UNDERSTANDING OSCILLATORS AND OTHER INDICATORS

Used in

By Tom McClellan

and

Sherman McClellan

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Used in ***The McClellan Market Report***

By Tom McClellan and Sherman McClellan

No single indicator can show the whole picture of what the market is doing. A variety of carefully crafted indicators measuring selected stock market and interest rate data forms the basis for the integrated technical analysis provided in *The McClellan Market Report*. By looking at several different tools and using different time frames, we can better identify the forces acting to change the market. Our goal is to understand the *probable* future market structure based on our analysis of what has happened in the past.

In each issue of *The McClellan Market Report*, there will be charts of several indices and indicators which we find meaningful in interpreting market action. Some of these are common indices that many analysts use, and some are completely of our own invention. Each of these indicators provides its piece to the puzzle of how the market might behave in the future. This booklet has been written in order that you may better understand the indicators we use, their methods of calculation, and our rationale for using them. Our objective in this booklet is for you, the reader, to be comfortable in their use and be able to integrate their messages into your trading or investing.

To help you understand our analytical techniques, it is important to first understand a few basic definitions of terms used to describe our indicators.

MOVING AVERAGES

The most satisfactory investing comes when the market is trending and you invest with the trend of the market. The old saying about "the trend is your friend" is trite but it is worth heeding. There are several trend-following indicators which technicians use to identify the direction and strength of the trend. One of the most important of these is the **Moving Average (MA)**. A moving average of price data can help to indicate the direction of the trend of the prices. When a stock's price moves above a moving average, this can indicate a change from a downtrend to sideways or up. There are several different ways to calculate moving averages, but they all involve measuring data over several time periods and using some computational method to average the data.

The easiest of the moving average methods to understand is the **Simple Moving Average (SMA)**. A 10-day SMA, for example, would be calculated by summing the previous 10 days' prices and dividing by 10. This method is favored by some analysts for its simplicity. Different analysts prefer different time periods for study. Shorter time periods result in faster changes in the moving average, and are therefore more useful in short term trading. Longer time periods result in more stable moving averages which may better reflect the long-term trend. Weekly or monthly data can also be used in calculating a moving average in order to look at longer term trends. The most effective time

periods have been found to be ones which correspond to one-half of the length of a major market cycle. One feature of the SMA is that data for each of the periods averaged are given equal weight in determining the value of the moving average. Only the most recent period's data coming in and the oldest data dropping off are able to change the SMA.

A variation of the SMA is the **Weighted Moving Average (WMA)**. In this calculation method, the value of the data for the most recent period is most heavily weighted in the calculation. Each preceding data value is weighted progressively less.

One type of WMA is called the **Exponential Moving Average (EMA)**. An EMA weights recent data more than older data, but the older data is never completely dropped from the EMA. The amount of weighting given to the more recent data is called the **Smoothing Constant**. An EMA calculated with a 10% smoothing constant would be weighted as follows: the most recent data value would be weighted 10%, and the previous EMA value would be weighted 90%. We prefer to use EMAs in our work because it seems only natural that the current value would have much more relevance than the value from several periods ago. Experience has shown that smoothing constants of 1%, 5%, 5.8%, 10%, 20%, 33%, and 50% are especially useful. The higher numbers result in faster moving EMAs because they more rapidly discount older data values.

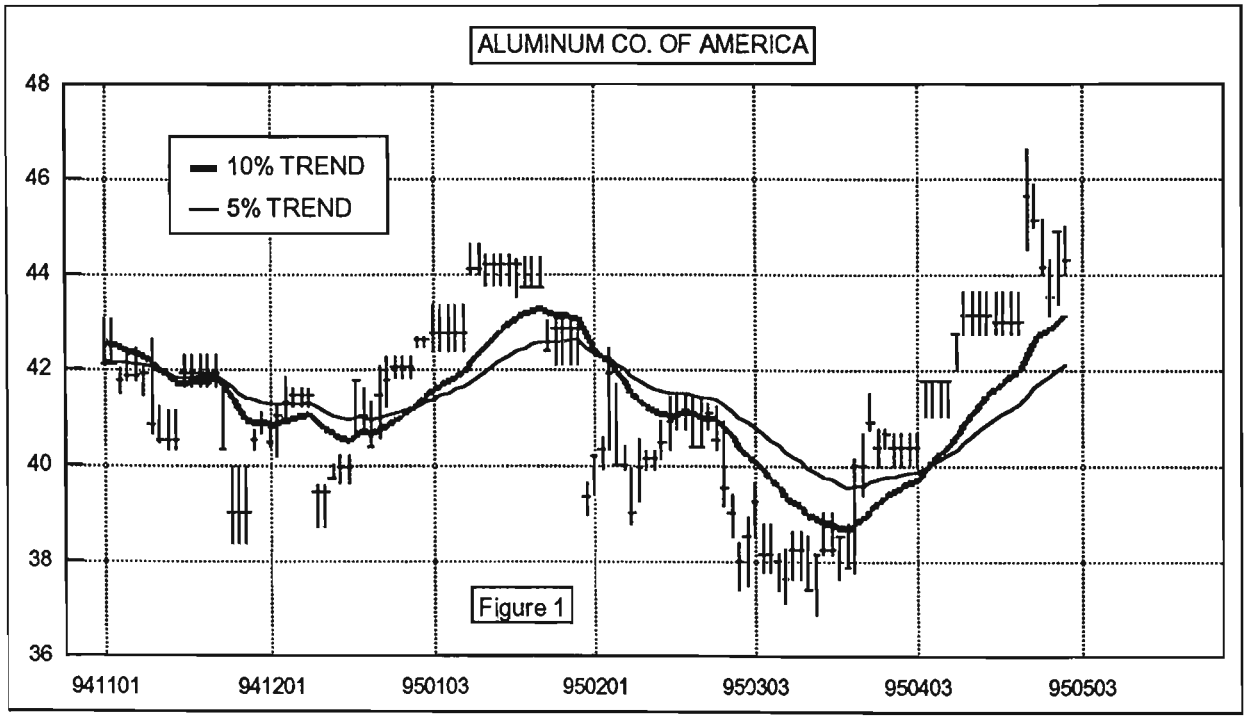


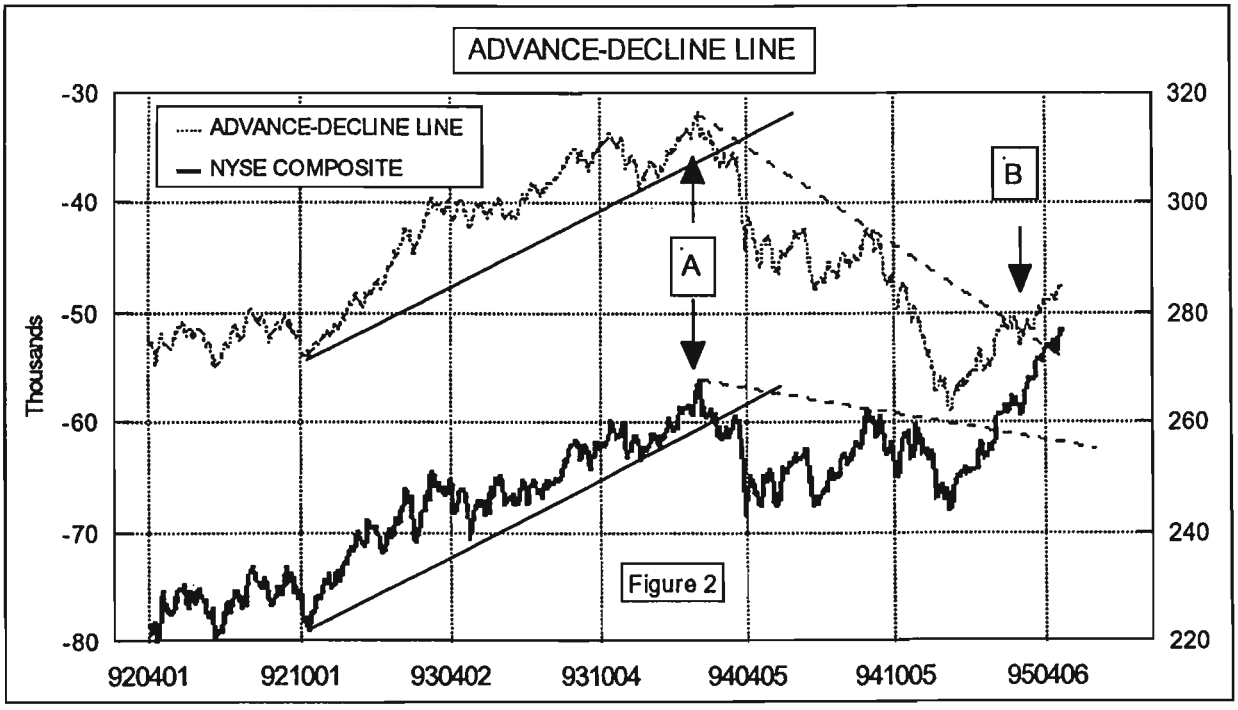
Figure 1 gives a good example of the use of this type of indicator. The thick line is an EMA with a 10% smoothing constant and it clearly hugs the data more closely than the slower EMA with a 5% smoothing constant shown by the thin line. Note that the dates are shown in computer format (YYMMDD).

In our early studies of EMAs, we found that not only were the EMAs important in and of themselves, but that the interrelationships of a fast and a slow EMA of the same data can give extremely useful insights into the status of the trend. This led to the development of the McClellan Oscillator which we will cover below.

ADVANCE-DECLINE LINE

Every trading day, financial news sources report the number of exchange-listed stocks that closed higher than the day before (advances) and those that closed lower than the day before (declines). Unchanged issues are also reported. The daily **Advance-Decline Line (A-D Line)**, is calculated each day by subtracting the number of declining issues from the number of advancing issues; the net difference is added to a running sum of all previous values. Studying the A-D Line can show important information concerning the underlying trend of the market. Since the A-D Line represents a cumulative total of advances and declines, the starting value for the data is arbitrarily chosen. The actual numerical value is not important; what matters is how the A-D Line moves compared to previous values. So even if two A-D Line calculations for the same stock exchange have different starting values, the structures of their chart pictures should be identical.

Figure 2 shows the New York Stock Exchange (NYSE) A-D Line compared to the NYSE



Composite Index. The two indicators topped together at point A and moved downward. A year later at point B, the NYSE Composite is making new highs while the A-D Line is still well below its year-earlier levels. Unlike some other indicators which give leading indications of market activity, the

A-D Line is a coincident indicator. As the A-D Line broke up through its downtrend line, it confirmed the price trend change, shown by the price breaking its downtrend.

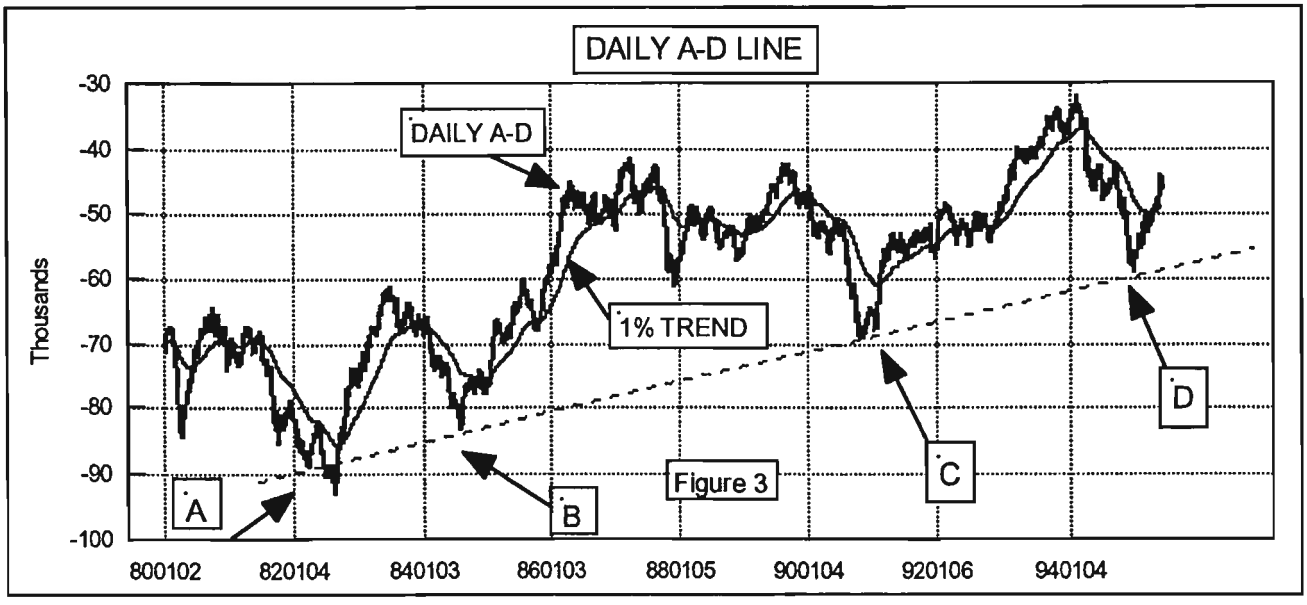
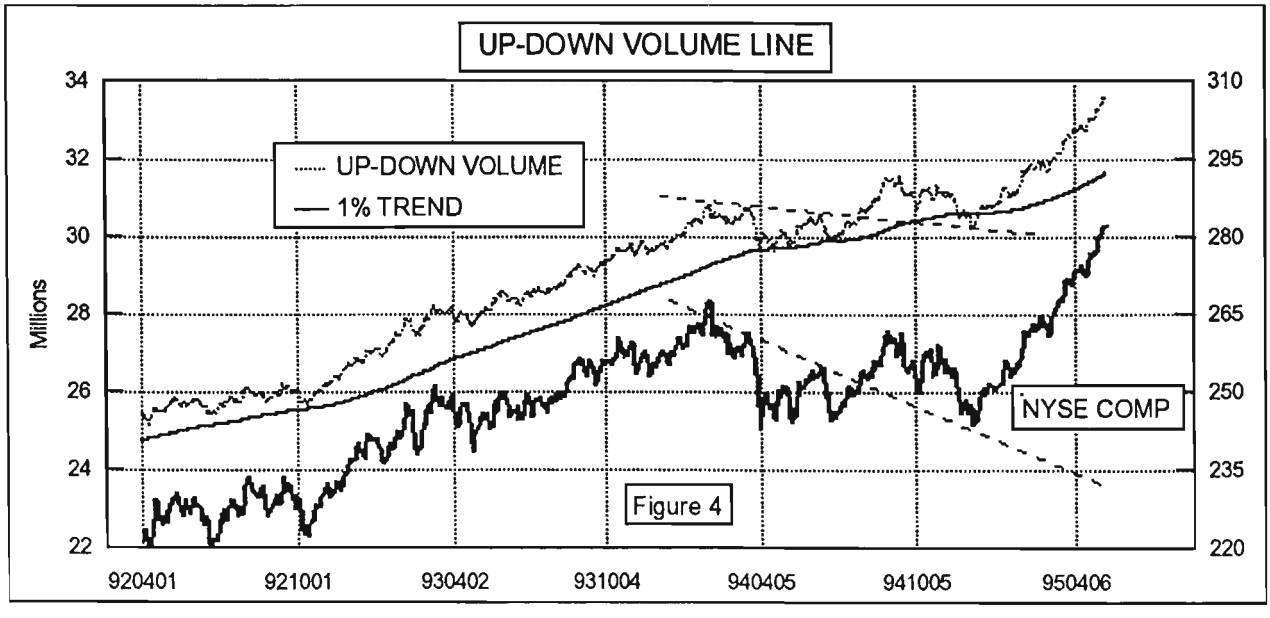


Figure 3 shows the A-D Line and its relationship to a 1% Trend (1% EMA). The 1% Trend line exhibits both support and resistance for the A-D Line, acting alternately as a ceiling and a floor for the A-D Line. Conventional trendline analysis (rising bottoms or declining tops) can be useful for the A-D Line just as with prices. From 1980 to the present, the A-D Line has touched a rising bottoms line at points A, B, C, and D. Each upturn from this line indicated the end of a price downtrend.

UP-DOWN VOLUME LINE



In the same way that the A-D Line is calculated using daily advances and declines, the Daily Up-Down Volume Line is calculated as a cumulative running total of up volume minus down volume. Comparing the Up-Down Volume Line to the A-D Line can yield additional information about the trend of the market. Very often, when the A-D Line and the Up-Down Volume Line give conflicting indications, the volume indicator will more accurately portray the money flow.

Figure 4 shows the Up-Down Volume Line for the same time period as the A-D Line chart in Figure 2. During this time period, the A-D Line did not make new highs but the Up-Down Volume Line showed greater strength. This indicated that the monetary inputs into the market were resulting in trading activity (volume) which resulted in accumulation capable of moving the market, ultimately to new highs. When the Up-Down Volume Line is not matching a decline in the A-D Line, eventual market strength can be expected.

USING EXPONENTIAL MOVING AVERAGES WITH THE A-D LINE

In the late 1960s, when Sherman and Marian McClellan first started developing new technical analysis tools for understanding the behavior of the markets, Exponential Moving Averages were not in general use for stock market analysis. The late P.N. Haurlan, a Jet Propulsion Laboratory engineer and publisher of "The Trade Levels Report", wrote *Measuring Trend Values*. This booklet explained how some of the mathematics used in targeting moving objects could be applied to tracking market price moves. "Pete" Haurlan called exponential moving averages **Trend Values**. Hence, an EMA with a 10% smoothing constant was referred to simply as a **10% Trend (10%T)**. Since this is a much more elegant way to say it than "EMA with a 10% smoothing constant," it is the terminology we have retained over the years.

Sherman and Marian knew that Trend Values had merit in analyzing data and they hoped to find a way to use this calculation method to gain an advantage in selecting the better times to enter the market. They had seen that there was a close correlation between movements of the A-D Line and stock market price averages. Advance-Decline data was readily available in daily newspapers, so they set about applying this calculation method to the daily difference between advances and declines. By using the 5% and 10% Trend Values, they found that they were able to determine important reversal points in the A-D Line, thus being able to deduce important changes in the direction of market prices. This provided a method for entering the market near market bottoms, and selling or avoiding entry near market tops.

To calculate the 10% Trend Value for the daily difference between advances and declines, one would proceed as follows: Subtract declines from advances to find the net A-D. Multiply the net A-D by 0.1 (or 10%). Add this number to the product of 0.9 times yesterday's 10% Trend value. In equation form, it looks like this:

$$10\%T_{TODAY} = 0.1 \times (A\text{-}D)_{TODAY} + 0.9 \times (10\%T)_{YESTERDAY}$$

Similarly, the 5% Trend for the daily difference between advances and declines would be calculated as:

$$5\%T_{TODAY} = 0.05 \times (A\text{-}D)_{TODAY} + 0.95 \times (5\%T)_{YESTERDAY}$$

To see it on a much smaller scale, Figure 5 shows only 4 days of data. The dimension P is the difference between the 10% Trend Value on January 18th and the A-D value on January 19th. 10% of P is the amount of change in the 10% Trend Value for January 19th.

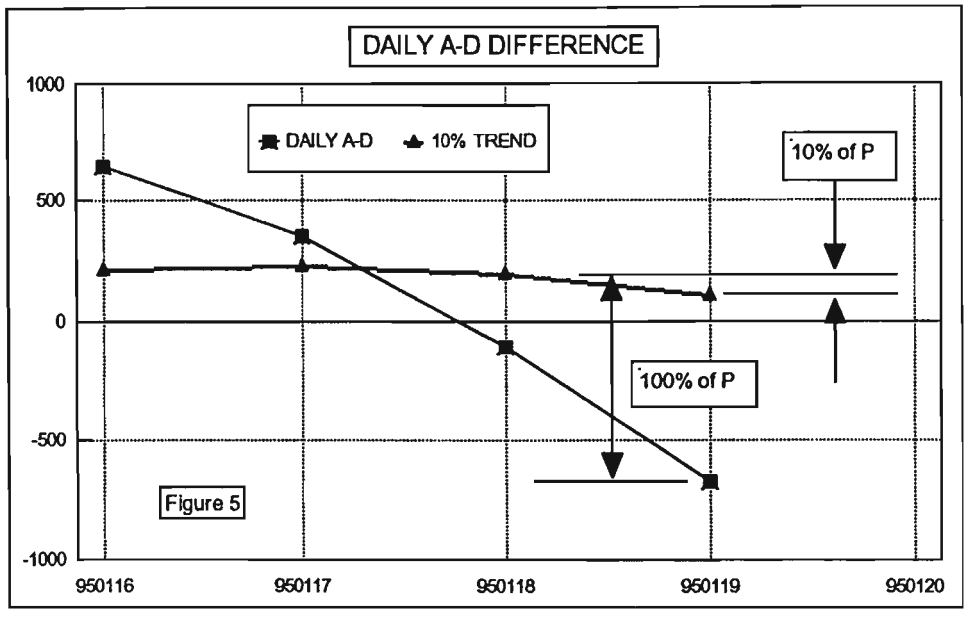


Figure 5

When starting a new set of calculations of trend values for daily advances and declines, use 0 as the initial trend value. When calculating trend values for the price of a stock, commodity, or index, use the previous closing value to start. It takes up to two months for the trend value calculations to adjust themselves to give proper values, so the more historical data used the better the accuracy of the current Trend Values.

$$100\%\text{ of } P = (A\text{-}D)_{Jan\ 19} - (10\%T)_{Jan\ 18}$$

10% of P = Change in 10%T for Jan 19

Sherman and Marian wanted to know which short term Trend Value of the A-D should be used to identify when to trade. They found the 10% Trend to be effective for this purpose. They also wanted to know what longer term trend could be used to identify whether the changes in the short term trend were turning points or merely snap back moves. They found the 5% Trend to be effective for this purpose. A more important discovery came when Sherman and Marian compared the faster trend value to the slower trend value numerically, by subtracting the 5% Trend from the 10% Trend. This value came to be known as the McClellan Oscillator. The formula reads as follows:

$$\text{McCLELLAN OSCILLATOR} = 10\%T_{TODAY} - 5\%T_{TODAY}$$

As commonly portrayed, the McClellan Oscillator uses NYSE advances and declines for its raw data. Data for the NASDAQ, AMEX, bond market, or other selected groupings of advance-decline numbers can be used to generate McClellan type Oscillators for those groups, e.g. gold stocks, utilities, steels, your portfolio, etc.

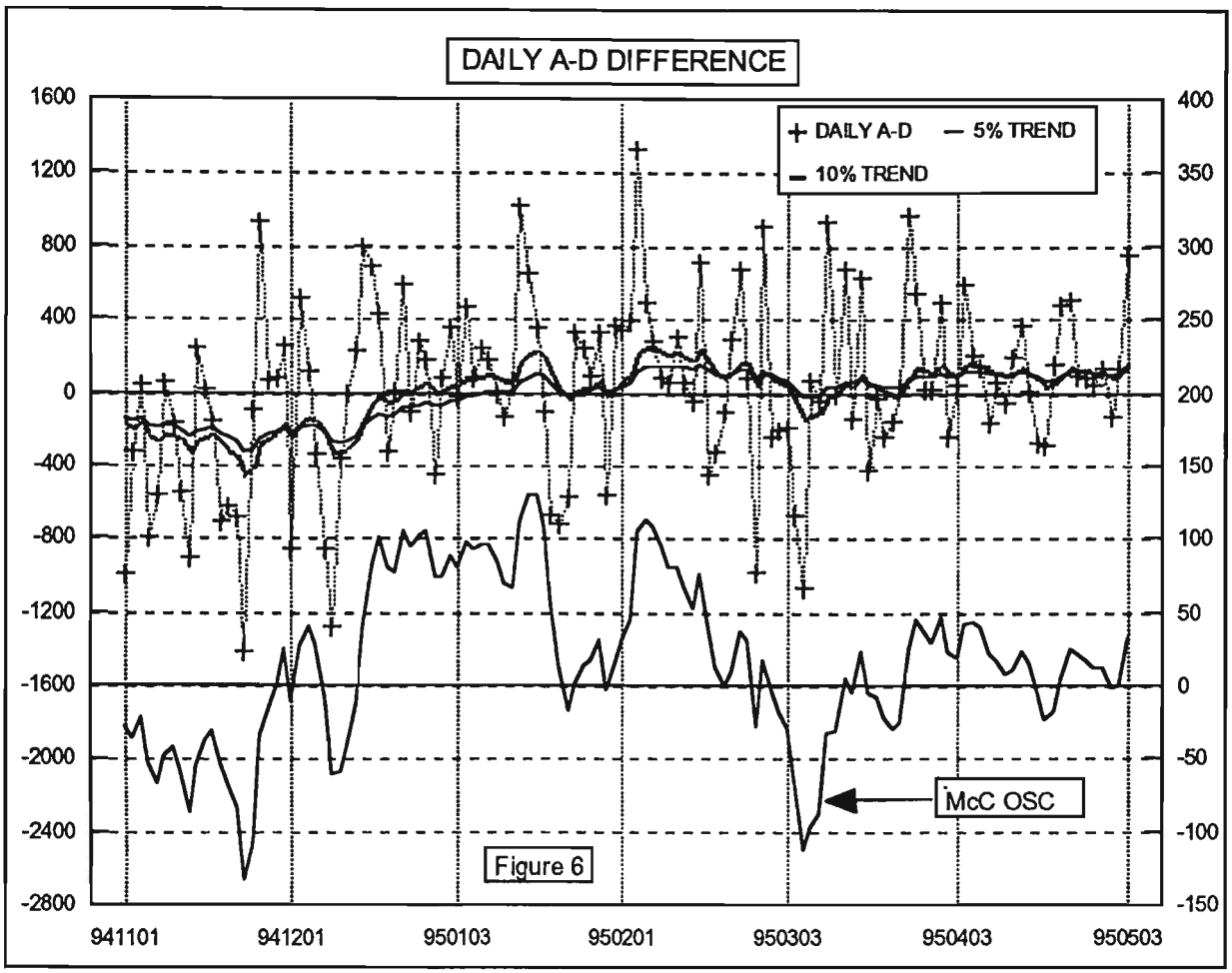


Figure 6 illustrates graphically how the 10% Trend, 5% Trend, and McClellan Oscillator are interrelated. The top part of the chart shows the daily difference between advances and declines, along with the 10% Trend and 5% Trend values. The bottom portion of the chart shows the McClellan Oscillator on a different scale. The McClellan Oscillator can be thought of as the distance between the 10% Trend line and the 5% Trend line. You can see that when the 10% Trend and 5% Trend are moving farther apart, the absolute value of the McClellan Oscillator gets larger. When the Trends move closer together and cross, the absolute value of the McClellan Oscillator gets smaller and goes through the zero line.

OSCILLATORS

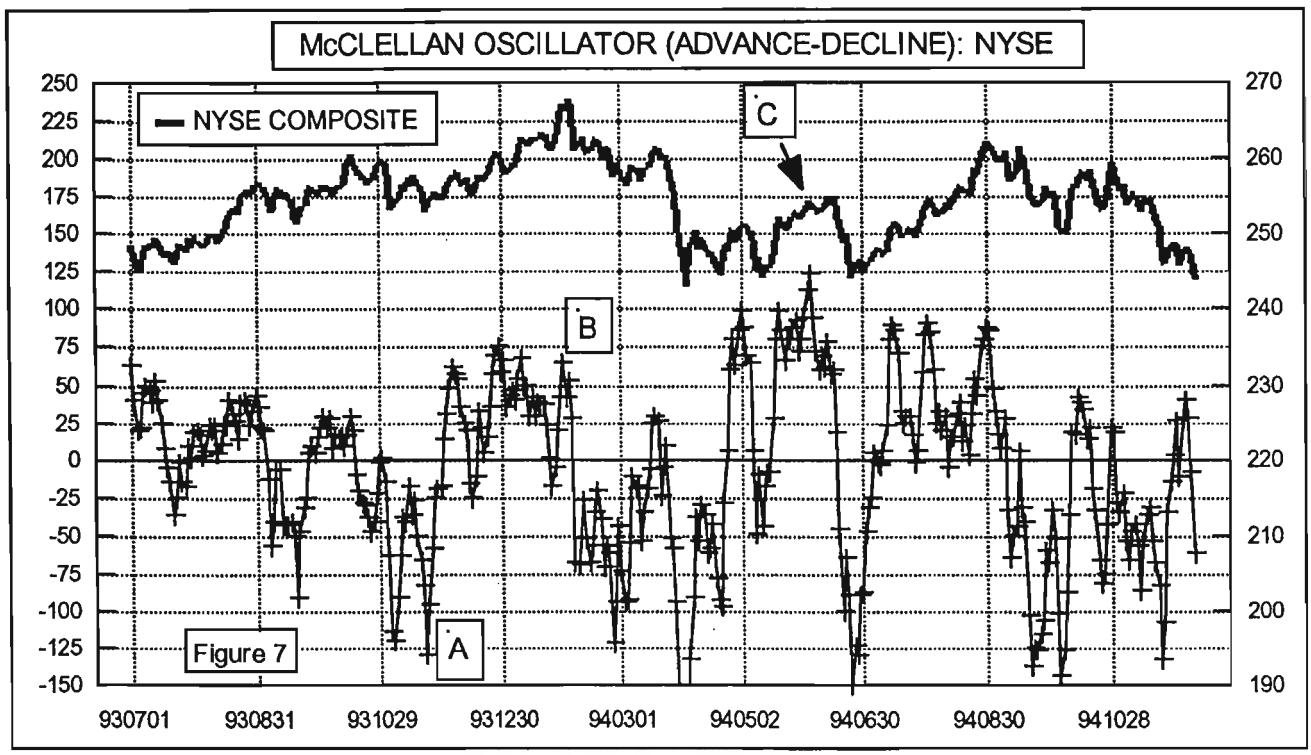
Oscillators are a class of technical indicators which share some common characteristics. They are all neutral at some value, which is to say that if the data stayed exactly the same for a long enough period, the oscillator would eventually move to and stay at an unchanging value. An Oscillator can also be useful for signaling overbuying or overselling conditions (see definition below) in terms of the its deviation away from the neutral level. MACD, RSI, Stochastics, and Momentum indices are all types of Oscillators.

The McClellan Oscillator exhibits all of these standard characteristics of an oscillator. It is neutral at the zero level. When it is above zero, it is giving a generally positive indication regarding the market. Crossing down through the zero line changes the outlook, in very general terms, to negative for the market. As with any indicator, there are exceptions to these general rules and experience helps an analyst understand the exceptions better.

Overbuying happens when significantly more enthusiasm exists for buying than for selling, pushing prices up at a rate that is not sustainable for very long. The market becomes overbought when enthusiasm has been exhausted.

When the McClellan Oscillator goes beyond approximately the +/- 80 level, overbuying or overselling has occurred. This does not mean that the market must reverse immediately, but does give an analyst some insight into the power of the move and the likelihood of a continuation of the move.

When the McClellan Oscillator reaches extreme levels beyond approximately +/- 125, it is

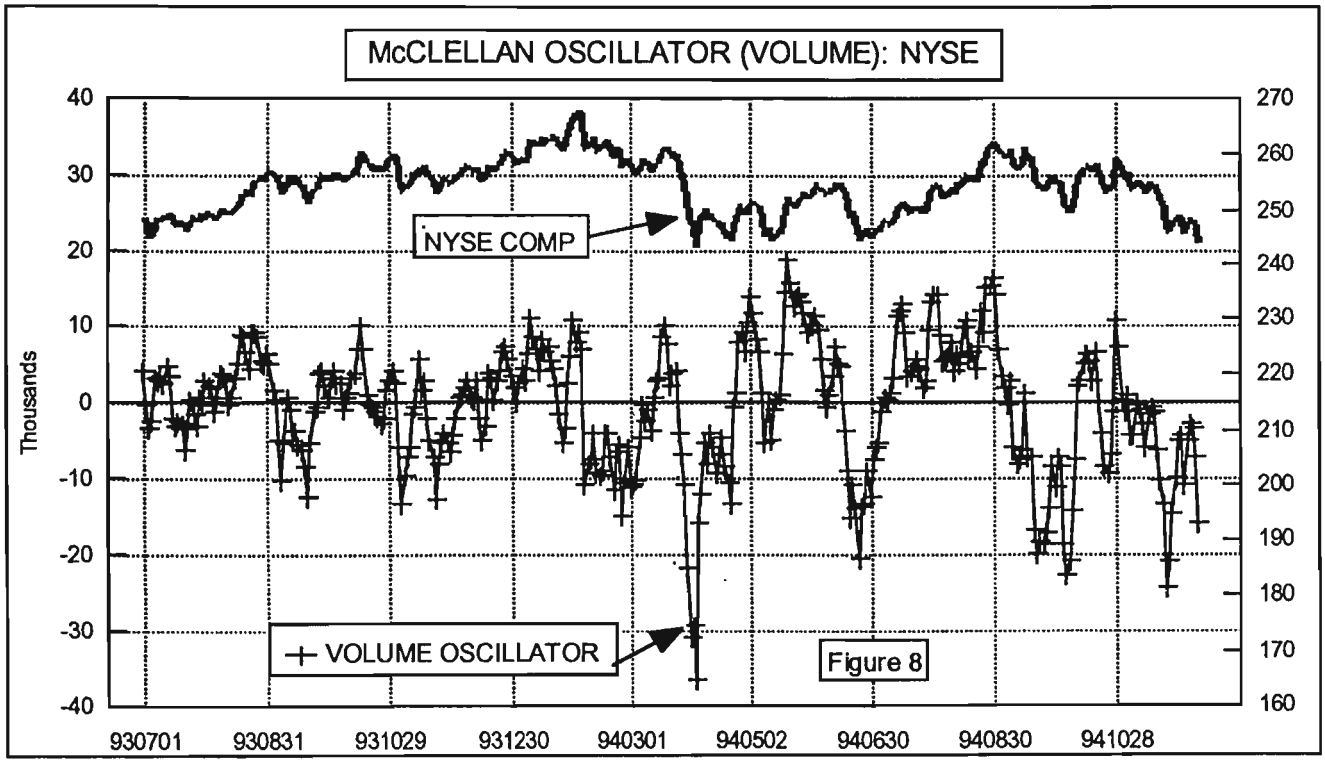


indicative of illiquidity in terms of an important supply-demand imbalance of consequence. A -125 or lower reading means that sellers can only find buyers by lowering the offering price. A +125 or higher reading means that buyers are having trouble finding stock to exchange for their cash. Conditions of illiquidity, as demonstrated by extreme McClellan Oscillator readings, usually continue or become greater in the direction indicated by that extreme reading for several more weeks before the market reverses. It can also be a shot across the bow, warning of future severe illiquidity at the end of the next intermediate term market move. This happened in 1993 as shown in Figure 7. Point A marks an

Oscillator low when for the first time in 2 years the McClellan Oscillator went below -125. Although the market did go higher afterwards, this extremely low reading gave an advance warning of the big selloffs that ultimately came in February through April 1994.

Like other oscillators, the McClellan Oscillator also gives important signals when it diverges from the direction of the market. Figure 7 shows that at point B, the market was making a higher high while the McClellan Oscillator was making a lower high. This divergence gave a warning of the down move that followed. Conversely, when the market makes higher highs while the McClellan Oscillator also makes higher highs (such as at point C), it suggests that the move is not yet complete.

The calculation method for the McClellan A-D Oscillator can also be applied to other indicators. If you substitute Up-Down Volume for Advances-Declines, you can calculate another useful oscillator we call the McClellan Volume Oscillator. Figure 8 shows that the McClellan Volume Oscillator behaves in a manner similar to the McClellan A-D Oscillator. We find it useful to compare the two indicators, since the volume sometimes tells a different story. Frequently, the McClellan Volume Oscillator will give an earlier indication of trend reversal than that given by the McClellan A-D Oscillator, especially when going from negative to positive.



We also use the McClellan Oscillator calculation method for stock and index *prices* which we will cover below.

SUMMATION INDEX

The McClellan Summation Index is calculated as the sum total of all previous McClellan Oscillator values, plus a starting constant to establish the Index's neutral value. If the McClellan Oscillator level for today was +50, then the Summation Index reading would increase by +50 points today. A Summation Index can be calculated for a Volume Oscillator as well as the more commonly referenced A-D Oscillator. We have done extensive research on the McClellan A-D Summation Index and have found this indicator to be tremendously useful for interpreting the probable future direction of the market.

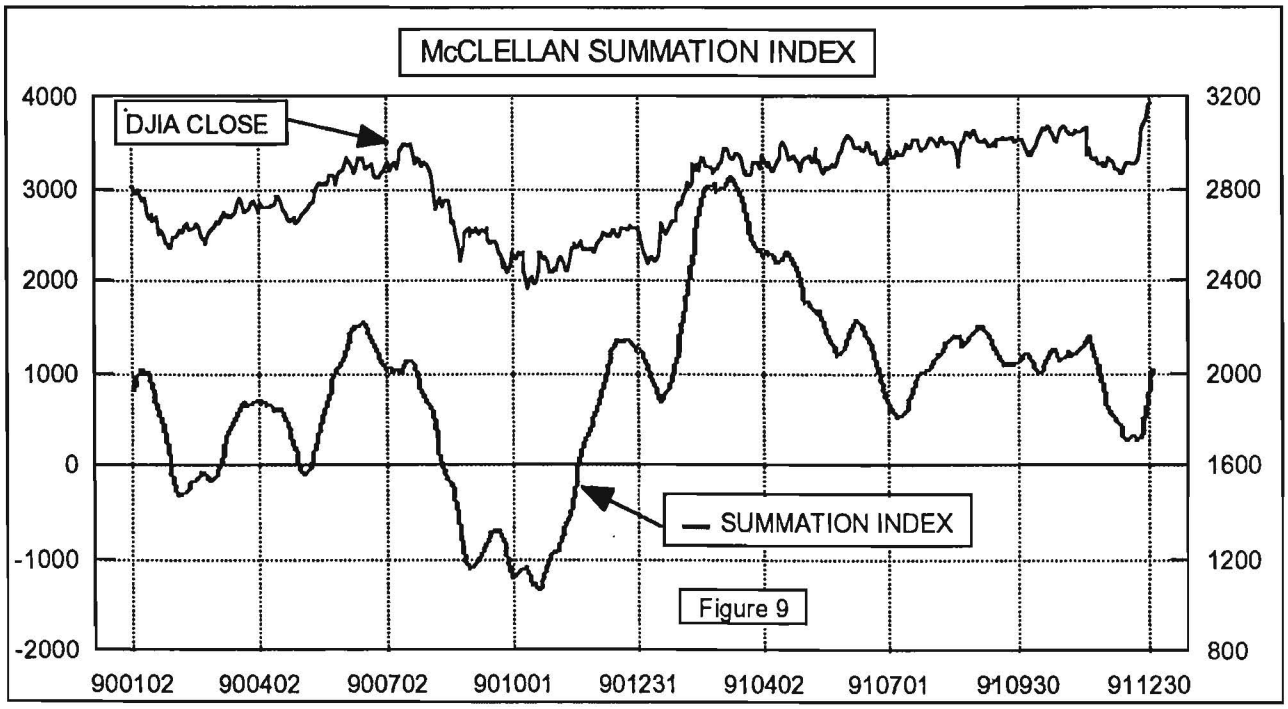


Figure 9 shows the McClellan A-D Summation Index compared to the Dow Jones Industrial Average (DJIA). The Summation Index moves more slowly than the Oscillator and is useful for gauging the intermediate term trend of the market. This companion tool of the McClellan Oscillator moves in synchrony with the general trend of the market, so knowing which direction the Summation Index is moving gives useful information about the intermediate term direction of the market. The real utility in it comes from watching its behavior when it approaches extended values away from its neutral level at +1000.

Sherman and Marian noticed in their early work that most of the time the Summation Index had a total amplitude of just over 2000 points from tops to bottoms. When it exceeded that normal range of values, something significant was going on in the market. They decided to set the neutral level of the Summation Index at +1000. This way, Summation Index values more than slightly below 0 would be a rare and meaningful occurrence. When the Summation Index went significantly below 0 or above +2000, they knew that it was in extended territory outside its normal range. We have kept

this convention over the years so as not to confuse users regarding different interpretations of specific values.

Several people have asked us over the years how there can be a neutral value in anyone's Summation Index calculations, and wouldn't two different start dates result in different Summation Index levels? These are important questions which deserve further explanation.

If the daily A-D were equal to zero for several days or weeks, the McClellan Oscillator would eventually move to zero, resulting in no change in the Summation Index. The level at which the Summation Index would settle (in this extremely hypothetical situation) is its neutral value.

If you start your calculations of the 10% Trend and 5% Trend without taking starting numbers from a properly calibrated series, you will not have correct Trend Values for several days while the Trend Values move to the correct value. After about 35 to 40 trading days, the 10% Trend and 5% Trend should be approximately equal to the values from a longer running set of calculations. This is because the nature of these EMAs is to give ever decreasing importance to older data, so that the values of the earlier advances and declines before the calculations started will become insignificant compared to recent values. While the 10% Trend and 5% Trend will correct themselves, the Summation Index values would be skewed by the early uncalibrated 10% Trend and 5% Trend values.

If you instead start your calculations of the 10% Trend and 5% Trend with initial values of zero, and start the Summation Index calculation with an initial value of +1000, then as the 10% Trend and 5% Trend move to their appropriate values over the first few weeks, the Summation Index will also normalize during the same period of time. In this way, any two people starting calculations at any two points in time should ultimately arrive at approximately the same Summation Index values once their 10% Trend and 5% Trend calculations have matured.

Problems can arise in calculations of the Summation Index when mathematical errors are made and not corrected. Because the Summation Index value contains the sum total of all previous oscillator values, any errors in calculation of the McClellan Oscillator will accumulate in the Summation Index number. This is one reason why different Summation Index numbers are reported by different sources.

One possible source of mathematical errors is from rounding off the 10% Trend, 5% Trend, and McClellan Oscillator values to whole numbers or to only a few decimal places. We now do our calculations using a computer spreadsheet program which calculates data to the 18th significant figure. This minimizes any rounding errors which might throw off the data, and assures that there are no errors in calculation.

One way to check to see if a Summation Index value is off is to utilize a calibration formula developed by mathematician Jim Miekka:

$$\text{Summation Index} = K - (9 \times 10\%T) + (19 \times 5\%T)$$

For the A-D Summation Index, our assigned neutral level is +1000, therefore in the formula above, K = +1000. For the Volume Summation Index, K = 0.

Another source of possible differences in Summation Index values results from using data from different sources. The values for advances and declines in most newspapers usually agree or are very close. Different McClellan Oscillator values will result if preliminary numbers are used for these calculations. The numbers for advances and declines reported right at the close of the market are nearly always adjusted later for late settlements and other transactions, so we prefer to use the later numbers. Although we may use any available source for preliminary calculations, for our final calculations we use data from *BARRON'S*, the Dow Jones Business and Financial Weekly. For daily calculations done between issues of *BARRON'S*, we use data from other sources. If there are any small differences in the data, they are usually not significant enough to result in a different reading of the market's condition and the preliminary McClellan Oscillator values are good enough to use in the mean time.

In every issue of *The McClellan Market Report*, we list the data for advances and declines, 10% Trend, 5% Trend, McClellan Oscillator, and Summation Index. We use the best data available and check the Summation Index reading to ensure it is properly calibrated. In this way, we endeavor to present to you the most accurately calculated values possible. The same holds true for the calculation table of the Volume Oscillator and Summation Index. The latest week's calculations are done without the benefit of the *BARRON'S* numbers, so minor variations in Oscillator and Summation Index values may be noted from issue to issue as *BARRON'S* data is entered to upgrade prior data.

SUMMATION INDEX INTERPRETATION

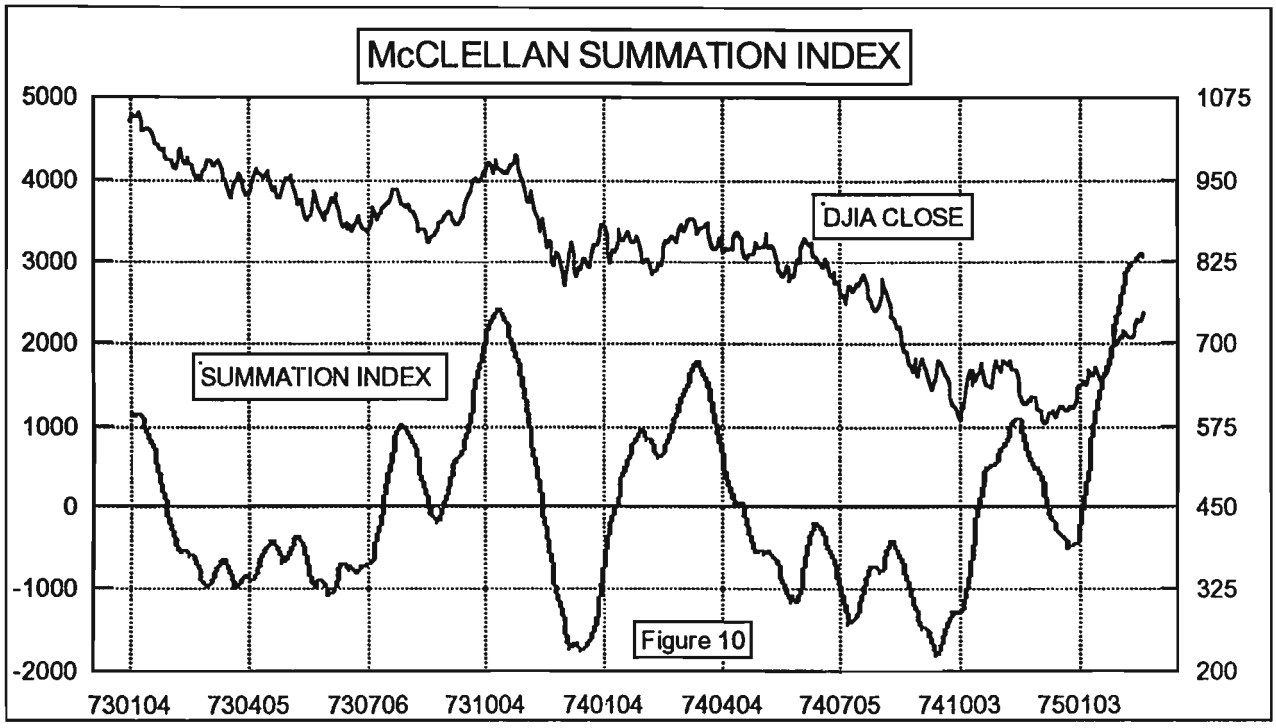
The book *Patterns For Profit*, written by Sherman and Marian McClellan in 1970 and updated in 1989, outlines the important rules for interpreting McClellan Oscillator and Summation Index patterns and behavior. Readers are urged to read the book themselves to gain a better basis for understanding these indicators. Copies may be ordered from McClellan Financial Publications, P.O. Box 39779, Lakewood, WA, 98496-3779. We will not repeat all of the rules for interpretation here as they are listed in *Patterns For Profit*, but it is useful to highlight a couple of the more important rules.

The stock market has a major bear-bull-bear cycle lasting approximately 4 years. The typical pattern is for the stock market to make higher price highs as it reaches the end of the mature bull market while the Summation Index reaches one or more lower highs. As the market heads into a bear market decline, the McClellan Oscillator will go below zero showing the trend to be down, and this will cause the Summation Index reading to move lower.

In a bear market, The Summation Index typically goes down through 0 in conjunction with the market breaking down through some previous price support level. Bear markets are also usually characterized by the Summation Index accelerating downward as it passes down through zero. These two characteristics are very important to watch for as the Summation Index goes down toward the

zero line. Without them, there is greater likelihood that the decline will not progress into a full-scale bear market.

The completion of a bear market move is signaled by the Summation Index reaching a level well below -1000 and turning up. Failure of the market to get the Summation Index down to that extreme level would indicate that the market has not established enough liquidity in supply of dollars verses stock market price levels to begin a new bull market advance. This was evident in the 1973 bear market when the Summation Index stayed between 0 and -1000 from February to July 1973 and the bear market was long and grinding (see Figure 10).



Once the Summation Index turns up from a reading well below -1000, the bear market move would be considered complete unless proven otherwise. To prove otherwise, the Summation Index would turn down again and possibly go below its previous low reading. Unless that happens, the expectation is that the market would move sideways or up. Once again, we look to the Summation Index to give an indication of which way the market will continue.

A new bull market is considered to be confirmed when the Summation Index rises from a reading well below -1000 to above +2000, usually within a period of about 22-24 weeks. Failure to go above +2000 within that time period indicates continued illiquidity and weakness in the market and a probable retest of the bear market price lows.

Figure 10 contains in one chart many of the important lessons about using the Summation Index levels and chart patterns to understand the bull-bear structure. Early 1973 saw the Summation Index failing to decline to a low enough level to indicate that the bear market could be complete.

While the rally to the October highs carried the Summation Index above +2000, the preceding Summation Index lows were not low enough and the duration of the advance to above +2000 was only 3 months. The normal duration is 5 to 6 months for the beginning of a bull market. The rally to the October highs failed, and the Summation Index broke down through the zero line coincident with the market making new price lows. Following the December 1973 Summation Index bottom, the Summation Index failed to reach +2000, showing that a new bull market was not being established and the memorable 1974 bear market ensued. After its September 1974 bottom, the Summation Index did finally move above +2000, in a normal time frame, and a new bull market was started which lasted until 1978.

Measuring the start of a bull market by using the Summation Index can also tell us about how far up the market should ultimately go. An important rule of thumb is that about one half of the price move for a new bull market occurs during the time that the Summation Index takes to reach its initial top at +2000 or above. In figure 11, the market bottomed in October 1990 with a low close of 2365.10 on the DJIA. At the same time, the Summation Index bottomed at point A at a level of -1333. At point B, the Summation Index topped out at +3130 with the DJIA topping out at 2973.27 (closing basis). This 608 point DJIA move projected the ultimate DJIA high to be approximately 600 points higher, for an objective of around 3570. The actual top came in January 1994 at 3978, exceeding the objective by 400 points. The expectation to exceed the objective can be inferred by the greater strength of the Summation Index move from A to B, going all the way to above +3000 instead of stopping at just above +2000.

Comparing figures 11 and 12 helps to demonstrate the lesson about confirmation of the new bull market. Figure 11 shows a typical example of the confirmation of a new bull market, as we have discussed. Figure 12 shows a good example of a failure to initiate a new bull market. In April 1994, the Summation Index declined to a level nearly identical to the 1990 bottom, but then failed to get the

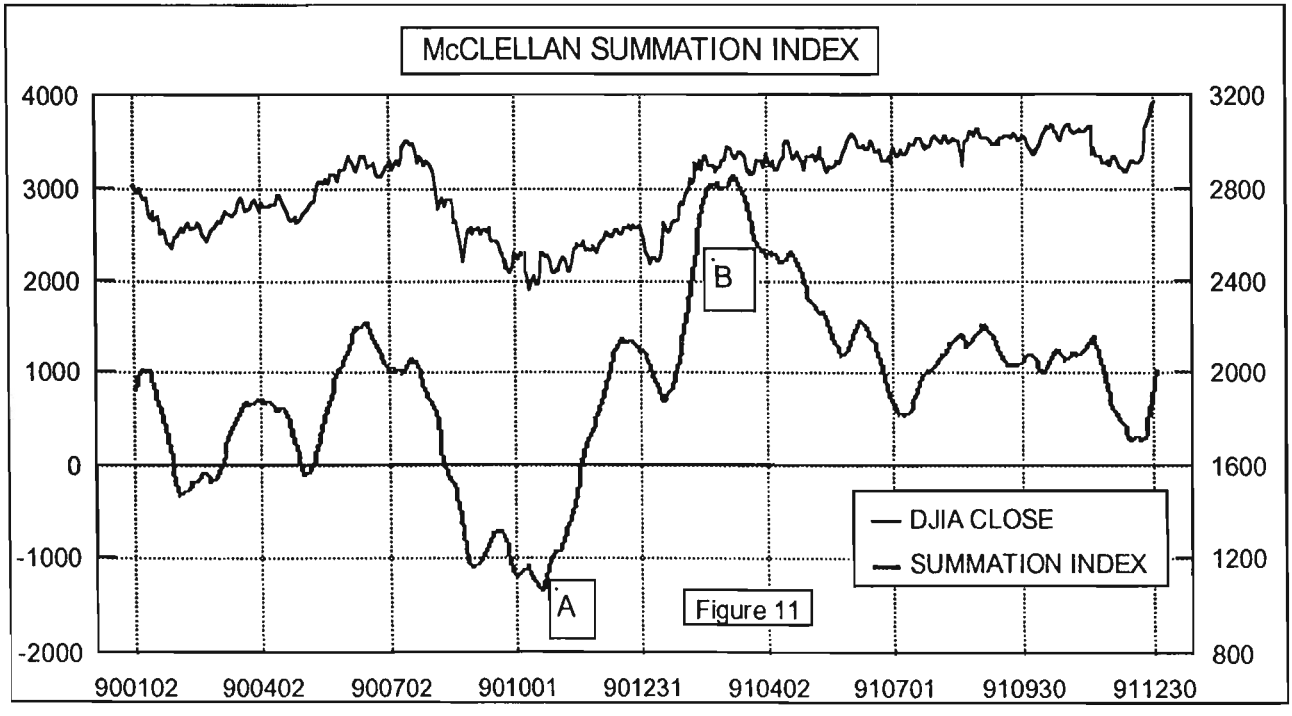
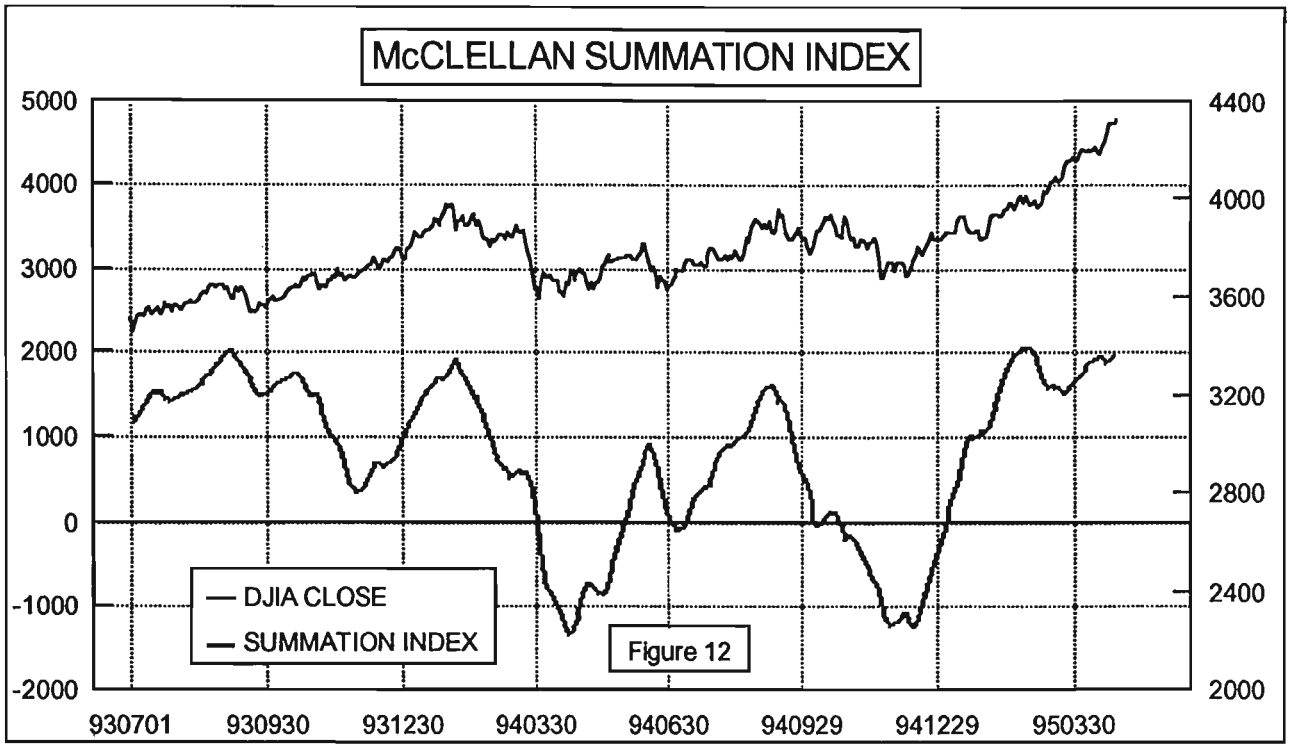


Figure 11



Summation Index up to +2000 by September and the market declined into the December 1994 lows, from which a move to above +2000 did occur.

In looking at the historic examples of times when the Summation Index rose to above +2000 to confirm a new bull market, the minimum duration of the up move was 13 months measured from the Summation Index bottom. The longest was 37 months. Even though much of the work of the initial up move is done by the time the Summation Index reaches +2000, remember that this should be accomplished only 5 months from the bear market bottom, so knowing at that point that the coming bull market highs should be at least 8 months into the future should provide some comfort to investors.

Going back to the discussion of calibrated values for the Summation Index, it should now be clear why calibration is so important. In September 1994, the Summation Index reached a value of +1628.7 before rolling over and heading down as the market went to retest the April price lows. If someone had been tracking the Summation Index with numbers that were off by 400 or more points, then that person could make an improper conclusion regarding the future of the market, thinking that a new bull market had been confirmed when it had not. When you hear a Summation Index level being reported, remember to consider this calibration issue. Computerized technical analysis programs which calculate a Summation Index but do not provide proper calibration or permit manual entry of a proper initial value are the source of some of the calibration problems.

The level of the Summation Index also impacts the interpretation of Oscillator readings. When market prices move up strongly for a sustained period with positive McClellan Oscillator values, the Summation Index will get to a level well above +1000. The highest the Summation Index has ever gone is +3604 in 1976. The lowest was -2247 in 1970. Both of these extreme readings had longer

term implications for market direction. When the Summation Index stops rising at a level well above +1000 as the McClellan Oscillator goes back down to 0, the Oscillator is merely going back to a neutral reading in terms of what the market has been doing lately (which is going up). Long-running bull markets will show periods when stock prices will continue higher even as the McClellan Oscillator is below zero because the market is rising at a slower rate than the rate at which it had been rising in the early stage of the advance. So it is not enough to only watch the McClellan Oscillator when timing the market; also look at the values for the 10% and 5% Trends and pay attention to the level of the Summation Index.

INTEREST RATE INDICATORS

In a nuclear reactor, the control rods serve to limit the activity of the nuclear reaction, thus keeping the reaction going at a sustained rate without allowing a meltdown. Without the control rods, the excess reaction activity would cause the rate of the reaction to increase uncontrollably. If the control rods are inserted too far into the reaction chamber, they absorb too much energy and can snuff out the reaction. We find this analogy to be particularly appropriate in describing interest rates and their influence on the economy. The U.S. Treasury and the Federal Reserve Board attempt to use bank reserve requirements and short-term interest rates to act as the "control rods" for the U.S. economy.

We pay attention to the interest rate instruments as they are traded each day because of their usually good correlation to stock market activity. The McClellan Summation Index shows correlation with the movements of the stock and bond markets and an inverse correlation to interest rates. Figure

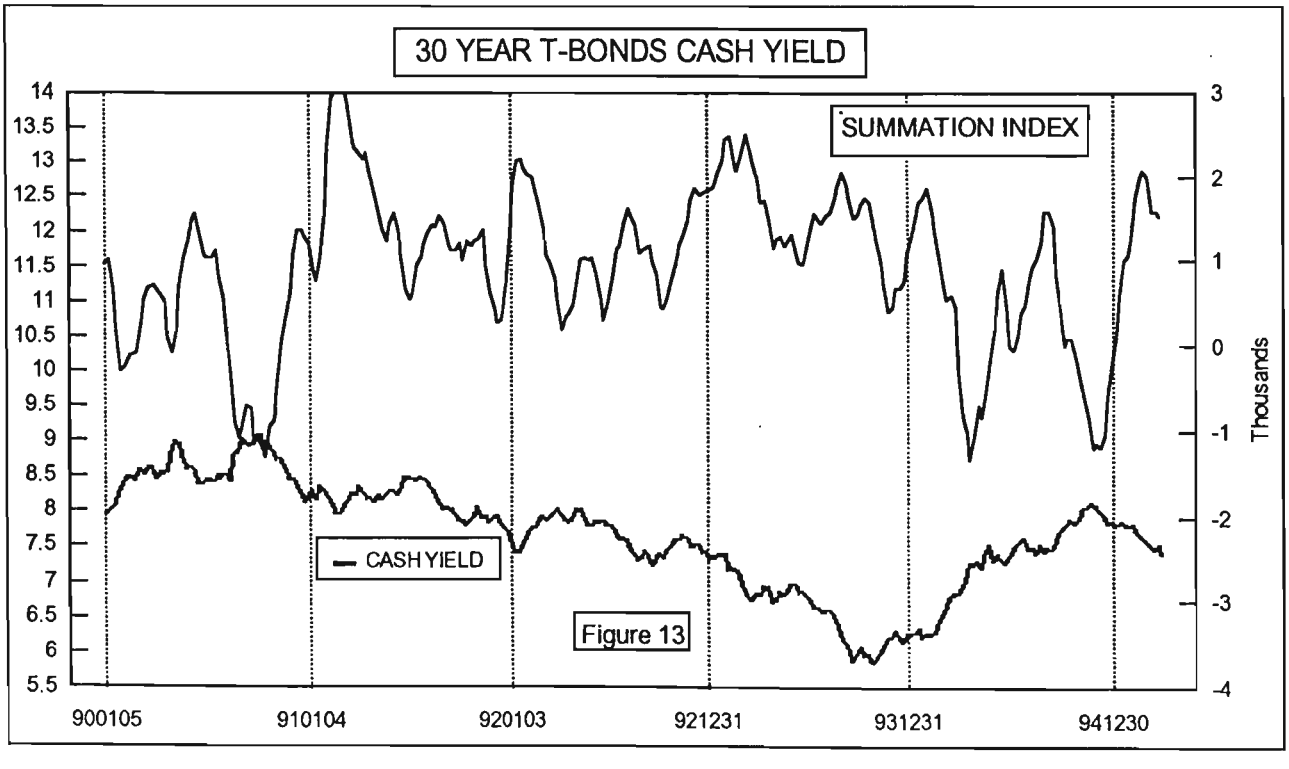


Figure 13

13 depicts the McClellan Summation Index portrayed against the weekly cash *yield* on **30-year Treasury Bonds**. Remember that as bond prices go up, yields go down. The two lines on the chart are nearly always moving in opposition, showing that interest rate watchers would do well to pay attention to the behavior of the McClellan Summation Index.

We pay great attention to T-Bonds. These are long term (>20 years) debt instruments of the U.S. Government. T-Bond prices are greatly influenced by inflation factors, more so than T-Bills or Euro$. Their yield competes against stocks for investment dollars. A downtrend in bond prices raises interest rates, stealing liquidity from the stock market, making it difficult for stocks to attract additional capital to support prices or raise prices from their current level.

Treasury Bills (T-Bills) are short-term obligations of the U.S. Government and are the standard measure of short-term interest rates. Because T-Bills also compete against other instruments for the investment dollar, government regulatory actions affecting T-Bills also affect other financial markets. The Federal Reserve buys or sells T-Bills to add or subtract bank reserves, thereby influencing financial market liquidity.

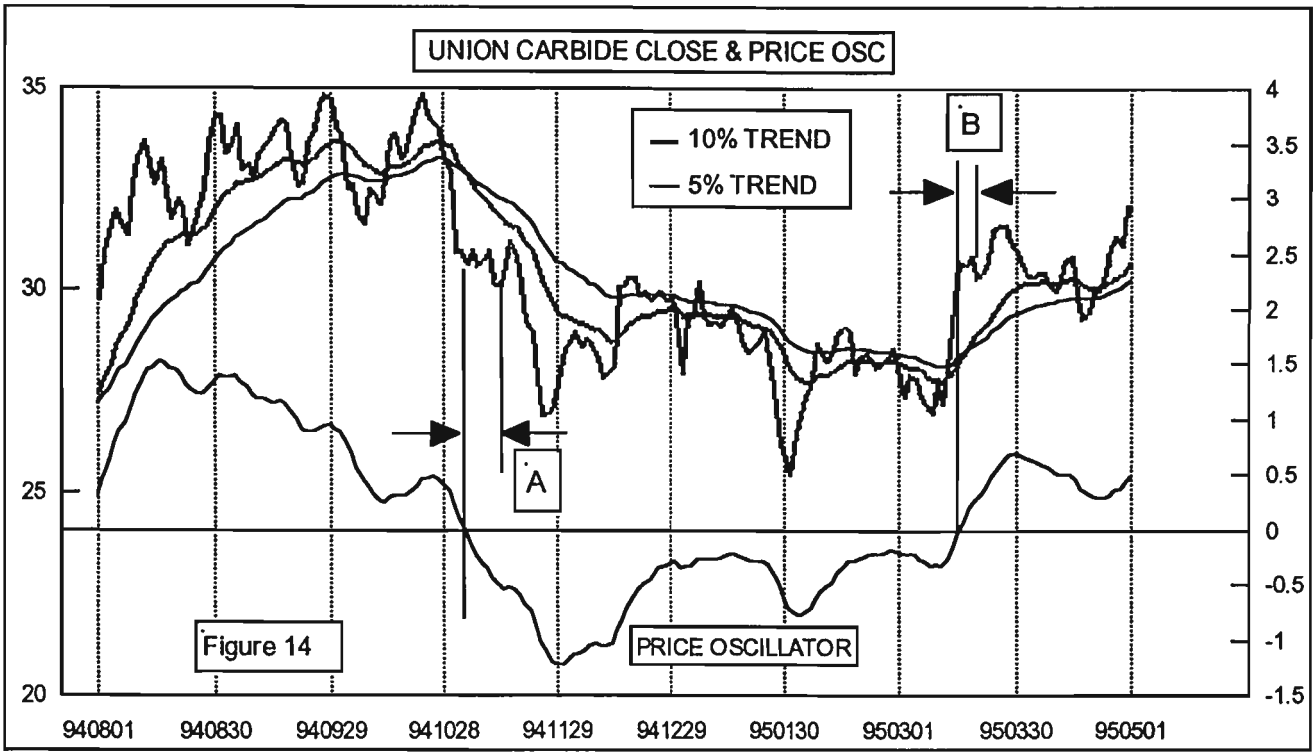
Eurodollars (Euro$) are dollar-denominated debt instruments originated by foreign entities. They are subject to the same influences as T-Bills plus perceived or actual international financial disturbances. They are another competitor for the investment dollar on a worldwide scale. There is almost 10 times as much open interest on Euro$ futures as on T-Bill futures.

From time to time, the Federal Reserve Board (the Fed) will act through its Open Market Committee (FOMC) to increase or decrease liquidity to financial markets. The FOMC does this by buying or selling T-Bills and repurchase agreements. The Fed also affects liquidity by changing the required reserve levels on bank deposits. This increases or decreases the amount of lending which a bank is able to do with its current customer deposits.

The Fed's changes will first affect T-Bills and Eurodollars but impact can spread almost instantaneously to other markets. Fed activity can abruptly disrupt or perturb the normal rhythm of the market. Therefore, we are constantly on the alert for the Federal Reserve Board and Open Market Committee actions that affect interest rates.

PRICE OSCILLATORS

Over the years, we have applied the calculation method for the McClellan Oscillator to other market data. A **Price Oscillator** is the difference between the 10% Trend and the 5% Trend of the price. Figure 14 shows some price history for Union Carbide along with the faster 10% Trend and slower 5% Trend lines. At the bottom of the chart, the McClellan Price Oscillator is displayed. The chart clearly shows that while the Price Oscillator is moving up, the general movement of the prices is also up. Likewise when the Price Oscillator rolls over and heads down, the price movement reverses as well. Because the Price Oscillator is calculated using the closing price as opposed to the daily change in price, it behaves more like a Summation Index pattern; the direction of movement is more important than the absolute value.



The formula for calculating a McClellan Price Oscillator level is as follows:

$$\text{Price Oscillator} = 10\%T_{PRICE} - 5\%T_{PRICE}$$

where,

$$10\%T_{TODAY} = 0.1x\ PRICE_{TODAY} + 0.9 \times 10\%T_{YESTERDAY}$$

and,

$$5\%T_{TODAY} = 0.05x\ PRICE_{TODAY} + 0.95 \times 5\%T_{YESTERDAY}$$

Remember, as we stated above, that a new calculation of a Price Oscillator should start with initial values for the 10% Trend and 5% Trend equal to the initial day's closing price. Advanced users may wish to keep a McClellan Summation Index of a stock's or index's Price Oscillator. The proper initial starting value for this type of indicator is 10 times the initial closing price. The user can then utilize the Price Summation Index level divided by 10 as a longer term support resistance line.

Price Oscillators are neutral at 0, so that level does have some importance in analyzing this indicator. A Price Oscillator which is positive and falling would generally not be considered to be as bearish as one which is negative and falling. The Union Carbide chart shows that the Price Oscillator reached the zero line at the same time that prices reached a previous support level. Concurrent breaking of the Price Oscillator zero line and the previous level of price support led to the 4½ point decline in late November 1994. Interestingly, when a Price Oscillator passes up or down through the zero line, there is some tendency for the trend of prices to pause for a few days before continuing, as Union Carbide did in both November 1994 (going down, point A) and March 1995 (going up, point B).

The amplitudes seen in Price Oscillators correspond to both the volatility of the issue being studied and to the actual price. Since both of these factors vary from stock to stock, or from index to index, there is no meaningful comparison to be made regarding the specific Price Oscillator levels of two different items. It is very useful, however, to compare extremes of amplitude within the price history of a single issue.

Like other types of oscillators, McClellan Price Oscillators give good signals when they show divergent structures, i.e. a higher price high with a lower Price Oscillator high. One interesting feature of McClellan Price Oscillators regards the smoothness of a move. If a Price Oscillator is shown to be making a bumpy, jerky move, this portends weakness in the direction of that move. A strong, smooth structure, on the other hand, shows underlying strength in the direction of that move.

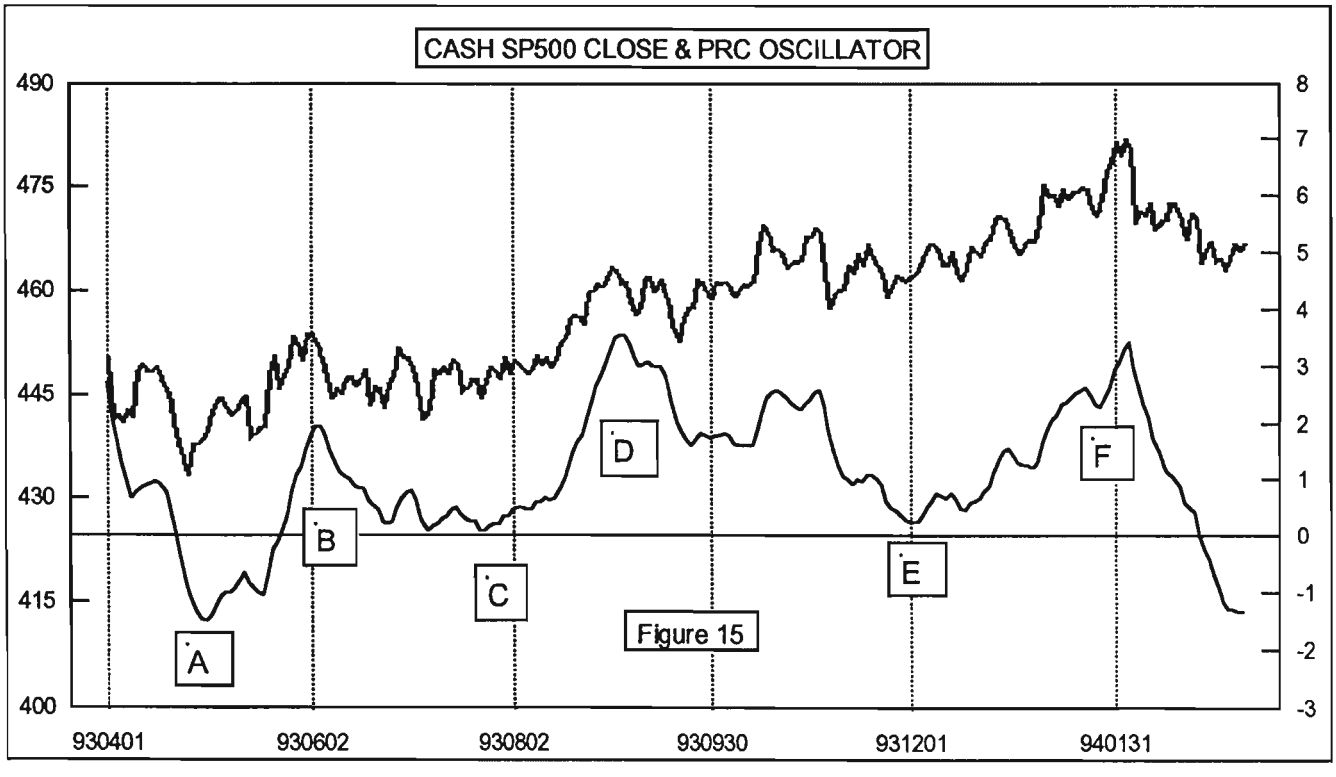


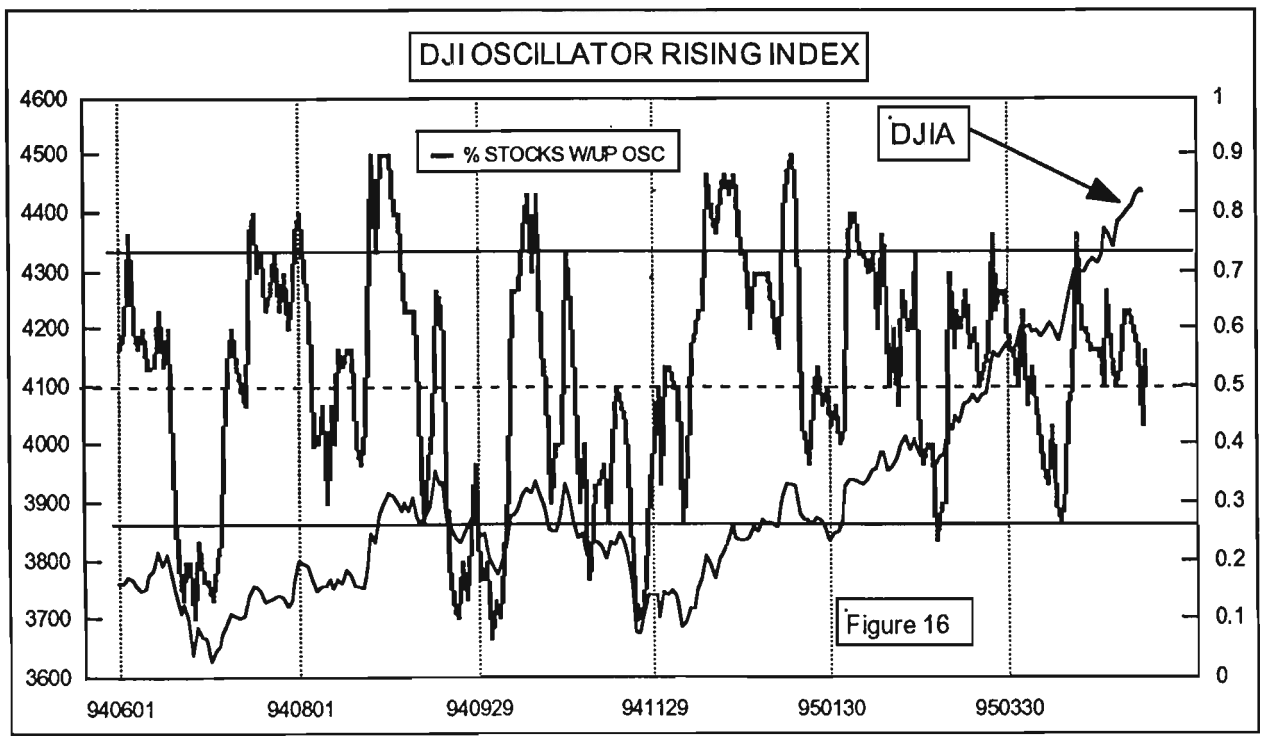
Figure 15 illustrates this. From point A to point B, the SP500's Price Oscillator made a relatively smooth move. From B down to C, the Price Oscillator made a bumpy decline as prices consolidated sideways. This smooth-up, bumpy-down action is characteristic of strength in the upward direction. This strength indication continued as the Price Oscillator moved up smoothly from C to D, then made a bumpy decline down to E. In interpreting this behavior up to point E, one would conclude that the SP500 had not finished its up move, because the Price Oscillator was still showing smooth-up, bumpy-down. This was borne out as the SP500 went still higher on its way to a February 1994 top. During this up move, shown from E to F, the Price Oscillator made a bumpy rise indicating that the strength to the upside was leaving the market. This was confirmed as the Price Oscillator made a smooth decline off its high at F, showing that the strength was in the downward direction.

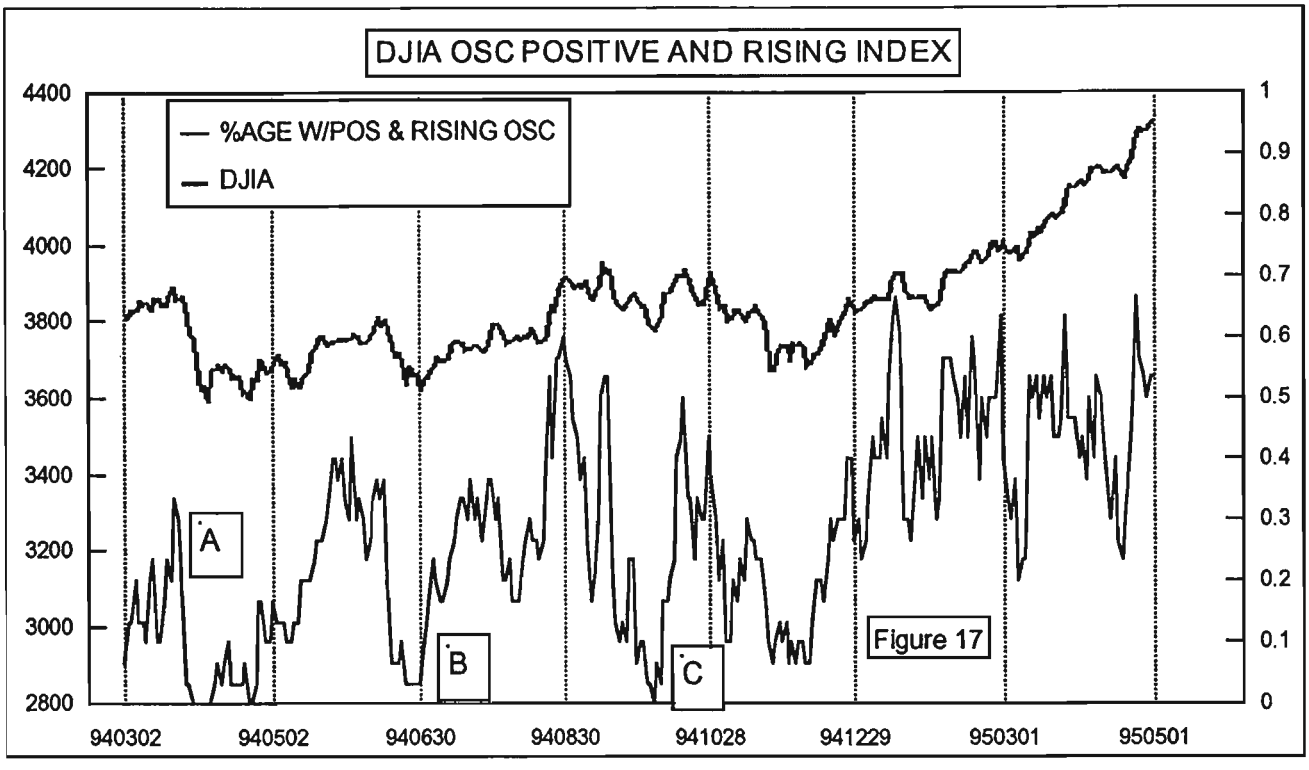
A NEW PRICE OSCILLATOR APPLICATION

Several analysts have developed technical analysis tools which measure the relationships of a collection of stocks with respect to some technical indicator. An example would be to cite the percentage of stocks in the New York Stock Exchange that are above their 200-day moving averages. We have created a new collection of indicators which examine the Price Oscillators of several stocks. How many are positive and negative, and whether they are rising or falling on a particular day, can yield important market information.

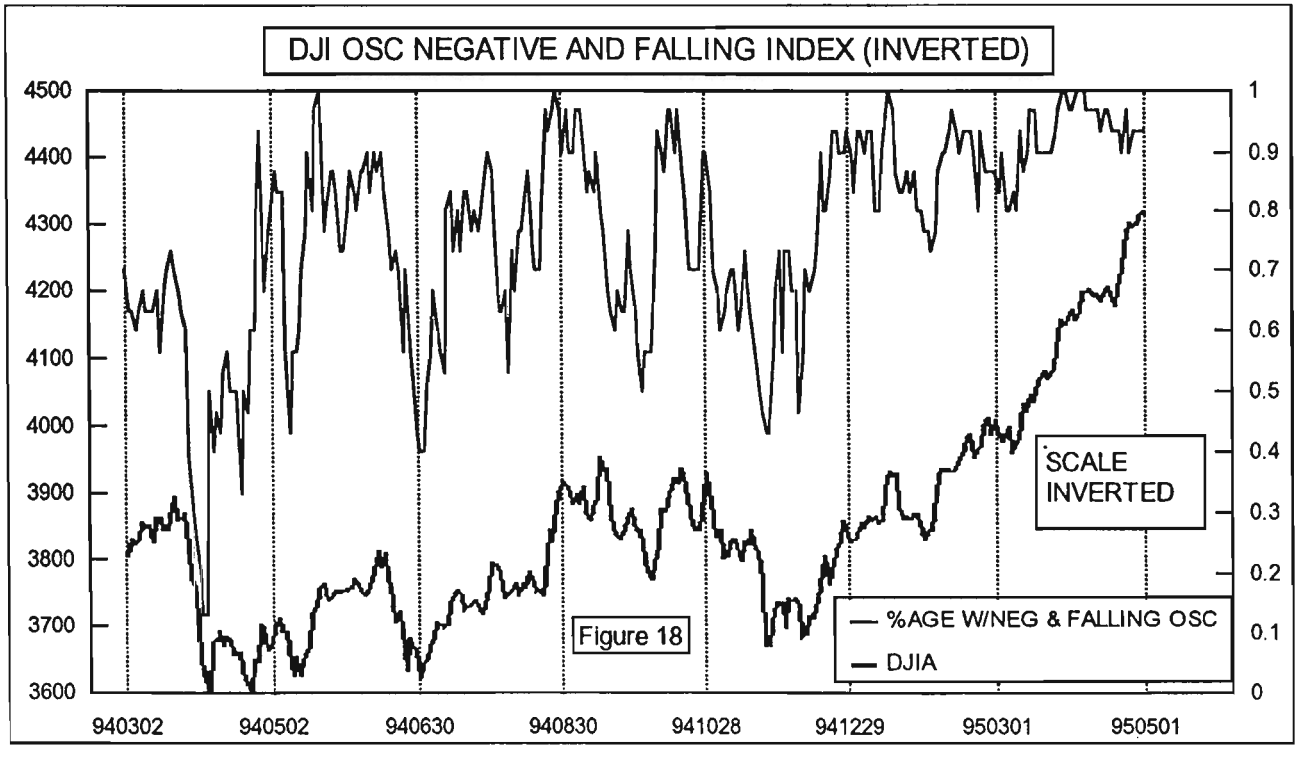
Using the 30 stocks which make up the Dow Jones Industrial Average, we looked at what percentage of stocks have rising Price Oscillators. We came up with an indicator we call the DJI Oscillator Rising Index. It is a computationally intensive indicator to set up, since it involves tracking the closing price of each of 30 stocks then calculating the 10% Trend, 5% Trend, and Price Oscillator, then determining if the Price Oscillator is higher or lower than its previous value. Once it is set up in a computer spreadsheet, it takes almost no time for the computer to calculate and we have found the resulting indicator to be extremely useful for indications of market opportunity or risk.

Figure 16 shows the DJI Oscillator Rising Index along with the Dow Jones Industrial Average. Since it measures the percentage of stocks with rising Price Oscillators, the indicator ranges in value from 0 to 1.0 (0% to 100%). Our research into this indicator showed that the indicator reaches a very low level at intermediate bottoms and a very high level at intermediate tops. It is interesting to consider why this is so. At extreme indicator readings, near 0% or near 100%, nearly all of the Dow 30 stocks have their Price Oscillators moving in the same direction. It takes a lot of effort for the market to get all 30 DJIA stocks to march in unison. That amount of effort gets quickly used up and the market reverses.





Another way to spin the data is to look at how many of the stocks have their Price Oscillators not only rising but positive as well. Figure 17 shows a plot representing the percentage of the Dow 30 stocks with both positive and rising Price Oscillators. This indicator is very good at picking out



bottoms when it gets close to 0. In the same vein, Figure 18 shows the percentage of the Dow 30 stocks with negative and falling Price Oscillators. The scale has been inverted to move in the same direction as prices, but when few or none of the 30 stocks have a negative and falling Price Oscillator as shown by the indicator reaching the top of this chart, then a reversal downward is expected. Neither index will pick out all of the important tops or bottoms, but the signals that they do give show great correlation to actual past market moves.

ACCUMULATION-DISTRIBUTION OSCILLATOR

Many analysts know the value of examining trading volume to help ascertain the strength of a move. When a stock moves higher on heavy volume and then corrects on lighter volume, the implication is that the trend is up. In an effort to quantify this effect, we applied the McClellan Oscillator calculation method to come up with a new indicator called the **Accumulation-Distribution (Accu-Dis) Oscillator**.

The formula for calculating an Accu-Dis Oscillator level is as follows:

$$\text{ACCU-DIS}_{\text{TODAY}} = (\text{PRICE}_{\text{TODAY}} - \text{PRICE}_{\text{YESTERDAY}}) \times \text{VOLUME}_{\text{TODAY}}$$

and,

$$10\%T_{\text{TODAY}} = 0.1 \times \text{ACCU-DIS}_{\text{TODAY}} + 0.9 \times 10\%T_{\text{YESTERDAY}}$$

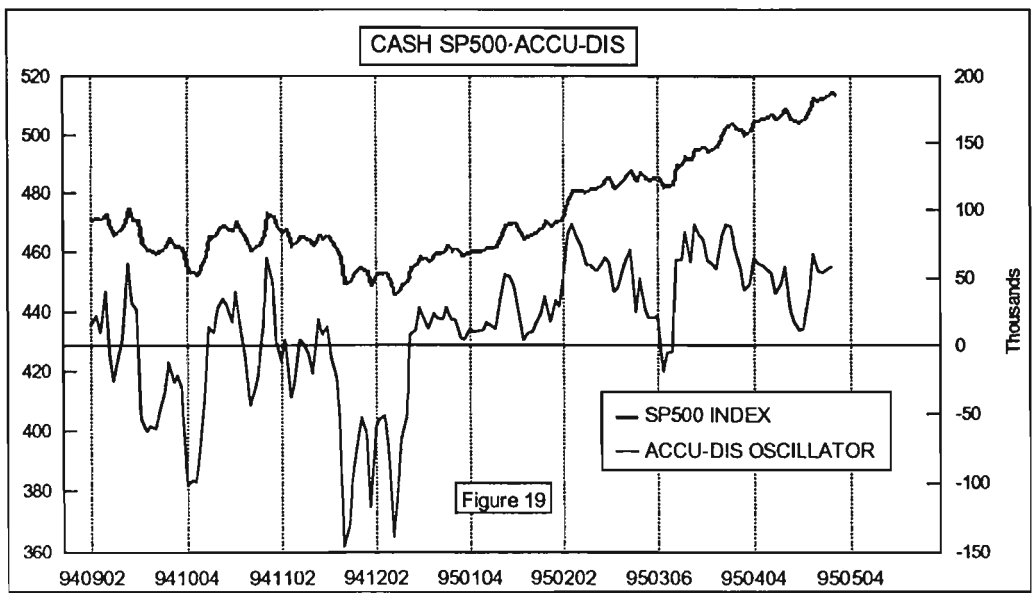
and,

$$5\%T_{\text{TODAY}} = 0.05 \times \text{ACCU-DIS}_{\text{TODAY}} + 0.95 \times 5\%T_{\text{YESTERDAY}}$$

so,

$$\text{ACCU-DIS OSCILLATOR} = 10\%T_{\text{ACCU-DIS}} - 5\%T_{\text{ACCU-DIS}}$$

As Figure 19 shows, the resulting indicator gives a quick thumbnail view of the message that price and volume are saying together about the trend. When the Accu-Dis Oscillator is above the 0 line, the price trend is generally up. When it is below 0, the price trend is generally down. Like most



oscillators, it can give whipsaws across the 0 line. It also portrays divergent structures which can be informative about the market's structure. It is particularly useful on individual stocks. It presents difficulties for use with options and futures where volume numbers change so dramatically as the near-month contract changes from one month to the next. Overall we have found it to be a useful addition to our technical analysis toolbox.

PRESIDENTIAL CYCLE

Our **Presidential Cycle** indicator was developed using techniques employed in a variety of other indicators. **Seasonality** is the study of a market's behavior with respect to a specific day or week of the year, every year, to find if there are historically good or bad days or weeks for a given market. **Cycle analysis** looks at identifying time periods of definable length between succeeding market tops or bottoms. **Overlay analysis** takes similar chart patterns and aligns them to a similar point to compare the results. An example of overlay analysis would be to put the 1929 crash and the 1987 crash on the same chart to check for similarities.

The Presidential Cycle pattern uses techniques from each of these types of analysis to synthesize an average pattern for the stock market over the four years of each presidential term. We had noticed that there was some correlation between these different four year terms and wanted to see what the result would look like if we combined several of them. Figure 20 is a typical example of how the market correlates in real time to this "average" pattern.

Using data for the SP500 going back to 1928, we mathematically overlaid the daily change in the SP500 over each four year period. We used November 1st (near the election) as the provisional

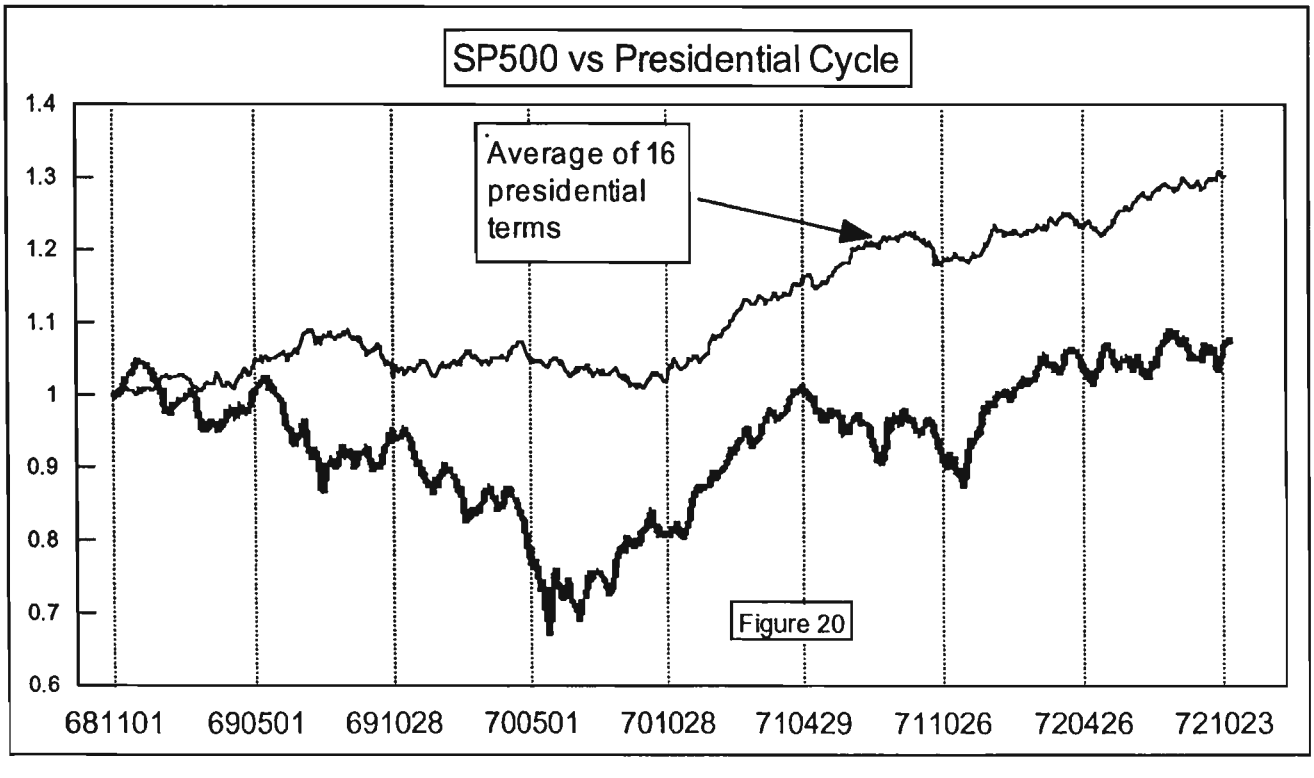
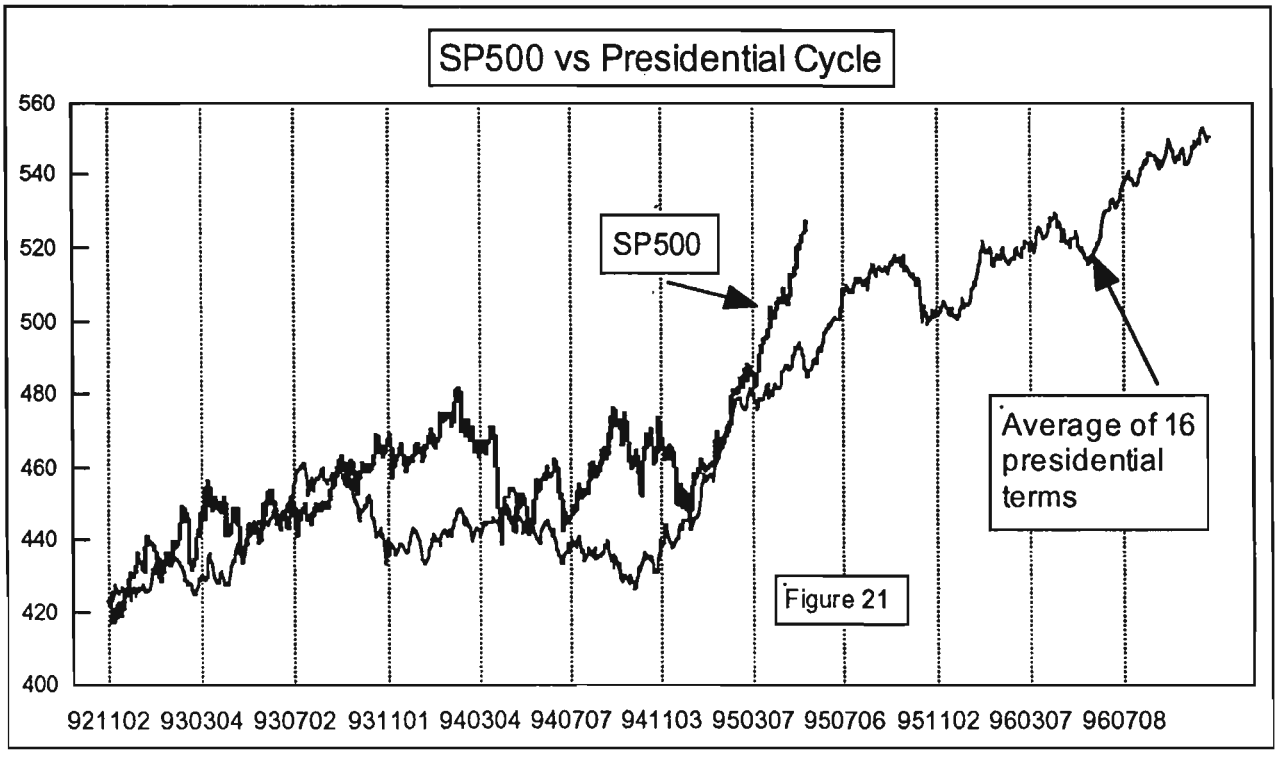


Figure 20

start date, although it would not matter what actual date was used as long as it was the same for each period.

We found that there is a strong correlation of the market's behavior to the resulting pattern. No period ever followed the Presidential Cycle pattern exactly, but the trend directions and turning points in the Presidential Cycle pattern have correlated well to those of the market. As with any other seasonal/cycle-based projection, it is important to remember that the direction of the trend and the timing of the turning points are far more important to consider than the actual level. The market occasionally has deviated from the pattern by trending farther or faster than the pattern suggests, but there has been a strong tendency when this happens for the market to correct sharply to get back toward the pattern. Figures 20 and 21 are illustrative of the way that the market tracks according to the Presidential Cycle pattern.

The pattern displayed by the market at various points along the 4 year election calendar happens for more than just random reasons. Governmental activity affects the financial markets; witness the market's reaction to a Fed rate increase or passage of capital gains tax reform. Even anticipation of these types of events can move the stock market. The rhythm of governmental activity is influenced by calendar year events such as the April 15th tax deadline, the congressional session calendar, the starting of a new fiscal year, and other seasonal factors. Public officials tend to correct excesses with restrictive behaviors early in their terms and they liberalize the politically controllable aspects of the economy as elections approach. The reason for doing this is to try to have a good economy to please the voters as the politicians come up for reelection.



The strongest tendency of the market that shows up in the pattern is to have a market advance in the third year of a presidency. Out of 16 presidential terms studied, only in 2 instances was the third year a down year; those came in 1930-31 (as massive bond defaults started the descent into the great depression) and 1938-39 (as Hitler was destabilizing Europe by invading Poland). In the absence of such extraordinary circumstances, the third year of a presidency has been an up year.

SUMMARY

As we said in the beginning of this booklet, no single indicator can give an investor the whole picture of what the market is doing. We have designed *The McClellan Market Report* to include indicators which not only help to time buys and sells but which have in the past been reliable at identifying the market's probable short-term, intermediate, and long-term direction and structure. A number of these indicators are not currently available from any other source. In our own investing, it is only when we have a proper understanding of market structure that we can properly assess the current risk or reward potential. We have found that by trying to understand and integrate the totality of our indicators, we can come closest to achieving an appropriate understanding of market structure and probable future direction.

The analyses described may be overly simplistic for brevity's sake. This booklet is not meant to be an all-inclusive description of interpretation techniques for these indicators. Our hope is that the reader will now have a better understanding of the formulation of the indicators and that this booklet will provide a start for the reader's own understanding of the role each plays. We hope that as you become familiar with them, these indicators will be as meaningful for you as they have been for us and that you will enjoy seeing them regularly along with interpretive narrative comments in *The McClellan Market Report*.

Please remember that past performance is no guarantee of future results. All analysis is based on past events and there is no guarantee that any indicators or interpretations will work in the future. All trading and investment decisions are the responsibility of the reader, and no one should take any comments that we have made here or elsewhere as recommendations for any specific course of action.

Since we first published this booklet in 1995, we have introduced several new indicators in *The McClellan Market Report*, some of which have become regular features. Below are the definitions and descriptions of some of these newer indicators.

THE UNCOMMON A-D LINE

We are often asked about the "purity" of the advance-decline information that is reported every day on the NYSE. It is true that not every issue that trades is an actual company in the sense that we commonly think of it. It is not clear, however, whether the presence of these other types of issues causes a problem for the data.

The New York Stock Exchange lists 355 closed-end funds (as of Oct. 2001) that trade like stocks and which are listed among the daily advancers and decliners. Of these, 244 are bond funds, 30 are stock funds, and 81 are referred to as "specialty" funds (mostly country funds like the Korea Fund). There are also a small number of other equity-linked derivatives that trade like stocks. Quite often these funds and derivatives do not trade at all for a day or more, and they are not reported in the statistics for advancing, declining, or unchanged issues for that day. Several hundred preferred stock issues also trade, and so companies that have both a preferred and a common class of shares can be double counted, or can cancel each other out if they go in opposite directions.

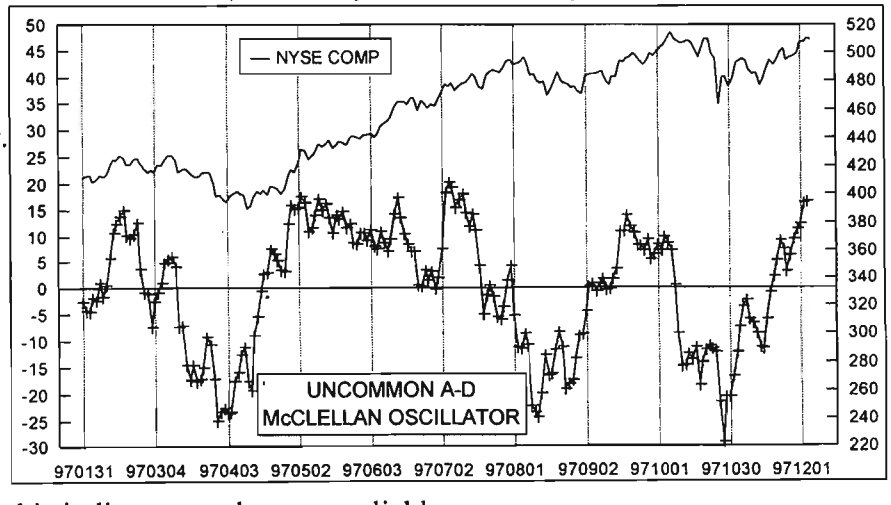
To view the market only in terms of only the common stocks, one can look at the daily "Common Only" A-D numbers reported each week in *Barron's*. Since a large majority of issues are common stocks, the Common-Only A-D Line looks a great deal like the composite A-D Line we usually feature in our newsletter. *Barron's* is the only source we have found for this data in printed form, but you can access this data on a daily basis for preceding trading day at the NYSE's web site, http://www2.nyse.com/marketinfo/marketsummary.html.

A knowledgeable NYSE source reported that their system generates the Common Only numbers by looking at all stock symbols that are 3 letters or less to count advances and declines. This way the preferred issues are filtered out. Also filtered are the small number of "equity-linked derivatives" that trade like preferred stocks. The closed-end funds, having 3 letter symbols, are still counted among the Common Only figures.

The question that remains is whether these closed end funds are polluting the Common Only data, going up or down for reasons other than the liquidity forces that are supposed to affect all "stocks". A study we did in 2001 found that the closed end funds had very little impact on the overall A-D numbers. They tend to move up and down pretty much along with the overall Common Only numbers, and this study refuted the claim offered by many analysts that the A-D Line is made invalid by the presence of "non-operating" companies on the NYSE. Further, we find that our standard indicators that are based on the composite A-D numbers are still doing a good job of helping to portray the changing liquidity picture.

One thing that can be gained from looking at the Common Only versus the composite is an understanding of what the preferred stock issues are doing. Preferred stocks are generally considered to be interest rate sensitive, and are owned more by institutions than by individuals. This makes them perhaps a better gage of the liquidity picture than the broad list because individual investors' emotions are not as much of a factor. Taking the values for the composite advances and declines and subtracting the Common Only advances and declines, one can calculate the values for the preferred issues. You might ask why anyone should bother to go to that much trouble, and the answer is that you can get a really good indicator out of it.

Pictured here is our **Uncommon A-D Oscillator**. It is calculated the same way we calculate the standard McClellan Oscillator but uses the values for advancing and declining preferred stocks as mentioned above. We say "Uncommon" because it is based on the issues that are not common stocks; we did not want to call it the Preferred A-D Oscillator and confuse people into thinking that we prefer it over our other ones (which of your children do you love the best?). It correlates very well to the NYSE Composite Index, and looks a great deal like our standard A-D Oscillator. The extremes of its trading are at much lower values because of the smaller number of issues counted. Its chief value for us is that it does not whipsaw back and forth across the zero line as much. When watching for the crossings of the zero line, the ones on this indicator can be more reliable.



The down side is that since data is not available until the following day, we cannot watch the numbers throughout the day to see if the market will give such a signal. We can calculate what it would take to generate a crossing through zero, and we can estimate what the data would be based on the composite figures, but at this point *Barron's* and the NYSE web site are the only sources we have found for the data. Because this indicator is difficult for our readers to follow on their own, we do not feature it very often in our newsletter but we do use it a lot for generating top and bottom signals in our Timing Models.

RATIO-ADJUSTED A-D OSCILLATOR

One problem with looking at indicators which are based on advancing and declining stocks is that changes in the total number of stocks can change the indicators. Over the years there has been steady growth in the number of NYSE issues trading, and substantial growth in the number of NASDAQ issues. To make comparisons between markets, or between current and prior periods, analysts need to make some adjustment for the different number of issues being traded. The adjustment can be done mentally, by just accepting that they are not going to be exactly the same. It can also be done mathematically, using a variety of techniques.

One technique that we like is to calculate a ratio-adjusted advance-decline difference. This is done by first subtracting declines from advances (A-D), and then dividing that by either the total of advances and declines (A+D) or the total of all issues traded (A+D+Unchanged). Either method is acceptable; keeping track of unchanged issues makes the task slightly more difficult, but may better satisfy mathematical purists. We find what we consider to be satisfactory results using only the advances and declines. A sample calculation is as follows:

From Dec. 11, 1997, with 750 NYSE Advances, and 2247 Declines:

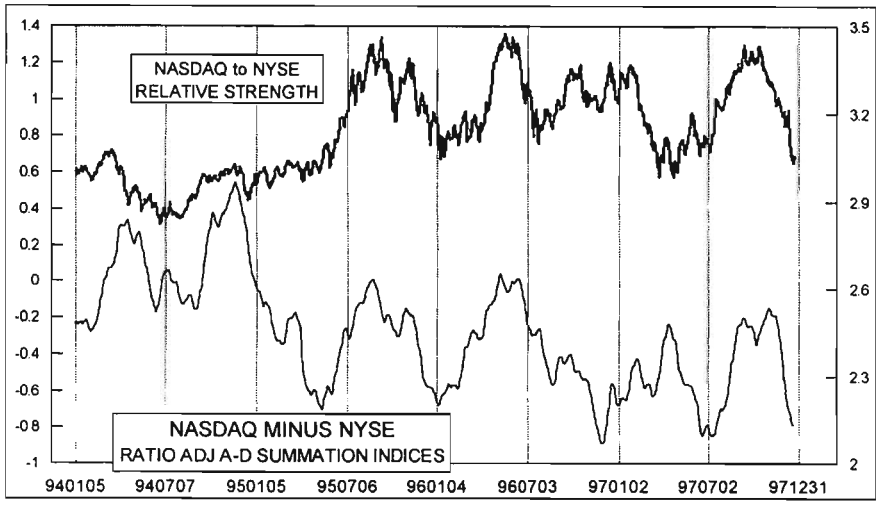
$$\frac{(A-D)}{(A+D)} = \frac{(750-2247)}{(750+2247)} = \frac{-1497}{2997} = -.4995$$

Once this A-D ratio is calculated, the 10% Trend and 5% Trend are calculated in the standard way, and the ratio-adjusted McClellan Oscillator is the difference between those two EMAs. A Summation Index can also then be calculated. We usually like to multiply the daily A-D ratio number by 1000 just so that we get the numbers up into what might be considered a normal range. What this does mathematically is to pretend that there are always only 1000 stocks trading on the NYSE. Thus the -.4995 number in our example would be adjusted to -499.5.

Over a short period of time (less than 2 years), there will be little difference between the chart pattern of a standard McClellan A-D Oscillator and a ratio-adjusted one. But longer term historical comparisons may be better made using a ratio-adjusted calculation method. In October 1987, for example, the standard McClellan Oscillator reached a then-record low of -260 and a ratio- adjusted low of -141.0. In the severe decline on Oct. 27, 1997, the standard A-D Oscillator reach a new record low of -285, but the ratio-adjusted A-D Oscillator reached only -93.5. So while the raw Oscillator numbers indicated that the declines were comparable, the ratio-adjusted Oscillator values indicated that the 1987 drop was really worse.

Another interesting use for ratio-adjusted A-D Oscillators is for making comparisons between markets. One of the easiest comparisons to make is between the NYSE and the NASDAQ because both exchanges publish the A-D data every day. Trying to do comparisons between other markets would be more difficult because of the unavailability of the data. The chart below shows an interesting application of this. The top line is a relative strength line

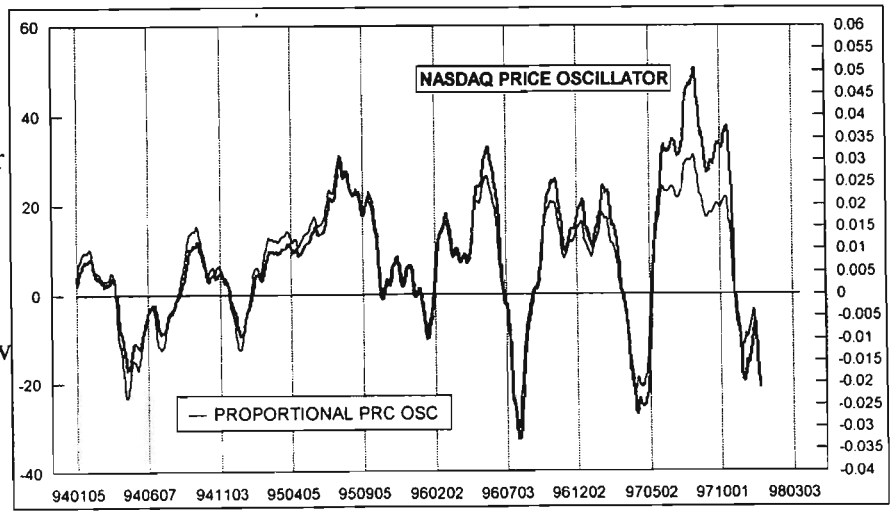
measuring the ratio of the NASDAQ Comp. Index to the NYSE Comp. It rises when the NASDAQ is stronger. The lower line reflects the difference between the ratio-adjusted Summation Indices for each market. When it is rising, the NASDAQ's Oscillator is higher than the NYSE's. There is a strong correlation between the movement of these two lines, implying that knowing which market has the higher ratio-adjusted A-D Oscillator would be helpful in predicting which market should outperform.



We should also note that ratio adjustment is useful for Volume Oscillator calculations, and perhaps more appropriately so due to the greater inflation of trading volume that comes from new issues and stock splits. Having said that, we do have one reservation about the use of a ratio-adjusted Volume Oscillator: ratio-adjustment treats all trading days as being equal whereas an unadjusted Volume Oscillator allows a greater volume day the chance to move the Oscillator by a larger amount. Treating all days as equal may be all right for A-D Oscillators because all issues have the same opportunity to trade every day. Heavy up or down volume days may have a story to tell which might be muted by the ratio-adjustment. For this reason, we usually prefer to view the standard Volume Oscillator for our daily analysis.

PROPORTIONAL PRICE OSCILLATOR

A similar problem exists when trying to make comparisons of Price Oscillator values. If volatility remains the same, then higher price levels will lead to larger Price Oscillator values. To adjust for this, we often look at a Proportional Price Oscillator. This is computed by simply dividing the Price Oscillator value by the closing price, thus adjusting for the effect of the rise (or fall) in the price level. This is illustrated in the chart below with both a standard Price Oscillator and a Proportional Price

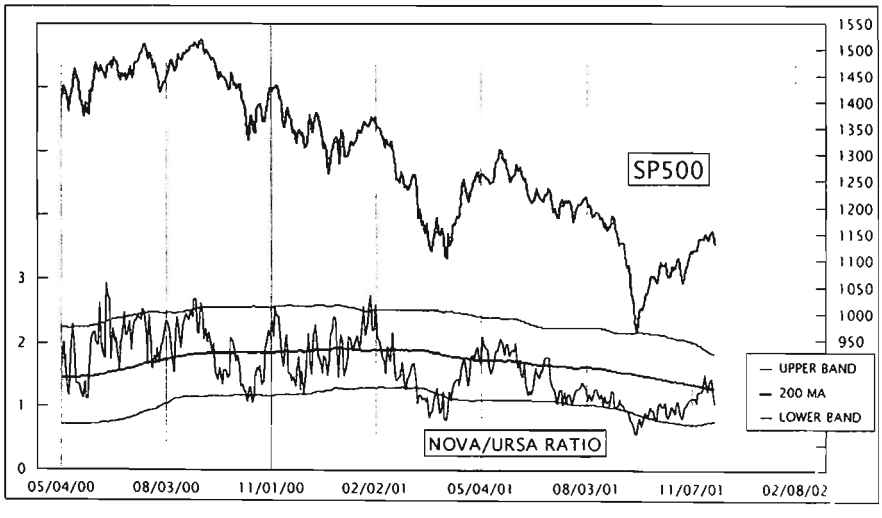


Oscillator (PPO) for the NASDAQ shown on the same chart. The standard Price Oscillator (darker line) moves to ever higher peaks but the amplitude limits remain more constant for the PPO.

Each market, stock, commodity, or other financial instrument has its own personality, including its own natural limits of price movement, acceleration, velocity, and volatility. Using a Proportional Price Oscillator can be helpful in analyzing one single financial instrument over a long period of time. Doing this can help to determine whether that issue's PPO extreme has reached what has previously been a limit of amplitude. It is dangerous, however, to use PPOs to compare one market to another; the different amount of volatility from one market to the next results in different "normal" limits of amplitude among their PPOs.

NEW SENTIMENT INDICATORS

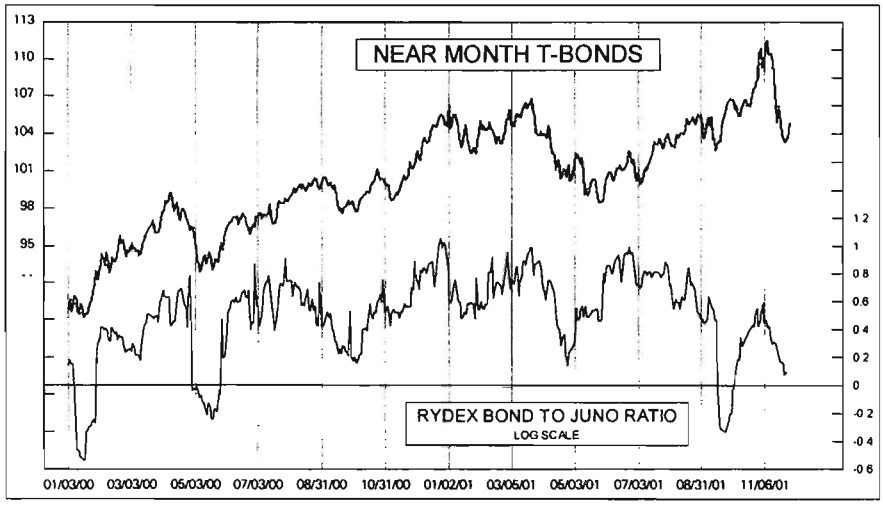
The reason why sentiment indicators may be useful is because they give a contrarian indication. Simply put, what everybody thinks the market will do is usually the opposite of what the market is going to do. Several sentiment indicators have been developed over the years including put/call option ratios and surveys of newsletter writers, but we like to follow a relatively new category of sentiment indicators known collectively as Rydex ratios.



The Rydex Series Trust is a family of mutual funds designed for market timers. They were the first to introduce a bearish fund, the Ursa Fund (ursa is Latin for "bear"), and they also offer several other index and sector funds. Rydex does something which is unheard of among other mutual funds: they publicize every day how much money is invested in each of their funds. This data is available each day by calling Rydex's recording at (800) 717-7776 and following the voice menu.

Fellow newsletter writer Steve Todd of the *Todd Market Forecast* was the first person we know of who figured out that this information could be used to create a sentiment indicator. He found that when investors who use Rydex funds were predominantly invested in the bullish Nova Fund rather than the bearish Ursa Fund, that was a sign of market top. Conversely, if the assets in Ursa were high relative to Nova, that marked a price bottom.

This relationship can be seen in the chart on this page. Because the thresholds for high and low readings on this ratio appear to change over long periods of time, we found it useful to



smooth the data using a 200-day moving average. We then add upper and lower volatility bands to the chart, set above and below that moving average at a distance equal to one standard deviation of the data values over the preceding 200 days. Readings below the lower band occur near market bottoms. Tops occur when the Nova/Ursa Ratio is above the upper band, although sometimes tops will also come in with the indicator not quite that high.

The same principle can be applied to Rydex's bullish Government Bond Fund assets compared to the bearish Juno Fund, which moves inversely to the direction of T-Bonds. When nobody wants to own T-Bonds, that is usually the point when bond prices are about to bottom, and this shows up in the Bond to Juno Ratio as a very low value. The chart on page A-6 shows this indicator, and in this case we have plotted the indicator on a logarithmic scale. On this scale, a reading of zero indicates parity, or equal amounts of assets in each fund. Because Rydex's investors tend to ordinarily be bullish on T-Bonds, it is very rare to see this ratio get below parity, and important bottoms can be made with the indicator above zero. But very high values have no conflicts; they are associated with price highs.