detector’s ID circuitry operates on the principle of the detected objects level of electrical conductivity.”

<b>COIN.....</b>	<b>DETECTOR READING</b>
U.S. Half Cent .....	High Coin
Indian Head Cent (1864-1909) .....	Zinc Penny
Indian Head Cent (1859-1864) .....	Square Pull Tab/Relic
Flying Eagle Cent .....	Square Pull Tab/Relic
Large Cent.....	High Coin
1943 Zinc Plated Steel Penny.....	Iron
U.S. 2 Cent .....	High Coin
U.S. 3 Cent Nickel .....	Foil
U.S. 3 Cent Silver .....	Zinc Penny or Square Tab/Relic
U.S. Half Dime .....	Penny(Zinc Penny on Fisher CZ's)
U.S. 20 Cent .....	High Coin
U.S. One Dollar Gold Coin .....	Foil
\$2.50 Gold Quarter Eagle .....	Round Pull Tab
\$5.00 Gold Half Eagle .....	Square Pull Tab/Relic
\$10.00 Gold Eagle.....	Zinc Penny
\$20.00 Gold Double Eagle .....	High Coin
Any U.S. Indian Head Cent w/medium corrosion .....	Square Pull Tab/Relic
Any Copper Lincoln Cent w/medium corrosion .....	Zinc Penny
Any U.S. Nickel w/medium corrosion.....	Foil
Foreign Coins.....	Anything
Gold Rings .....	Anything

It is a fact that women wear the bulk of the jewelry that is produced. Therefore, the majority of gold jewelry recovered is in the form of small, thin-band gold rings, which almost always reads ‘foil.’ Men’s rings usually read ‘pull tab.’

In general, the standard alloy for white gold is nickel. Yellow gold generally is a copper alloy. Gold will never tarnish or oxidize, hence the term ‘precious metal.’ Only the alloys in the gold may halo/deteriorate. U.S. gold coins can be detected at tremendous depths because of their high density/mass. This also holds true for large gold rings, nuggets, pendants etc... Pure gold is 24KT. U.S. gold coins are 22KT (10% copper alloy for increased hardness/wear

properties). Most gold jewelry is 14KT. Karat is a ratio: 14KT is 14/24 pure, 18KT is 18/24 pure and 24KT is 24/24 or 100% pure gold.

Due to a large time exposure to the corrosive elements of Mother Nature, a good portion of Indian Head cents will read ‘pull tab.’ For this same reason, a large portion of older nickels will read ‘foil.’

In general, a metal detector’s ID circuitry operates on the principle of the detected objects level of electrical conductivity. A highly conductive item such as silver will give a high ID reading. Nickel is less conductive and will give a lower reading. Mass and size dictate detection depth. A thin

## *Sensitivity Training*

**“Contrary to popular belief, the sensitivity control on most modern metal detectors has nothing to do with transmit power.”**

Contrary to popular belief, the sensitivity control on most modern metal detectors has nothing to do with transmit power. When a metal detector is turned on, the power (measured in milliwatts) is a fixed/constant output, The FCC regulates maximum output/transmit power to 100 milliwatts. Sensitivity controls only the ‘receive’ circuits of the detector. For example: if a certain metal detector can produce an audio response on a dime at, say 11” deep with the sensitivity at maximum setting, it now can be said that the same metal detectors electromagnetic energy will reach the dime with the sensitivity control setting on minimum, however, no audio response will occur because the receive circuits have been desensitized. Another analogy; most metal detectors can detect a man-hole cover or 55 gallon steel barrel at a range of 5 feet. This is proof that the electromagnetic energy travels to 5 feet. So why will a metal detector NOT report a dime at 5 feet when there is proof that the electromagnetic energy will acquire the dime? SENSITIVITY is the answer. To boost sensitivity to this tremendous level, the detector would be extremely unstable, with current technology.

Now, for a few valuable tips/pointers. With the proper use of the sensitivity control, performance can be maximized. There are 2 different, very distinct ‘set-up’ configurations for the sensitivity control to optimize performance of any metal detector.

First, if the area to be detected has very few metal targets, a maximum sensitivity setting is preferred as long as the detector remains stable (ground minerals/conditions permitting). This higher setting provides a “maximum depth - maximum width” condition for greater area coverage. With a higher sensitivity setting, it can be said that a 8” diameter coil will actually elec-

tromagnetically/electronically become a larger coil - say 12” equivalent diameter. A metal object radially outward (not underneath the coil, but to the side of the coil) can be detected, hence greater area coverage. If ground minerals are too high, a high sensitivity setting will cause erratic/unstable operation and the detectors performance will be greatly hindered because of high feed-back interference. In this case, a lower sensitivity setting will actually provide greater depth, stability and performance.

The second set-up configuration is for high trash content areas - which are the most commonly detected areas where the most human travel/habitation exists. In this case a lower sensitivity setting that provides a “maximum depth - MINIMUM width” condition is desired. ELECTRONICALLY reducing the coils diameter with a lower sensitivity setting will allow the detector to distinctly separate AND see more targets individually for the operator to select from. Also, a smaller coil is beneficial. While overall detection depth is reduced, EFFECTIVE detection depth is increased. Greater results will ensue. Enhancing the detectors ability to see ‘between’ trash targets is always beneficial. A hardly known, but very common occurrence, is by having sensitivity too high causing a deeper good target to be missed because of a adjacent shallower trash item interfering. Reducing the sensitivity results in a more ‘focused’ coil receive pattern causing the detector to ‘not see’ the adjacent trash item. Remember two definitions:

-Target Separation = One metal object ADJACENT to another metal object, not necessarily at the same depth

- Masking = One metal object directly UNDERNEATH another metal object. (F)

## *Infinite Untapped Hunting Opportunities*

**“Micro-Jewelry hunting,  
searching for the leftover ‘gold crumbs’ on a VERY heavily detected beach,  
yielded absolutely startling results!”**

Having nearly exhausted all inland detecting sites within a 3 hour driving radius will cause one into a condition called: “forced creativeness”. As all of us patiently wait for our favorite manufacturer to release a new metal detector that has better target separation and greater depth we, out of desperation, seek alternate opportunities.

By this desperation (and reasonable suspicion), I have discovered a MAJOR, INFINITE, UNTAPPED world of detecting, sure to revolutionize a new category of hunting. The title of the category: “Micro-Jewelry hunting”. Searching for the leftover ‘gold crumbs’ on a VERY heavily detected dry salt beach yielded absolutely startling results. I have always wondered where all of the small gold chains, earrings, beads, pendants and other micro-jewelry items were at. Now, with certainty, I know!

Utilizing a Fisher Gold Bug 2 in an environment that it was not designed for, uncovered a world unknown to man. Finding a gold nugget with the Gold Bug 2 is one form of excitement. Finding already pre-processed gold (some with precious stones attached!!!) is a new age of discovery. The Gold Bug 2 exceeds ALL other machines I have ever tested on tiny gold, both in depth and sensitivity. Pulse induction detectors and coin/jewelry detectors usually will NEVER detect small gold chains (without pendants) or earrings. Placing the Gold Bug 2 in ‘Iron Discriminate’ mode is perfect for the dry beach. Trying to further discriminate the tiny bits of chewing gum foil is a guarantee to lose all of the gold earrings and gold chains as aluminum is more conductive than gold. The Gold Bug 2 is extremely stable in

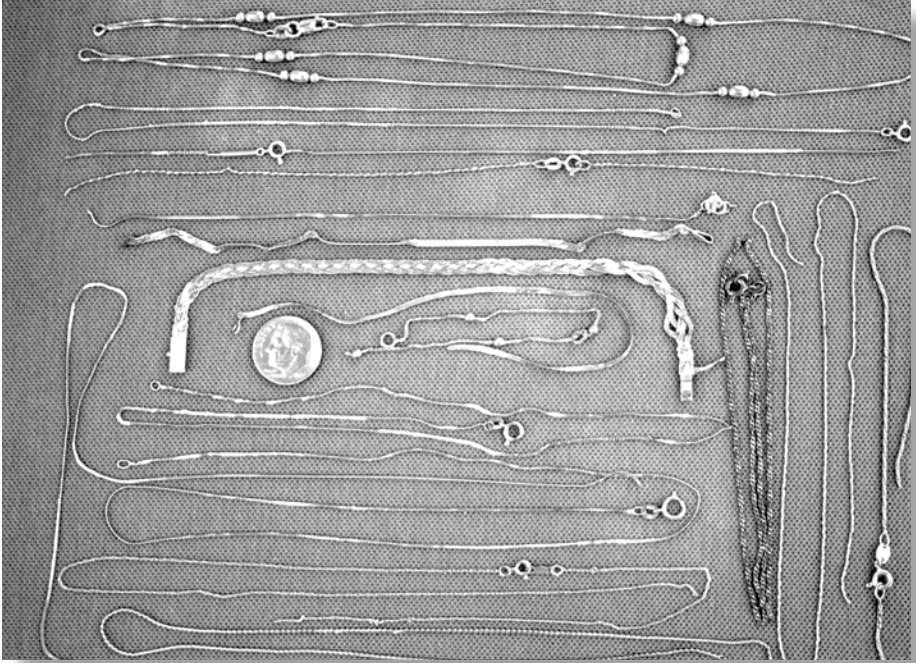
the DRY sand. It also has about the same depth capabilities of the Fisher CZ series detectors on coins & rings.

One word of honest caution; your spinal column will hate this type of hunting IF you do not utilize the correct sand-scoop with many holes slightly larger than a standard salt & pepper shaker. Facing the facts, you will find a lot of tiny bits of chewing gum foil - but you will also find plenty of tiny gold & silver valuables that all other metal detectors could not/did not detect. Of all the different types of hunting; relic, jewelry, coins and cache hunting, I have found this new type of detecting “micro-jewelry hunting” to be, by far, the most profitable type of hunting in the shortest period of time. Difficult, ‘patience challenging’, yet highly rewarding!

Recommendation: I am going to make a BOLD statement (shows the magnitude of my level of confidence). Take a tiny earring or hair-thin chain that is made out of real gold (not gold plated) and test EVERY metal detector at your local distributor. THEN test a Gold Bug 2!

STATISTICAL ANALYSIS/FACTS: 1. There are approximately 11 TIMES more losses of micro-jewelry in comparison to rings/wedding bands. 2. When a ring/wedding band is lost, 20% of the subjects instantly realize it. Also, the item is usually found. 3. When a micro-jewelry item is lost, less than 1% of the subjects realize the loss. Due to the nature of the items size, usually the item is never found. Source: Jeweler demography

“Discover the undiscovered world!!! **F**”



Micro-Jewelry Finds • Thomas J. Dankowski



\*notice all of the diamond earrings surrounding the dime

## *CZ-70 Pro - Advanced Operating Techniques*

**“It is imperative that you understand the “order-of-conductivity” of the 7 icons on the faceplate of the CZ.”**

For those of you who have purchased the new CZ-70 and have been using it for a certain period of time now, here are a few advanced operating techniques. First, it is imperative that you understand the “order-of-conductivity” of the 7 icons on the faceplate of the CZ. This applies to all of the CZ’s. In order of conductivity, from the lowest to the highest; Iron, Foil, Nickel, Round pull-tab, the new ‘Relic’ Icon, Zinc penny and high coin. When a detected item ‘bounces’ between two icons, it is almost certain to bounce between adjacent conductive bandwidths on a CZ, which, on the faceplate of a CZ meter, are not exactly in order of conductivity. The faceplate icons are presented in a fashion to facilitate ease of operation to a beginner. A beginner likes the simplicity of seeing all of the coins “bracketed” together on the faceplate. Because of this, the beginners learning curve is quickened. His/her attention span will be greater along with increased, long-term hobby retention. SO, for the advanced detectorist, memorize the CORRECT order of conductivity. Given the foundation of the basics, let’s get down to business.

The CZ has 7 specifically engineered/ chosen icons. As you know, the real world presents infinite possibilities of detectable targets with the same (infinite) amount of differing conductivity possibilities. Therefore, it is safe to say that many detectable items may/will be conductively on the very high end or very low end of any one specific icon bandwidth/window. It is for this exact reason that a detectable target will ‘bounce’ between 2 different icons. For example, a slightly corroded ‘Wheat’ (copper)

penny may have conductive properties that detectably read on the extreme high end of the “Zinc penny” icon. This may cause the CZ to bounce between the two icon readings of “Zinc penny” and “high coins”. Very rarely are there items in the Earth that conductively read exactly in the center of any one specific icon. As long as the detected target is reasonably centered within the conductive bandwidth of a specific icon, the CZ will “lock-on” to that specific icon. Understanding this principle, let’s proceed educationally upward.

Remember how the old (3-tone) CZ would frequently “bounce” between the mid-tone and high-tone? It then required the operator to look at the faceplate on the CZ to determine if the audio “bounce” was a Foil-to-nickel ID or maybe a square tab-to-zinc penny bounce. With the CZ-70, you needn’t look at the meter any more. A foil-to-nickel reading can only be the mid-tone to high-tone audio. The square tab-to-zinc penny reading will be the ‘new tone’-to-‘high tone’ audio response only. Nothing else. No other possibility. And when you hear a mid-tone alternating with the new tone, it can only be one possibility. It is a round pull-tab reading, bouncing into the square pull-tab (new ‘relic’ icon) reading. Nothing else. No other possibility. The CZ-70 dramatically reduces analyzation time by reducing the operators workload. The requirement for the operator to listen to the audio responses AND look at the meter to see what the detector is indicating has been reduced to mostly just listening to the audio responses. Yes, there are times/condi-

## *CZ-70 Pro - Field Test*

“I’m still surprised at the amount of deeper coins that produce an initial hit as “Relic.”



Above: Toms CZ-70 PRO finds  
- each read specifically as the new “Relic” 4th tone.

Such a simple change yet such a dramatic performance enhancement. The CZ-70 Pro’s level of intelligence has doubled with the implementation of the 4th tone. And there is no customizing of programs required to “setup” this conductive bandwidth of targets. Yes, it’s definitely the previous CZ’s square pull tab/flip top range, now re-categorized as the “Relic” range and given a 4th tone (800Hz) audio output. No wool to be pulled over anyone’s eyes - on the contrary, to open everyone’s

eyes to this startling range of targets. I did recover some trash targets, but keep in mind, even digging in the “high-coins” only readings; you are going to find some trash targets also.

It’s inevitable and it’s a statistic with ratios of good targets versus trash targets and how to increase your odds. Without the 4th tone, I never knew how many good items I was missing. It is nearly impossible to know what you are missing if you don’t

## *Maximum Performance - The Human Factor*

**“A “optimized” detector, although critical,  
can mean nearly nothing in the hands of a novice.”**

Precisely adjusting your detector IS absolutely critical and “appears” to be the first half of the equation for success. A “optimized” detector, although critical, can mean nearly nothing in the hands of a novice. Equivalently, a optimized race car in the hands of a learners-permit equipped 16 year old boy also nearly guarantees poor performance.

Facing the facts, many of the areas that we like to detect, the “cherry-picking” days are nearly over. The “stand-alone” coins are gone. The “challenged” coins (and other targets) remain. Old coins do not replenish. Jewelry at the beaches and swimming holes continuously replenish, especially during summer months. Most detectorists do not live near the beach. So, what does it take to ascertain success in hunted-out areas? What does it take to outperform ALL other detectorists (including yourself)? How do we ‘renew’ the hobby? ATTITUDE and EDUCATION. If you enter an area with the education and mindset that the site has been detected by all others, yet you have the attitude of knowing that good targets still remain, your chances for success are tremendous. This is the correct attitude in which your detecting foundation should be based upon.

When a serious/professional detectorist enters into a challenging area, he/she can perform MANY things differently AND simultaneously, in order to nearly guarantee success. Many of these things seem so simple, so elementary, yet most will not abide by their own guidelines..

+ Simply, lightly scrubbing the coil on the ground/grass provides a tremendous

boost in performance. For certain, specific reasons, some metal detectors seem to “electrically connect” to the ground better, when the coil is on the ground, providing enhanced performance. Said differently, some detectors display poor air-test performance, yet work well on the ground. Providing a couple inches of air-gap between the coil and the ground may result in several inches of lost performance. If mineral & soil conditions permit, keep the coil as close to the ground as possible. If said detector can detect a dime at 11”, but the coil is 2” above the ground,,, at best, the detector will be able to detect a dime to a depth of 9”,,, IF conditions are perfect. If the detector does not like the air-gap, a dime may be detected at depths much less than 9”. The coins that are most wanted (the deeper ones) will be the ones that are missed. Keep the coil on the ground. You will occasionally find older coins that are shallow, however, this is not the norm. This will falsely lead you to believe that most older coins are shallow because this is where you have found them in the past. It is difficult to assess the huge volume of older coins that are beyond 12” deep, due to the fact that our current technology limitations prevents us from deeper recovery into the “unknown” stratum. How do you know what you are missing, if you do not know that it even exists? What we DO know is when a farmers field is deeply plowed or an old homesite is deeply excavated, suddenly, older coins appear like magic, in large volumes. This should be a clue. And when a old sidewalk or city street is lifted/removed,

## *Finding Rare, Key Date & Gold Coins*

**“ In reality, your odds for finding a rare coin with a metal detector are quite high, compared to finding a rare modern coin in today’s circulation.”**

What are the odds of finding a high-dollar, low mintage, rare coin with a metal detector? Can the odds be reduced? Are there special places to search for rare coins?

In reality, your odds for finding a rare coin with a metal detector are quite high, compared to finding a rare modern coin in today’s circulation. For centuries, people have collected many things, including coins, but in such small, nearly immeasurable quantities. Coin collecting, as we know it today, did not become a big thing until the late 1950’s. Prior to WWII, for some individual to save (collect) just a few dollars in coins, was a major ordeal. A few dollars in 1940 was a days wages for many. A half dollar around the turn of the century (1900) was a common daily salary for many. People could not afford to simply ‘collect’ coins. Therefore coins, rare or common dates, stayed in circulation. Rare coins were lost at the same proportionate rate as common coins.

Looking at numbers, a completely different perspective comes to light. Rare coins like the 1885 ‘V’ nickel, 1877 1908’S’ 1909’S’ Indian Head pennies, 1909’S’ VDB 1914’D’ 1922 1931’S’ 1955 Double-Die wheat pennies, 1916’D’ 1921’D’ 1942/1 1942’D’ 2/1 Mercury dimes, all of the rare Barber dimes, the low mintage Seated Liberty dimes, half-cents, 3-cent silver & 3-cent nickel coins, all of the rare quarters, rare half-dollars etc..... The list goes on. If you simply add up all of the “rare” coins ever produced into one number, a very large number is derived. This ‘large volume’ number is ultimately what a detectorist can rely upon for validity in the quest to

find key-date coins. There have been many rare coins found by detectorists. It is by no accident. It is a ratio of odds. The odds are not as small as one may think. Finding and/or witnessing a 1916’D’ Mercury dime in ‘Good’ (G-4) condition being recovered tells a story. First, a rare coin was found. Secondly, the condition of the coin verifies the undesirable collectability of the coin during its circulating era. A ‘Good’ (G-4) condition coin signifies 20 to 30 years of general circulation -- AND NOBODY COLLECTED IT! No one ‘removed’ it from circulation. The cliché ; A dime, is a dime, is a dime -- was the true sentiment for coins. Although, a 100 year old silver dime was more apt to be spent first over a new silver dime because the general consensus was the old dime might not be recognized as 10 cents someday. This is to imply that the older coins circulated to a greater extent. During the Civil War, 100 year old Spanish coins remained in common circulation. By today’s standards, some of those coins were very rare. During the era, only the face value was of concern..

On a similar note, coins do not have to be ‘low mintage’ to be rare. Recovering a nearly uncirculated Standing Liberty quarter or Barber dime, for example, can be a several hundred dollar experience. In their own sense, a high grade coin is categorized as “rare” and the current market value reflects this. Combine the volume of key-date AND high-grade coins which were lost, and you have a substantial number that truly increases your odds to a ascertainable level for detectable recovery. Older sites do



Continued from page 2 • Unforgettable Experiences

coil in the hole once again, the detector now reported many broken signals. Realizing that I had hit the roof flashing with my shovel and broke it apart, I decided to router out the hole a bit more. Dunking the coil once more, down into the Earth, I then heard only one weak, short beep. Most of my error and mess would now be in the excavated dirt pile.

I swept the dirt pile and heard my multiple errors. I decided to remove each piece of roof flashing out of the dirt pile, one at a time. In a visually induced adrenaline depleting experience, the first target was a Indian Head penny. Then a 'V' nickel. Then another Indian Head penny. Then ANOTHER 'V' nickel. Then a Barber quarter. Then 3 more consecutive Indian Head pennies. Coin spill of era! -The dirt pile was now sans metal. BUT, the hole still had one more weak signal.

In my unsuspecting, haphazard digging efforts, I had no idea of the critical information as to the exact depth of which these coins were at, but now I would be much more cautious. Much success comes from being intuitive to specific soil signatures; a critical part of detecting intelligence. Fortunately, the one remaining target was not in the loose dirt in the bottom of the hole, rather, it was deep in the sidewall of the hole.

Sweeping the coil from the surface of the Earth, the target was not detectable due to excessive depth. It was only detectable with the coil deep down in the hole and to the West sidewall. I decided NOT to scrape out the sidewall, rather, I would carefully dig another plug from the surface of the ground and meticulously ascertain an exact depth of where the target was at.

At exactly 16", I yielded 2 more Indian Head pennies stuck together! These pennies were located about 14" away (outward) from the main spill. Realizing I was in a large field in the middle of nowhere, I knew I could

ethically dig a moon crater and no one would care. So, I removed 10" of top soil in a 4 foot radius. This labor intense effort yielded yet another Indian Head penny at 16" deep. Physically exhausted, I covered my hole and returned home. Carefully cleaning the coins, I analyzed each one with heavy scrutiny.

The newest coin was a 1908 'V' nickel. Although somewhat corroded, it was nearly mint-condition new. I surmise the coin spill took place in 1909. All of the other coins seemed to support this datum. The country store was built in the early 1880's and had seen nearly 40 years of service. Sixteen inches = 1909 strata soil. Hmmmm. If not for a large target coin spill, I would have never detected these coins individually.

It was not until July, 2004 (5 months later) when I realized that I should try the 10.5" coil in the remote areas surrounding the once-standing structure. I had 'written-off' the area as undetectable as the wanted targets were at inaccessible depths. The large coil would give up to 15% more depth in Florida's mineral-free soil if used properly; however, I was fairly certain this would not be enough of a depth boost to ascertain success. Needing 16" depth capabilities on single pennies and dimes would be asking slightly too much from the large coil. It is a normal occurrence for the 1909 soil strata to be at a 16" depth in Florida; in fact, it is actually categorized as "stable soil conditions" in this tropical State.

I arrived on site in the early morning and after a hard rain. As long as iron targets were not abundant, the wet ground would help detecting capabilities slightly. For a good starting point, I began detecting right at the infamous coin-spill spot. The ground seemed to 'come alive' quite a bit more with the larger coil. With the 8" coil, the ground was silent. With the 10.5" coil, the headphones became

Continued from previous page • Unforgettable Experiences

busy with targets. Because of the era of the site, my intent was to recover all mid-tones and high-tones (everything that was non-ferrous). Most of the mid-tones would turn out to be crushed buttons, suspender clasps and fired shotgun shell casings.

Within the first two minutes of detecting, I received a very deep high-tone signal, less than 5 feet from the coin spill spot. This particular signal was so weak that if I were to raise the coil about 3/4" above the target, all intelligible data would be lost. Being careful not to damage the target and also to ascertain a exact depth measurement, I found ANOTHER mini coin spill. At 15-1/2", I recovered a 1917D Walking Liberty Half Dollar which was almost directly on top of a pair of Standing Liberty quarters; a 1919 & 1920. The 1920 quarter was almost completely Uncirculated with nearly full mint luster. To date, this is the best condition quarter I have ever recovered. The 1919 quarter was About Uncirculated. I believe that I can safely say that these 3 coins were lost in the Spring of 1920.

Approximately 7 feet away from this spot, I received an even weaker high-tone signal. This particular signal was within 1% of the detectors maximum depth capabilities, as the coil could not be lifted 1/10" above the ground, or the target would be completely lost. The target sounded like ground chatter, but it was repeatable ground chatter and in one specific pin-point location. At 15-1/2", I recovered ANOTHER 1917 Walking Liberty Half Dollar. And four feet to the West of this spot, I recovered ANOTHER Half Dollar at 15-1/2" depth, again. This time it would be a heavily worn 1908 Barber Half Dollar. That's 3 Half Dollars and 2 quarters (\$2.00 face value) in less than 10 minutes; a record-breaker for me.

It is such a rare occurrence that soil conditions are so clean and clear, so as to allow un-

conditional maximum depth capabilities on targets at such extreme depths with no target masking - which would prevent the detection of these deep coins. I am quite certain that all of these coins were lost in a moments time, by the same person. And \$2.00 in 1920 was more than one days wages for many folks.

I continued to hunt for an additional 6 hours and had no further success. I should have turned the detector off and went home after the 1908 Barber Half Dollar. Hind-sight!

In retrospect, I recovered only large coins of substantial mass and coin spills. Smaller coins; dimes, pennies & nickels are less than half the mass of a large Half Dollar. In fact, a dime is exactly 1/5 the mass of a Half Dollar (by no accident). And at 15-1/2" 1920 soil strata, 16" 1909 soil strata, and a suspected 17" 1890 soil strata, all of the smaller coins are still perfectly safe, deep inside the Earth awaiting a future generation, deeper technology metal detector. Current technology is preventing anyone from ever accessing these coins. I sure would like to rent a Bobcat and scrape off the first 13" of topsoil in a 200 foot radius surrounding where the building once stood, and detect the sight all over again. I suspect there are approximately 200 coins (pennies, nickels, dimes & quarters) still remaining in the ground at this particular site; lost during the period from the early 1880's to the Fall of 1920.

The older gentleman of whom gave me the tip; the knowledge of where to hunt, had since passed away sometime after 1997. It would have been a deep honor to share any/all of these finds with him, as this specific place on the Earth was much a sacred part of his memorable life. — Godspeed. **ⓔ**

Continued from page 3 • ID Discrimination Vs All Metal

D-Tex. A old, large, heavy, cumbersome looking contraption. Time permitting, he could walk circles around most detectorists with this dinosaur. His intimidating skill level was pure fascination to witness. In short, he snagged the coil wire, rendering his unit inoperable. Too far from home, he was forced to use my back-up unit; the prototype CZ-70.

The tactile digital faceplate frustrated him, so I asked him to ignore the faceplate and pay-no-mind to all of the different tones this unit speaks. Just dig what ever sounds good, as I have this detector set up in the "all-metal" mode. He could read the faceplate - but it was a good thing that he did not know what "Auto-Tune" meant! I could have placed him in the Auto-Tune (all-metal) mode, but deliberately chose not to. By days end, he claimed to have found just as much with this detector as he would have found with his unit. I believe that he actually found more. (This may just simply be a component of the target recovery speed time-constant = a slow digger). The high quality of his finds remained the same. He eluded that all of the different tones were "annoying" but "interesting". The detector was "too light" to feel real. He refused to admit that he was less tired at the end of the day. He exclaimed that "most of the coins found made this high-pitched, funny sound" and "if I were going to look only for coins, I would only dig this funny sound; - but I would never do that". I asked him if he could still tell the difference between a good target and a bad target. "Yes, but the sound was a bit less defined".

Four months later, he purchased a used 3-tone Bounty Hunter for \$100. He fell in love with the tones, did quite well with the detector and saved his money. Less than one year later, he purchased a new CZ-70

and never looked back. To this day, he still digs all tones (everything) except iron.

Is there a time when a all-metal (or low discrimination) detectorist will out-perform a bells-n-whistles detectorist? Yes. Is there ever a reason to dig the foil and pull-tab trash tones? Yes. When a detectorist uses a modern discriminating detector and he/she chooses to recover only the "best-of-the-best" signals; he/she will have the absolute best good target vs. trash target ratio. Maximum good "keeper" targets with a minimum amount of trash. BUT, some good items will be missed (not dug). As discrimination is reduced, the ratio of trash recovery increases dramatically in a disproportionate/non-linear ratio. However, the chances of recovering gold jewelry, small gold coins, relics and other 'trinket' items of interest, increases. Said differently; as discrimination is reduced, the ratio of good targets vs. bad targets recovered decreases dramatically to your disadvantage; --then a human factor/limitation enters the equation.

Each and every human being will have a differing threshold/set-point tolerance level as to just exactly what level of trash (ratio of good target vs. bad target recovered) to which specific point that person will "fatigue-out" or "tolerate" -- as discrimination is reduced. Hence; the blessing of individual adjustability to custom "tailor-fit" to each specific detectorists tolerance level.

You may hunt with a person of whom digs nearly everything; whereas you dig only the "sweetest" signals. Most of the time, you will end the day with the most "keepers" for several consecutive hunts. Then, the tables will turn when your trash digging partner finds that one serious "keeper" target (that ID'd as trash) that

Continued from previous page • ID Discrimination Vs All Metal

will match or exceed (trump) all of your previous successes combined, in one 'dig'. Then, the cycle starts all over — with you cherry-picking and your partner digging trash again.

A relic hunter and a beach hunter share a commonality. BOTH will want to dig everything metal except iron,,, and even then,,, there are times when both beach and relic hunter will WANT to dig iron signals. Most gold jewelry ID's as "foil",,, sometimes "pull-tab". Many relics ID as "foil" or "pull-tab". Low discrimination is HIGHLY desired. Hunting inland, when you recover a deeper 'pull-tab' or 'foil' reading and it is NOT modern aluminum trash (or any aluminum trash... for that matter),,, pay attention, as this is a major "successful detecting" clue. Discrimination set-points need to be utilized accordingly, and in an intelligent fashion.

+++Once again, the recommendation is to recover the deeper signals, especially in older areas, regardless of detector ID tone (iron ID recovery is optional) and to not put blame on the modern ID detector, but take full responsibility of your own selectively discriminating ear. The modern ID detector is not blind, nor is it selective. It is the operator. Try a few of those "yesterday" habits. Dig a few of those deep mid-tones each time you go out. Some of them WILL surprise you. You may then find yourself utilizing the different tones as 'intelligence-input' rather than a discriminating bias.+++

\*\*\* These recommendations hold true for ANY BRAND detector.\*\*\*

--- Discrimination. A very highly personalized issue. Most importantly; a useful tool that is specifically your prerogative OPTION! Ⓣ

Continued from page 1 • Hunt Wisely

dirt mineralization is so severe that even the top performing detectors, multi-frequency or otherwise, may not be able to detect a coin exposed on the surface of the ground.

\* Educate yourself FIRST about 'dirt conditions' —then, secondarily about top performing detectors. VERY CRITICAL order-of-events!

Hunt wisely! Ⓣ

Continued from page 5 • Creating the CZ-3D for the Real World

Head pennies about 4 feet apart from each other. They too read a constant mid-tone in the ground. Out of the ground, one IH penny read high-tone and the other remained a constant mid-tone (square-tab) reading. Feeling somewhat proud of my accomplishments for knowing just exactly which mid-tones to recover, I skeptically continued hunting; - ONLY to learn at a later date that I only THOUGHT I knew which deeper mid-tones to recover! I continued to recover hundreds of mid-tone trash items and only a few more coins including a Mercury dime that ALSO read a constant mid-tone in the ground. Out of the ground; constant high-tone. Building a case, I saved these mid-tone coins for future analyzation and re-engineering. I also found several copper washers, brass tokens and bronze items that reported as a mid-tone, unto which I was perplexed and not happy with this mid-tone ID performance, these items could have been Indian Head pennies that would have been missed. I even recovered a couple of smaller silver items that registered as a mid-tone ID. An electronic area needing some attention!

One of my thoughts: Bet today's modern detectors are calibrated to today's modern coins. (I would rather NOT recover modern coins). This turned out to be true, yet was only part of the equation as to why coins were being missed. Add some corrosion, dirt matrix & mineralization, tilting of some coins, partial masking and you have a plethora of older coins that will ID as trash on any brand detector.

Enter the CZ-3D concept and inception. Keeping the intermediate engineering stage write-up short, I developed several 3D platforms that failed in my books. Too much trash was recovered and the low ratio of coins was unacceptable. Finally, after (seemingly) endless attempts, I perfected

the design intent.

Knowing that I had a finalized unit, I went detecting with confidence. After six consecutive hunts (different days & different sites), I was beginning to lose confidence, as I had found absolutely nothing with the unit (in reference to old coins), behind a standard CZ. Then, on the seventh hunt, (and nearly every hunt thereafter), it happened all at once. This was the old school that I acquired my record-breaker of finding 4 old nickels in a row that all had read as a mid-tone on a standard CZ. The CZ-3D now was finding more Indian Head pennies, 'V' nickels (one shield nickel), additional early wheat pennies, a few silver dimes, and even a Standing Liberty quarter (and two nice tokens). All were now reporting as a 'high-tone'. (Noteworthy; The 1917 Standing Liberty quarter reported as a 'Zinc' penny at 2" deep on the CZ-3D. The quarter was actually 3" deep and somewhat tilted. I nearly refused to dig a zinc penny at 2". Glad I dug! This was at a site that I had the ability to hunt behind myself, nearly in my exact footprints from the previous (standard CZ) hunt, trying to ascertain absolute validity by removing all other variables. After recovering several additional older coins with the 3D, I decided to continue to use the 'enhance' mode to find the high-tone (suspected) old coins,,, but then disable the 3D enhanced mode by flipping the toggle switch to the 'salt' mode and re-checking these pin-pointed targets. Sure enough, MOST of the suspected older detected coins would now read as a mid-tone. The 3D enhancement worked! Only a couple of the coins would read as a high-tone in the salt mode, simply due to the fact that the exact pin-point location had now been established giving the electronics a better 'edge' for a correct ID.

Continued on next page >

Continued from preceding page • Creating the CZ-3D for the Real World

On this same hunt, there were times when suddenly, I would completely stop finding older coins. I FORGOT to turn the salt/enhance switch back to the “enhance” mode! Excessively easy mistake to make. You will most probably make the same mistake a few times. Now, with full confidence in the machine, I no longer have the need to ‘check’ the targets by flipping the salt/enhance switch. Besides wearing out the switch, and/or possibly making the mistake of accidentally leaving the switch in the ‘salt’ mode on a hunt many hours from home, I strongly recommend against excessive utilization of this switch.

Another test that I wanted to perform so as to validate the CZ-3D even further, as I had performed this test on a standard CZ, the 3D needed to live up to design intent. I hunted behind a standard CZ looking to find coins that did not read ‘high-tone’. I found several coins. Now, with the 3D, I wanted to hunt behind itself deliberately, looking to see if I could find any coins that also did not report as a ‘high-tone’ (by digging hundreds of mid-tones). After several hunts, I have yet to find a coin that the CZ-3D mis-ID’d. Certainly not saying that it is a impossibility, yet definitely alluding that the CZ-3D is much more accurate. All too often I would hear a statement from fellow detectorists like: “All of the Indian Head pennies, Buffalo nickels and U.S. silver half-dimes that I have found, read high-tone on a standard CZ”. My response: Yes, this is true, however; did you dig all of the trash mid-tones and discover the coins that registered as a mid-tone? The answer: “No, absolutely not. That would be absurd and not practical with as much mid-tone trash as there is in the ground”. My response: It is commonplace to NOT know what you are missing if you do not know that it even exists? This is exactly why the CZ-3D has

come into existence. Most of the coins in the ground that previously registered as a mid-tone, will now register as a high-tone in the “enhance” mode. Not to worry though, the round and square pull-tabs will still register as a trash/mid-tone pull-tab in the “enhance” mode on the CZ-3D. You may still recover a few crushed aluminum screw-caps and a few of the old large square-tabs as you did before, with other detectors. The bottom line intent is to have you walk away from the field at the end of the day with more older generation coins in your pockets. For certain reasons, Indian Head pennies and half-dimes in the Earth commonly read pull-tab trash tone. You may never discover this occurrence unless you dig a lot of pull-tabs or you are a relic hunter of whom commonly digs many mid-tones. On this same subject; Lately, I have been hunting with the CZ-3D in the “enhance” mode at ALL times. This allows for the continued utilization of the “enhance” mode benefits. If I am in a modern day trashy area, it then becomes my option to recover the deeper high-tones, circumventing certain, shallow (most probably modern) targets if time is limited. Yet, I still strongly recommend recovering all high-tones.

Testing the CZ-3D in several states; Indiana, Florida, Wisconsin and Alabama (Birmingham, Alabama = proper ground balance was critical), I could conclude that a standard CZ was a stellar performer on ID’ing coins down to about the 8” mark. Any coins deeper, the ID was questionable. On the CZ-3D, especially in lower mineralization areas, ID accuracy was much more accurate to several inches beyond what a standard CZ could ascertain. I did notice a unique quirk about the CZ-3D; on a few of the newer Jefferson nickels, some would

Continued from page 25 • Creating the CZ-3D for the Real World

ID as a pull-tab. That's ok, as the intent of the 3D was for OLDER coins, not the new pocket change.

During the course of CZ-3D design, I had yet another noteworthy incident. I had removed the meter on the 3D so I could analyze possible changes to the faceplate. I still continued to hunt with the CZ-3D without a meter/faceplate. I must say; I had the best luck with the 3D. Lacking a meter, it had forced me to dig all high-tones, and most importantly, forced me to NOT have the ability to visually discriminate. It is all too common & often that I would choose to NOT recover shallow zinc readings. Big mistake! One of my nicest Indian Head pennies, a nearly uncirculated 1874, was about an inch deep, and certainly would have read 'zinc' had I utilized the meter. Under normal circumstances, I would have left this target in the ground. Another occurrence in a different area; I recovered a new corroded zinc penny about 2" deep, but masked almost directly underneath it, at a depth of 11" was a 1883 'V' nickel in fine condition.

And one of my most memorable days ever: A coin spill; At 14" deep, I recovered 3 Barber quarters, 6 early wheat pennies (two were VDB's), and a pair of 4" nails, all within a 8" circle - a elongated zinc penny high-tone reading on the CZ-3D. I almost didn't dig that one either! Hence; Justification of my statement to the owners of a new CZ-3D = Dig ALL high-tones. I could share many more 3D experiences, but now it is YOUR turn.

### CONCLUSIVE ANALYSIS

In all honesty, the CZ-3D is an absolute "must" for the serious 'old coins' hunter, especially if you take into consideration that most places we detect, have been "hunted out". Yes, you are still going to recover

some trash items along the way (as always), but if you stick to the older sites, especially nineteenth century (1800's) areas, you will soon realize the benefits of the CZ-3D. It differs from ALL other CZ's. Period!

And once again, in total honesty, on the other side of the coin (dry pun intended), if you hunt a new park or any newly habited areas, the CZ-3D in the 'enhance' mode could potentially be a detectorists nightmare. Use the "Salt/Enhance" switch wisely. I am curious as to whom will have good success with the 3D on the first few hunts and whom will get "skunked" the first few attempts -- only to catch up shortly thereafter! Statistically speaking, it's going to happen. ---Post your finds on any of the popular Fisher forums.

### A "REAL WORLD" CZ-3D CHART

It is difficult to create a chart that gives cut-n-dry answers to the exacting differences between a CZ-3D and all other CZ's including the CZ-70 (and other brands). Up until now, all detector tests were based upon waiving different objects in front of the coil, then documenting (in chart form) the ID readings and results. A good test, because all variables are removed, yet on the other hand, a bad test because this air-test is not representative of real world (real soil) conditions. The CZ-3D is a poor performer in an air-test. In fact, it may fail a few specific air-test scenarios. The CZ-3D is designed with the real-world dirt matrix variables in mind. So, how do you design an ID chart with infinite variables in the equation? On the following page, let's try this:

Continued from preceding page • Creating the CZ-3D for the Real World

“REAL WORLD - OTHER” = Probable reading of what all other detectors will ID the specified target as, and in real dirt with a average package of infinite variables. (My apologies for this vagueness).

“REAL WORLD - CZ-3D” = Most probable reading on the 3D in ‘enhance’ mode.

• **TARGET/REAL WORLD**

“REAL WORLD OTHER”      “REAL WORLD - CZ-3D”

• **Dirt exposed Indian Head Cent**

Trash /mid-tone      High-Tone

• **1857-1864 White (nickel) Cent**

Square-Tab/mid-tone      Square-Tab

• **U.S. 3-Cent Silver**

Trash/mid-tone      High-Tone

• **U.S. Half-Dime; real dirt scenario**

Trash/mid-tone      High-Tone

• **Silver Dime or Quarter; partial masking**

Trash/mid-tone      High-Tone

• **Shield Nickel & ‘V’ Nickel; no/slight corrosion**

Trash/mid-tone      High-Tone

• **Buffalo Nickel; mild corrosion**

Trash/mid-tone      High-Tone

• **\$2.50 Gold Quarter-Eagle**

Round-Tab/mid-tone      Square-Tab

• **\$5.00 Gold Half-Eagle**

Trash/mid-tone      High-Tone

• **\$10.00 Gold Eagle**

High-Tone      High-Tone

• **\$20.00 Gold Double-Eagle**

High-Tone      High-Tone

• **Many Non-U.S. Coins**

Trash/mid-tone      High-Tone

(Many more benefits could be added to this list, yet, it is the “infinite” variables that make additional entries a bit unique to quantify).

Noteworthy: The older nickels that would previously read as a ‘mid-tone/foil ID’ should now read as a ‘high-tone/nickel ID’. All other items in this list will now read ‘high-tone’ audio with either a ‘zinc cent’ or ‘high coins’ meter ID. This is due in part to infinite variables such as ground mineralization, multiple targets in close proximity, tilted coins, coins on edge or a combination thereof.

- Happy "Enhanced" Hunting! **F**



Continued from page 6 • CZ-3D Unique Operating Instructions

ing the 'salt' mode or the 'enhanced' mode.

- Read this booklet - especially the chapter titled: "Finding Rare, Key Date & Gold Coins".

After 2 years of extensive programming, calibrating and field-testing, the CZ-3D is now maximized for a very specific function - finding older era coins at older sites. To ascertain this extensive programming, simply select the 'enhanced' mode with the utilization of the 'salt/enhanced' switch. No special or lengthy programming required on your part. And for the first time, this CZ has been engineered for "General Purpose" detecting AND "Specific Purpose" detecting (that being specifically the older era coins). The CZ-3D does not require a new 'learning curve' per se - it is the age of the areas that you hunt that will present a new 'learning curve', while in the 'enhanced' mode. The dirt you select & detect will be your learning curve.

In the 'salt' mode, the custom program is disabled, and the detector is configured to detect wet salt beaches with maximum stability characteristics at the ocean, as before. There may be times when you need to default out of the 'enhanced' mode which can be accomplished by placing the CZ-3D in the 'salt' mode. In some detectable areas, the 'enhanced' mode will be very beneficial, however, it is not designed for all areas. A site that is dated c1950 is where the benefits of the 'enhanced' mode just starts to become realized.

Older coins have an increased propensity to ID as a mid-tone (trash tone) in greater quantity. The CZ-3D will bring these 'mid-tone' coins into the 'high-tone' audio bracket. In many cases, the CZ-3D will ID coins more correctly and to greater depths. Just a few examples: Many of the bronze Indian Head pennies (especially the 1870's & 1880's) audibly read 'mid-tone'. The 3

Cent silver coins and the Half-Dimes (in real soil) frequently read 'mid-tone', especially when tilted (or on edge). Under certain circumstances, silver dimes & quarters may read 'mid-tone' (in real soil conditions). Many Buffalo nickels & War nickels, and almost all 'V' nickels & Shield nickels audibly read 'mid-tone'. You may be surprised as to how many wheat pennies and older nickels you missed in some areas that read mid-tone on a standard CZ. The most widely circulated U.S. gold coin, the \$5.00 Half Eagle also reads as a trash 'mid-tone'. All of these items will now read 'high-tone' on the CZ-3D. The list goes on. Some specific examples would be nickels that previously audibly reported as a nickel/foil bounce or a solid 'foil' reading, should now read as a solid nickel. Indian Head pennies that bounced between square-tab/zinc penny or registered as a solid square-tab (mid-tone), should now register as a solid high-tone. Silver coins that were partially masked that registered as a mid-tone, should now register as a high-tone. Yes, This is to imply that the CZ-3D does work better in the trash, but not necessarily in an air-test. The intent is to breathe new life into the hobby, especially in old (and hunted out) areas. "HOW DO YOU KNOW WHAT YOU ARE MISSING, IF YOU DO NOT KNOW THAT IT EVEN EXISTS"!

Keep in mind, the CZ series detectors has seven "potential target" icons. Also keep in mind that 3 of the 7 icons are high-tone icons, the zinc penny, nickel and high-coins. On any given hunt, you may pass your coil over 5000 detectable targets. Each one of these 5000 targets MUST fit within one of the 7 icons. (Hence 3/7 of the targets could potentially be high-tones). This is performed by the electronics of the detector in accordance with the conductivity of

Continued from previous page • CZ-3D Unique Operating Instructions

the detected metal object. This is to say that you will recover some trash that registers high-tone. There are certain pencil erasers and aluminum pull-tab/soda-tab tongues (beaver tails) that, inevitably, will register as a 'nickel' and aluminum screw caps that may read zinc penny or high-coins, as before. No metal detector from any manufacturer is immune from these conditions. Facing the facts, there will be times and places that you detect where many targets will be high-tone trash. You may have already experienced this phenomenon and it did not matter what brand of detector you were using. Before you fatigue, move to a different location. The CZ-3D is engineered to ascertain maximum successful performance for old coins while retaining the best possible ratio of good targets vs. trash targets. In older areas where aluminum trash is minimum, the CZ-3D will have exceptional performance. Areas littered with aluminum trash, invoke the 'salt' mode or recover only the deeper high-tone targets while in the 'enhanced' mode. Your option. Remember, the dirt you detect is your learning curve.

There is yet another new feature of the CZ-3D. As expected, a mid-tone audio is heard on the "foil, round pull-tab, and square pull-tab" icons. However, the audio reporting system has been modified so as to present a slightly lower audio tone on the "foil" icon ONLY. The "foil" audio is still a mid-tone, but comparatively sounds like a C-flat vs. a C-sharp. Justification for this minute difference in audio span variation is to retain a simplistic/user-friendly 3-tone system that is non-fatiguing (read = non-stair stepping flute) yet, in certain detectable areas, there can be tremendous benefits ascertained due in part to this enhancement. Here are a few steps to improve your odds:

First, Say you have limited time to detect. You choose an old ball field and learn the old coins are at a 7" depth strata. You recover only the high-tones.

Secondly = When you do have more time, you may return to the ball field and recover the pull-tab readings (ignoring the foil tone) that are also at 7" or greater in depth. Keep in mind, aluminum pull-tabs did not exist prior to 1962 and if the 7" depth strata is allowing you to recover coins older than 1962, you should not find aluminum pull-tabs at the 7" depth mark, or deeper.

Thirdly = After you have recovered all of the high-tones and the pull-tab medium-tones, you may wish to recover the "foil" readings in the areas that produced the greatest items of interest.

\*When recovering the high-tones, the ratio of good targets vs. trash is usually at its highest/best point.

\*When recovering pull-tab mid-tones, the ratio of good targets vs. trash is usually average/acceptable.

\*When recovering foil mid-tones, the ratio of good targets vs. trash is usually at its least desirable ratio.

This holds true for inland detecting. At the beach, you will want to recover ALL of the mid-tones, as 'foil' is the 'hottest spot' for gold jewelry, followed by the pull-tab readings.

The example here, is an old ball field. Other areas could be old home sites, churches, parks and schools. The list goes on, yet the concept remains valid. It is never a bad idea to sample some of the mid-tone pull-tab targets at the same depths where the older coins are being recovered. As with any new metal detector, the more 'questionable' signals that you dig/recover, the greater you increase your chances of finding valuable

Continued from page 29 • CZ-3D Unique Operating Instructions

items, then you place “claim-to-fame” on the new detector, when, in actuality, it is simply the odds that were increased. The CZ-3D attempts to remove some of the ‘guess-work’ out of the equation. If you do feel like experimenting, as always, recover the deep ‘square-tab’ readings.

Side note: From 1880 to 1905 counting all of the mintmarks, there were approximately 100 Half Eagle (\$5.00) gold coins produced per one Quarter Eagle (\$2.50) gold coin; Nearly a 100:1 ratio. Keep this in mind while detecting old sites with the CZ-3D in the ‘enhanced’ mode, as Half Eagle gold coins NOW produce a high audio tone/zinc penny ID! (Notice the CZ-3D still retains a ‘square pull-tab icon). Post your exceptional finds that you make specifically due in part (to the best of your knowledge) to the “3D enhanced” modification, on any of the popular Fisher forums. In the past, it was simply a matter of luck finding a Half Eagle gold coin. With the 3D, it is now just a matter of time. Who will be first? **ⓔ**

Continued from page 7 • Soil Conditions/Sinking Targets

This soil is generally inorganic - unable to support life, therefore, it has low/no grass clipping accumulation and targets rarely sink. 3. Heavily watered lawns, swamps, and wetlands provide one of the worst sink rates where even new coins can be out of detectable range in just a few months. These “boggy” “soggy” conditions should be avoided. 4. Soft soil with rocky conditions provides interesting scenarios because targets will sink rapidly until/unless the item comes to rest on some form of a supporting medium, such as a stone. 5. Wooded areas provide a rapid sink rate due to tree foliage, however, a large root will subdue an item from sinking and possibly even push the item back to the surface. A wooded area that provides a ‘carpet’ of roots will also decelerate the sink rate. 6. The softness of soil is not necessarily indicative of a rapid sink rate. Soft, loamy (gray/sandy) soil is fairly stable due to the fact that it is semi-inorganic in nature. 7. Areas of erosion always provide interesting detecting, especially the deep cuts. 8. Plowed fields can produce items of any age at any random, churned depth. 9. Country fields where the grass is never mowed, in general, is fairly stable soil. 10. Silver items that turn black with the copper items being heavily pitted is due to the acid/salt content of the soil and has no bearing on sink rate. 11. When a roadway or sidewalk is removed, it will present items that have been ‘frozen’ in place for as long as the concrete has been in existence. Items rarely sink or shift once concrete or asphalt is poured. 12. Soil that has been compacted by automobiles or foot travel, such as roadways, walk-ways and ball fields usually provides hard, stable soil. Items tend to sink very slowly under these conditions.

The metal detectors capabilities are very important. The operators awareness, acuity and intelligence determines the “rate of success”! **ⓔ**

Continued from page 9 • Unmasking Beginnings

penny'. So, the intent is to fine-tune/adjust the detector to accept the high end of the pull-tab range. On some detectors, it is categorized as the "square pull-tab" range, -- a very important range. On manually adjusted detectors, the set-up procedure is to take a round pull-tab (ring-tab) and bend/fold the tongue of the tab into (and around) the ring of the tab, being careful not to snap the tongue off of the ring. The tighter the fold, the better. Using this tab, adjust the detector to just barely discriminate the tab. At this set-point, make sure this pull-tab remains discriminated at further distances. Now you should be able to hold any coin (except a nickel) AND the tab together with the detector being able to successfully acquire the coin in your hand (or on the ground). You are ready to hunt. With your detector in this set-up configuration, LEARN PATIENCE! What you will find is a coin and a aluminum tab co-located, or just a pull-tab, or just a coin. If you remove a plug and the signal disappears, check the hole for a coin and check the plug for a pull-tab. This will require you to use the all-metal pinpoint mode. On many occasions, you will find that (after removing a plug) the detector remains silent. Reason; The pull-tab is too close to the coil and the coin is far beneath the pull-tab causing the detector to discriminate. Once again, use the all-metals/pinpoint mode and find the pull-tab. Then find the coin. Keep in mind that there exists a few high quality older generation pull-tabs that can read in the high-end of the pull-tab range and even some that will read "zinc penny". You will inevitably dig some aluminum trash, but you will also unmask coins. ⑤

Continued from page 10 • Coil Size Myths

coil is capable of proper ID on the dime to a depth of only, say 3" because of a large amount of interference from the trash items. (Many variables are possible). The 8" coil may properly ID to a greater depth of, say 4". The smallest coil (5" diameter) will have the greatest ability to 'look between' the trash items and be least affected by the trash and ID properly down to a depth of, say 6". Noteworthy; None of the coils achieved their maximum depth capabilities. In an air-test, the large coil will have maximum "depth". In the real world, the smaller coils will have maximum "effective depth". Remember, increasing target separation (trash target in close proximity to good target) through the use of a smaller coil, will increase the detectors ability to ID the multiple targets with greater accuracy. ⑥

Continued from page 11 • Ground Moisture Content & the Halo Phenomenon

Highly mineralized soil poses yet another problem when moisture is added. Wet, mineralized soil is conductive in itself, causing the metal detector to detect the soil and may become completely blind (masked) to actual metal objects. In areas of high mineralization, it is recommended to hunt under the driest of conditions. One example would be a ocean beach. Most metal detectors function with great stability up in the dry sand areas of the beach. If it begins to rain, causing the dry sand to become wet, most detectors will have dramatically reduced performance characteristics under these conditions, unless some form of a electronic 'salt compensating' mode is invoked. Soil conditions of medium mineral content is a vague term and must be detected under wet, then dry scenarios to sample the specific performance characteristics of a particular area. Low mineral soil locations where targets are sparse presents ideal detecting opportunities with saturated soil conditions. Detecting the shoreline of a fresh water lake is one 'ideal scenario' example, lending to extreme detection depth capabilities.

In summation, all of these rules apply to most metal detectors. Pulse Induction (P.I.) metal detectors circumvent most of these rules, however, at the time of this writing (June 2002), P.I. detectors are non-discriminating, 'all-metal' units. **F**

Continued from page 12 • Know Your Detector

piece of chewing gum foil the diameter of a dime is hardly detectable, but an actual dime can be detected at respectable depths. A U.S. Quarter Eagle is exactly the size of a dime but because of its heavy mass it can be detected at greater depths. **KNOW YOUR DETECTOR! **F****

Continued from page 16 • CZ-70 Advanced Operating Techniques

tions where the detector will bounce between “zinc penny” and “high coins” and the audio response is the same. But it is the majority of the readings that will keep the operators attention directed to metal detecting, and NOT constantly looking at a meter. There are other 2-tone “audio bounce” possibilities that will occur with the CZ-70 which no longer requires the operator to distract/direct his attention to the faceplate for identifying which specific icons are being reported. With a 3-tone CZ, it nearly required a visual verification. You will soon become aware of how much time is saved by NOT having to look at the meter as often, with the new 4-tone CZ.

So, what does all of this audio “bouncing” mean? It means time saving efficiency. It means a substantially higher level of intelligible audio data. I very specifically selected 800hz for the new 4th tone because it is congruent with the correct order-of-conductivity. The 800 hz tone is higher then the medium-tone yet lower then the high-tone. The 800 hz tone is exactly the old 3-tone CZ square-tab (flip tab) range, A very important range. It’s now titled the “Relic” range. This range is much higher in conductivity then most of the aluminum trash and is very slightly lower in conductivity then a perfect Indian Head or zinc penny. So, when a Indian Head penny has a slight amount of corrosion, it will then have a conductive property that is on the low-end of the zinc penny range or on the very high-end of the ‘Relic’ range. With its conductivity being on the “hairy edge” of two icon ranges (Relic & Zinc penny),, hence the audio “bounce.’ Don’t ever forget that! Mildly corroded ‘Buffalo’ nickels and ‘V’ nickels have a strong propensity to bounce between “foil” and “nickel” readings. Hence, a high-tone to mid-tone audio bounce as the coil is passed over the target a few times. Remember, very few targets give perfect readings. A very slightly corroded ‘Wheat’ penny will bounce between “zinc penny” and “high

coins” readings. Some of the early (older) ‘Wheat’ pennies read a constant “Zinc penny” on any CZ platform. MANY of the Indian Head pennies read a constant “Square pull-tab” reading on a standard CZ. That’s the new 4th tone (800hz) on the CZ-70. All of the ‘Flying Eagle’ pennies, early Indian Head’ pennies, \$5 ‘Half’ Eagle’ gold coins and many, many more good targets read medium-tone (aluminum trash tone) on the standard 3-tone CZ. Not so with the new CZ-70. All of these items read “Relic” on the CZ-70 in conjunction with the new tone. A nickel with a penny, a nickel with a dime, a pull-tab with a penny or dime will read mid-tone (trash tone) on a 3-tone CZ. The CZ-70 reads all of these combinations as ‘Relic’ new-tone.

Electronically, it is common for a CZ (or any brand detector) to have difficulty PROPERLY ID’ing deep targets in heavily mineralized ground. If you encounter a deep “Relic” reading or you encounter a bounce between Relic-Zinc-High coins (or a combination thereof), it is definitely worth investigating. These readings are indicative of a highly conductive non-ferrous target,, possibly an older coin. The CZ-70 is not a deeper seeking detector when compared to the older CZ’s, however, with the new 4th tone, it has greater EFFECTIVE depth. That’s a tremendous attribute. Very deep (older) coins DO have a stronger propensity to slightly “mis-ID” on any detector, but with the inception of the CZ-70,, you are less likely to miss the older, deeper coins.

Now, here is where the hobby has renewed interest. Take the CZ-70 to one of your favorite detecting sites. Preferably one where you found some of your oldest coins. As always, continue recovering coins (zinc penny & high coin readings), If any still remain. START SAMPLING the “Relic” readings. Sample a couple at 2”, then a couple at 4”, then 6”, 8” until you find where the aluminum trash sub-

Continued from page 33 • CZ-70 Advanced Operating Techniques

sides. You are looking for a depth where the stratum of aluminum trash ends. Anything beyond this depth will have a higher ratio of good targets vs. bad targets. You can do this same test with the 'Foil' & 'Round pull-tab' readings, however,,, you will have a better success ratio when you sample the 'Relic' (new tone) readings. Use the 'Relic' readings to aid you in finding this depth/stratum. Then, the astute detectorist will transfer this stratum information into the other icon readings. You may find the aluminum trash stratum to a depth of 4" at one local park, then find this same stratum at 10" at another detecting aite. Each site will differ. You should locate and identify what this depth is at every site you hunt. You will see why! Remember, the introduction of the aluminum pull-tab debuted in 1962. As you experiment with the deep 'Relic' readings, the CZ-70 will place you on a natural learning curve. Very little effort will be required on your part. Keep In mind that you may recover a fair amount of trash with the new 'Relic' reading. But, remember that you may recover some trash that reads 'high coins' also, such as crushed aluminum screw-caps. Every brand detector can read these same trash Items as 'good target'. No detector is immune to these conditions. The creation of the CZ-70 is to simply increase your odds through greater artificial intelligence.

Don't be surprised if you start finding valuable deep coins (including silver ones) that initially read as 'Relic'. You may also find that you are recovering more coins on edge. You should NEVER pass up extreme depth 'Relic' readings.

A variable tone, in accordance to target conductivity for ID purposes has been examined by Fisher and was deemed "user difficult",,, especially for the tone-deaf and for beginners. Four very discrete, distinct tones were selected to present a much more intelligible, user-friendly platform. **Ⓔ**

Continued from page 17 • CZ-70 Pro Field Test.

know it even exists. Trying to force a 3-tone unit to do what this 4-tone unit will do - it's just not possible. It continues to impress me! Now having the ability to go back to all my old "hunted out" sites and recovering the deep 4th Tone relic readings certainly is an eye-opening "shock therapy" succes story.

There is a learning curve (as with anything) and I would recommend to the beginning coin hunter to recover the "high-coins" only readings, as always. For the seasoned detectorist, (if one choses to delve into a bit of experimentation), the next step/recommendation would be to recover only the deep "Relic" readings. As the learning curve continues, the user can experiment with less-deep "Relic" readings. I seem to find myself ignoring the shallow "Relic" readings nearly all the time (unless I'm at a old site), recovering only the deeper "Relic" targets. The deeper "Relic" readings are rarely aluminum trash.

Here is a list of items that I have found in my field-testing and inclusive in this listing are items that read "Relic" on the CZ-70 Pro:

1. Very deep coins
2. Foreign coins
3. Necklace medallions
4. Tokens
5. Pendants
6. Early (1859-1864) Indian head cents
7. Flying Eagle cents
8. Coins Located with trash (partial masking)
9. Older style aluminum flip top square tabs
10. Minnie ball/Civil War bullets
11. Large signet/class rings
12. Brass & lead objects
13. US half eagle (\$5.00) gold coins
14. Fairly high conductive items

Continued on next page

Continued from preceding page • CZ-70 Pro Field Test.

I seem to be finding a lot more coins on edge. As the coil is passed longitudinally over a coin on edge, the response is a "Relic" tone. Then, changing the coil approach direction, the coin resolves between 'zinc' and 'high coin.'

Any deeper target that initially responds as "Relic", is ALWAYS given a 2nd, 3rd & 4th opportunity to resolve, and THAT's where this 4th tone tremendously outperforms/excels above and beyond a standard 3 tone CZ. I believe this is where the bulk of the success is attributed.

I'm still surprised at the amount of deeper coins that produce an initial hit as "Relic." Then, this may or may not resolve a little bit higher in conductivity resolution with proceeding coil sweeps. This may also be the determining factor of whether or not to recover the target, especially if you are searching for coins only.

Here is what is happening with the older/deeper coins. I swing the coil from my left side to my right side. Say, I hear about a dozen targets. Then, I step forward advancing the coil about 8" (failed overlap) and swing the coil in the other direction and I hear about a dozen NEW targets. Case in point; each individual target has only ONE chance to report/ID. Not a good scenario. Now, amplify the error by realizing that each target swept/detected probably NEVER was swept with the target DIRECTLY centered underneath the coil. Am I starting to paint a picture?! These occurrences/failures are common to any brand detector, no immunities given.

Now, a deep coin that is clipped by the front end of the coil - then, if I'm lucky, I pass the coil over the coin again with the very rear/heal of the coil... may (both times) mis-ID as "Relic." Now, with the new 800 Hz 4th audio tone, THAT'S NOT A PROBLEM!!! Sweeping the coil from

my left to right, I may hear about a dozen targets - with, "on average" one of them being the 4th tone "Relic" reading, causing me to lock-up my brakes and give that specific target multiple chances (and from different directions) to properly ID/resolve. With the coil now given the opportunity to be centered over the target, the detector may now ID/resolve to high coin, zinc penny, relic or bounce between these 3 readings, of which I have recovered deep coins with any or all of the above conditions. I even recovered a silver (1936) quarter at 9" that continued to bounce between "Relic" and "Zinc" penny. Some rust flakes in the ground prevented the detector from reading just the silver quarter (a case of partial masking). Silver quarters are extremely high in conductivity, and a "Relic" icon reading is only slightly less conductive than a zinc penny.

I also tried notching out nickel, iron, foil and round pull tab, detecting only the relic, zinc and high-coin conductivity range. "Notching" is nice, but the real world poses some unique problems. I chased many ghost signals. I would get a zinc penny reading once, and from only one direction - then I could never get the detector to duplicate/find that target again - no matter which direction the "moving target" was approached from. Now, disabling the notch and bringing all targets back in, I could find that elusive/mysterious ghost target. It was bouncing between zinc, iron, and sometimes foil. Very typical "real world" multi-trash target. Hence, "notching" is not ideal/wanted for this particular scenario. And hence, the new 4th tone is a blessing. This is also why a regular 3 tone CZ cannot be set up to duplicate what the CZ-70 can achieve.

In the past, I would have my eyes glued



Continued from page 18 • Maximum Performance

you will find older coins “frozen in time” from sinking, due to the cement securing all elements of mother nature - preventing the coins from sinking. What about areas where mother nature has ‘full effect’ on allowing targets to sink? These are most of the areas that we detect.

+ A slow coil sweep speed becomes critical in trashy areas. The electronics needs time to audibly & electronically reset between targets. If the coil is passed over a target, the detector will begin to audibly report the target. If the coil immediately passes over a second target, the detector's electronics may be “busy” reporting the first target. The second target will be completely missed and you will never realize that a second target existed. That's just two targets. In multi-target rich scenarios, it is common for the average detectorist to miss 80% (on average) of the targets. To the astute detectorist, these types of conditions and sites will seem like virgin soil and cherry-picking, in skilled hands. The actual coil speed in target-rich conditions should never exceed two times (2X) the diameter of the coil versus distance covered,,, per second. For example; an 8” coil should never move faster then  $(8 \times 2) = 16$ ” per second. A 5” coil should  $(5 \times 2)$  never cover more then 10” of sweep in one second. And a 11” coil should  $(11 \times 2)$  never be swept faster then 22” of covered ground in one second. Now, it can be clearly viewed as to why a smaller coil can “winkle” out more targets (if swept properly) in target-rich areas. Yes, it can be mentally difficult to acquire the feeling of accomplishment versus the amount of ground covered by the utilization of a small coil. One must unlearn an old (fast sweep) habit to realize the gain that will ensue. Two times the coil diameter (2 x dia) is nearly maximum performance for most detectors, which is a

speed that will naturally occur to a detectorist who starts to find more (and good) targets in trashy areas. A slower coil sweep speed in trashy areas, especially in heavily mineralized soil conditions, equates to a much more accurate target ID. Most quality detectors do not lose detection depth with a slow coil sweep speed. For those metal detectors that require a faster coil sweep-speed, a major handicap is acquired in trashy areas, as this type of detector will miss most of the targets due to adjacent target separation failure.

+ Overlapping your sweeps by 50% (or more) in trashy areas also does wonders. Remember, on a spider coil, it is the inner coil (inner ring) that is the ‘receive’ coil. The ‘receive’ coil is the coil that your ears hear. On Fisher 8” spider coils, the outer ring is the 8” ‘transmit’ coil and the inner 5” coil is the ‘receive’ coil. With the 8” coil, pretend you are sweeping a 5” diameter coil while in trashy areas. On the 10.5” spider coil, the transmit coil is the 10.5” outer ring. The ‘receive’ coil is the 5” x 9” elliptical coil in the center. This configuration has a few specific advantages. The larger transmit coil will ‘light-up’ more ground, electromagnetically. The elliptical receive coil provides greater depth AND respectable adjacent target separation characteristics because of its narrow 5” width. The elliptical 5” width on the large coil, and the 5” diameter ‘receive’ coil on the standard 8” spider coil, is by no accident. On the subject of coils, the reason why a large coil is more apt to find coins on edge is because the transmit coil has a greater ‘angle-of-attack’ on the sides (faces) of the coin, “lighting” up and ‘seeing’ the sides of the coin to a greater extent. A smaller coil virtually sees only the edge/rim of a coin that is positioned “on-edge” in the ground, providing

Continued from previous page • Maximum Performance

insufficient data for the metal detector to ID correctly.

+ Your approach direction also plays a critical role in the DETECTORS success (followed by your success) in proper target acquisition. If your sweep is about 6 feet wide, you should choose 12' x 12' square increments of mentally gridded off property to search. Cover the property from 3 different directions. First from East-West, then North-South, then from a 45 degree tangent (say Northeast to Southwest). Say, while on your second or third approach direction, you find a good target. Do not recover the target. Find the exact location of the target. Now, start rotating your body around the target while continuously sweeping the target. You will soon see why you missed the target from your initial approach direction. As explained earlier, if your coil passes over the good target first, then immediately passes over a second (bad) target, the detector will probably report only the good target. As you continue to sweep the target and rotate your body 360 degrees around the target, it may transition to a bad target reading. Once again, because the coil is passed over the bad target first (immediately proceeded by the good target), the detector will probably report the bad target. When you hear only the bad target, try slowing down the coil sweep speed. You then might be able to hear both targets extremely close to each other; however, this is never a guarantee. What you may learn is the importance of different approach directions and/or the importance of slower coil sweep speeds. Facing reality, in general, the slower the coil sweep speed and the smaller amount of property detected with higher precision, the greater your success due to the changing times and current world detecting conditions. You will also notice deeper tar-

gets coming to light. Challenging targets brings greater pride.

All of these tips are "critical". And if everything is so "critical", it can appear to be overwhelming. Do not be overwhelmed. Instead, read "critical" as; "So many 'criticals' equates to = so many opportunities". Remember, if you can outperform your competitor in just one critical area, success will be ascertained. And if you can outperform the competition in ALL areas; coil on the ground, overlapping coil sweeps, slow sweep speed, different approach directions, top end detector, proper control settings etc..... Let the cherry-picking begin - ALL OVER AGAIN! **Ⓢ**

Continued from page 19 • Finding Rare, Key Date & Gold Coins

not necessarily increase your odds of finding a key-date coin. Some age is required; however, more importantly, it is the volume of coins recovered that will place the odds in your favor. Example; The 1916'D' & 1942/1 Mercury dimes were still heavily in circulation in the 1950's.

It was not until the turn of the century when the general public finally started to accept and partially 'trust' paper money. Even then, silver, gold and copper coins were still "psychologically" preferred. A merchant would choose to accept a silver dollar (or coins) for payment more readily over a paper dollar bill. Silver, a precious metal, would trump paper money every time. And just when the general public began to trust paper money, the crash of 1929 performed a "master reset" on the trust of a NON-hard asset, that being paper money. Silver, gold and copper coins took the lead again until WWII, when paper money, once again became the (questionable, somewhat distrusted) standard.

Looking back in history, people have always preferred gold and silver for bartering. Paper money was not always accepted nor was it always trusted. Banks were not trusted. Prior to WWII, the common man frequently buried his money, nearly always in the form of coins. Transportation to the bank (horse & buggy) was never convenient, assuming a bank was near by. Banks did not have insurance. No FDIC, FSLIC. When a bank was robbed, you lost your money. Precious metals in the form of coins, kept in your possession was the preferred method for security. Coins were "holed" - a small hole punched through the coin so it could be carried on a string with other coins for safe keeping. In general, purses, pockets and coin pouches were made out of lesser quality materials as compared to today. Coins were heavier; a silver dime is

heavier than a clad dime. The heavier coins sink a bit faster in the earth compared to their clad counterparts. Larger volumes of coins, versus paper money, were carried by individuals of yesteryear as compared to modern (paper money & plastic) times. Proportionately, more coins were lost.

One of the greatest & most sought after quests of a coin hunting detectorist is to find a gold coin. The most common gold coins in the United States were the Quarter-Eagle, Half-Eagle, Eagle and Double-Eagle (\$2.50, \$5.00, \$10.00 & \$20.00 respectively). The \$50.00, \$4.00, \$3.00, \$1.00 and smaller denomination gold coins existed, but rarely circulated. The key word here is: "circulated". Today, high volumes of half-dollar and one-dollar coins are minted, but not circulated. A detectorist should not be concerned with the minted volume. The question of significance is: "Were they circulated"? It is easy to find out how many gold coins were minted. However, it is quite difficult to determine the circulated volume of gold coins, even with the utilization of dedicated, juried research techniques. A coin must be in circulation in order for it to be lost (barring stolen, buried, etc...). Although nearly impossible to determine circulation numbers, there are a few tell-tale signs indicative of gold coins having been in circulation. The largest indicator is to view the inventory of gold coins in a coin shop. Pay particular attention to the coins with the largest wear properties. Most coin dealers/shops prize the near-mint condition specimens; however, the fact of the matter is the bulk of the gold coins show some wear characteristics, indicative of having been circulated.

Research reveals some interesting, yet limited statistics about gold coins. In 1930, about half of the gold coins remained in

Continued from previous page • Finding Rare, Key Date & Gold Coins

circulation compared to the amount of gold coins that were in circulation in 1917. But with this statistic in mind, be aware the central banks “held-in-reserve” 92% of all the gold coins by the year 1929. This makes the extrapolation of even just the ratio of gold coins in circulation in 1917 versus 1930 difficult to acquire. If 8% of the gold coins produced, remained in circulation in 1929, what percentage remained in 1930? How many gold coins were in circulation in 1917 OR 1930? Keep in mind, mintage records bear no correlation to the volume of gold coins that remained in circulation, especially since there had been several sessions of gold coinage melting in large, wholesale amounts throughout the past century. Because of the 1929 depression, President Roosevelt passed legislation to cease the production of gold coins, remove the nation off of the gold standard and have all U.S. citizens surrender all gold coins (usually exchanged for paper money) in May of 1933. Convertibility of paper money into gold was abandoned.

Probing deeper into our history, in the 1830's, gold coins were heavily circulated. Foreign gold and silver coins were heavily circulated up until 1857. Silver coins disappeared from circulation in 1848 and 1849 because the price of gold dramatically dropped - and (panicked) people hoarded the silver coins for security. In 1854, silver coins began to see small amounts of circulation, as the price/value of gold began to rise again. Gold coins saw significant circulation before the Civil War. By the beginning of 1862, circulating gold coins completely disappeared. After the Civil War, gold coins began to circulate again in small numbers. During the Civil War, paper federal currency was introduced, and in 1879, this paper currency was ‘backed by gold’, held in reserve by banks, in the form

of gold coins. And finally, in 1914, legislation was passed, officially standardizing the nations Gold Standard. Hence; Silver Certificates & Gold Certificates.

Sometimes, gold coins did not circulate. Many gold coins were melted. Many gold coins were in bank vaults, held in reserve. Some gold coin denominations never made it into circulation. So what does all of this mean to a treasure hunter? The fact of the matter is: MANY gold coins were CIRCULATED and were LOST, and in respectable quantities, deserving our attention. So why have not more gold coins been found by detectorists? Let's focus on the most common denomination circulated gold coins. The Quarter-Eagle, Half-Eagle, Eagle and the Double-Eagle. (\$2.50, \$5.00, \$10.00 & \$20.00 respectively). First, all brands of metal detectors, assuming proper factory calibration, will read & ID each denomination of gold coin the same. A Double-Eagle will ID as ‘high coin’. An Eagle will ID as a ‘zinc penny’. A Half-Eagle will ID as ‘square pull-tab’ (Relic on CZ-70), and a Quarter-Eagle gold coin will ID as ‘Round pull-tab’. On the CZ series of metal detectors, the Eagle and Double-Eagle will audibly read as ‘high tone’. That is a good feature. On the Quarter-Eagle and Half-Eagle, all calibrated detectors will read these coins as a (trash audio tone) pull-tab. On the CZ-70, a Half-Eagle will read audibly with the new 4th tone — a good feature. Here is where the education becomes critical. Of all the gold coins minted, and of all the gold coins circulated, THE HALF-EAGLE (\$5.00) was the most widely CIRCULATED gold coin. Consequently, over 80% of the gold coins recovered by detectorists are HALF EAGLE's, by no accident. Because of this statistic, special attention needs to be given to the Half-Eagle. On most metal detectors,

Continued from page 39 • Finding Rare, Key Date & Gold Coins

the Half-Eagle ID's on the high end of the pull-tab range. On a CZ-70, this is the new 4th tone in consort with the 'Relic' icon. On all other CZ's, it is a 'square-tab' mid-tone reading. While detecting older areas, give special attention to this range (conductivity bandwidth). If you are in search of a gold coin, place all of your energies on the Half-Eagle. The Eagle and Double-Eagle are naturally at a detectable advantage, simply because they are of higher conductivity and read higher on any brand detector. No effort required on your part. (Noteworthy; most of the Double-Eagles were held-in-reserve in banks and utilized primarily for bank-to-bank transfers). The Quarter-Eagle was a distant #2 on the list of circulation, especially when compared to the Half-Eagle. The ratio of trash versus Quarter-Eagles is fatiguing. Focus your efforts on the Half-Eagle.

A quick refresher. For comparison, a U.S. Quarter-Eagle is nearly the exact dimensions as a dime. One major difference. The Quarter-Eagle is nearly twice the weight of a clad dime. Hence, the Quarter-Eagle will sink to a greater depth at a faster rate to that of a clad dime. This is a disadvantage; yet, there is an advantage, and that being the Quarter-Eagle can be detected to a greater range due to its extreme density.

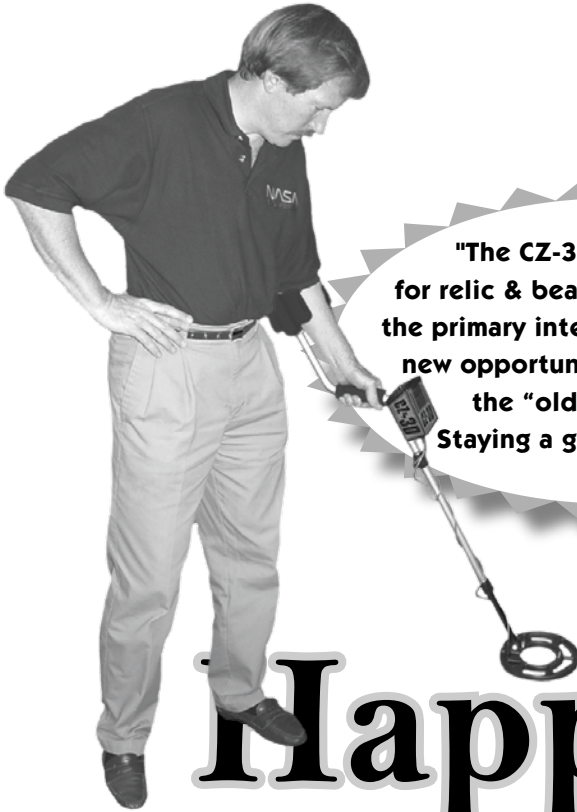
Improve your odds! **F**

Continued from page 35 • CZ-70 Pro Field Test.

to the faceplate/meter (not a fun way to detect) and try to look for the "square pull tab" readings. I never knew how many of these specific readings I was missing! That 4th tone (now) allows me to watch the ground and coil overlap instead of a rapidly jumping meter. I'm quite surprised as to the plethora of "Relic" readings there are, and most of the deeper items are not aluminum trash.

As far as 'unmasking,' this 4th tone "Relic" category does unmask some coins. For instance, when a coin is in extreme close proximity to an aluminum pull-tab, the new CZ-70 will report the 4th tone in consort with a "Relic" icon. It's always a good idea to 'recheck' the hole and the grass plug if a piece of trash is found/removed after a "Relic" ID reading. I have 'unmasked' quite a few coins after removing the trash that caused the detector to read "Relic", then passing the coil over the grass plug & hole, the detector now properly ID's the coin.

Simple as it may be, this new CZ-70 Pro is a substantially higher intelligible platform. I only wish Fisher had implemented this enhancement years ago! **F**

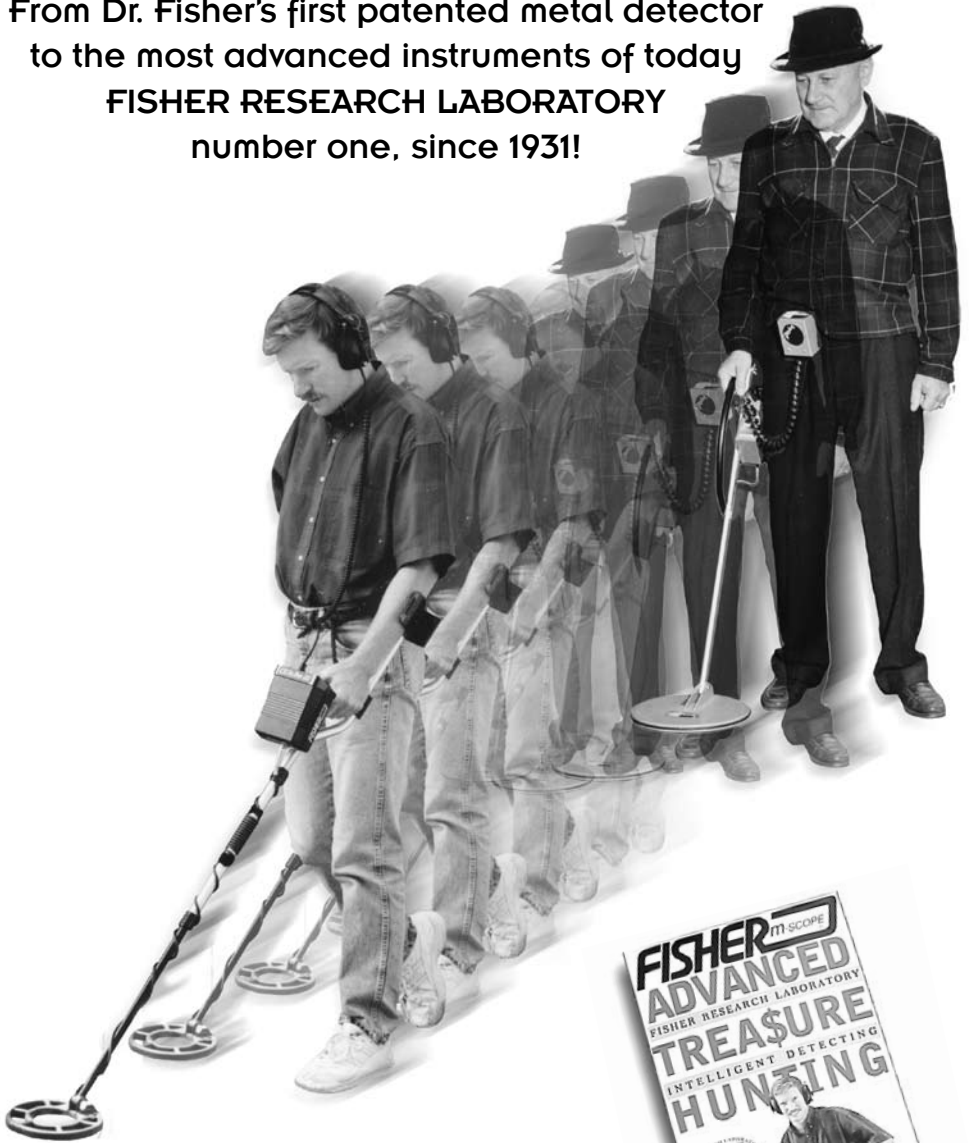


"The CZ-3D is spectacular for relic & beach hunting; however, the primary intent is to revolutionize new opportunities specifically for the "old coins" hunter. Staying a generation ahead!"

# Happy *Intelligent* Hunting!

Thomas J. Dankowski,  
Kennedy Space Center,  
NASA, FL

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