A Second Look At The Final Breakthrough

by Arthur Jones

I N an earlier article titled "The Final Breakthrough," I gave a brief outline of the required characteristics of an exercise machine designed to replace the squat; a machine that would provide all of the benefits of the squat — while markedly improving the possible degree of results producible — and with none of the disadvantages of the squat, the discomfort and possible danger.

And while it should be obvious to any literate person momentarily familiar with the weight-training scene that some of my past comments have created a storm of controversy, I think the reactions of large numbers of people to the article on a "squat machine" provided an interesting commentary on human character traits: because, without single exception up to this point, the reactions have been highly favorable - thus, apparently, while a few people may be somewhat hesitant about admitting the full value of some of our other types of machines, it seems that everybody (all those I have heard from, at least) afforded the new squat machine instant and full acceptance.

Why? Why doubt in some areas but immediate acceptance in this

case?

Could it be that people want to believe in the squat machine simply because they hate doing squats so much, while being clearly aware of the value of the squat as an exercise?

If that proves to be the case and I think it will - then this is yet another example of wishful thinking on the part of large numbers of people, the kind of thinking that has done so much damage in the weight-training field in the past; I do not want our ideas - nor products - accepted simply because people "believe in them." From the moment of the first public announcement of our work, one of my goals has been the establishment of a trend towards logical thinking in a field where it has been all too rare in the past - and if people believe something only because they almost desperately "want it to be true" then my efforts are not producing the desired results.

And it now appears that this is happening; apparently people hate doing squats almost with outright

passion — and such an emotional attitude thus leads them into an acceptance of the new machine that is based on emotion rather than logic. It is my firm opinion that emotion and logic are mutually-exclusive; that they exist in inverse ratio — total emotionality equates insanity, and pure logic presupposes complete elimination of emotion. And while I am certainly not suggesting even an attempt to remove emotion, I do think that everybody would be well advised to try to at least be aware of the distinctions between emotion and logic.

My eldest daughter once accused me of being extremely "cold blooded" — of almost being without emotion; she asked me, "do you actually consider simple survival the ultimate achievement?"

And I told her, "... no, but it is certainly a prerequisite for any-

thing else."

In that light, then, let us logically attempt to examine the concepts of the new squat machine; if it is logical — and thus "right" — let us accept it, and if not, then

we should reject it.

To begin with, as I clearly stated in the earlier article on this subject, the new machine does not provide an "easier" form of exercise; which should not be surprising, since it was not our intention to provide easier exercises — on the contrary, since it is my firm opinion that exercise produces results almost in direct ratio to the intensity of effort of the exercise, we were trying to provide the hardest-possible form of exercise.

In the squat, you are primarily working three separate muscular masses — the frontal muscles of the thighs, the muscles of the butocks, and the muscles of the lower back; and while squatting is certainly not an "easy" form of exercise, it is nevertheless true that squats involve only a small percentage of the total number of fibers contained in the muscles being worked, and that none of the muscles are worked in a direct manner — in either sense of the word "direct" as I have used it in previous articles.

That is to say; the resistance provided in squats is not "directly opposed to the possible-direction of force application" — the resistance is being provided in one direction, straight down, and

erted in another direction, in a direction almost 90 degrees out of phase with a direction opposite to the direction of resistance application. As a conse-

EDITOR'S NOTE: Most readers have been very enthusiastic about the new system and machines developed by Mr. Jones. A few ask why we continue to give the machines publicity since the articles seem to act as advertising. We admit that the articles do promote the machines and it is not our usual policy to use articles which do this, but in this instance, we feel these machines are such an advance over any other similar equipment, that such articles are justified. We plan to continue to use some articles submitted by Mr. Jones, for in addition to plugging his equipment, you will note that he has advanced some training principles not heretofore recognized or used, that can be of tremendous value for those using barbells. May we direct your attention to past articles in which he has clarified the function and work of muscles as it has not been done before. Did you understand the full function of a muscle fiber before reading his explanation in last issue? Also let us direct your attention to his description of how you can work the legs with barbells, as they have never been worked before, in his article beginning on page 33. Mr. Jones has many excellent ideas on training that can improve your barbell training when so applied. We have asked him to put these ideas on paper so we can publish them in booklet form so that those of you who do not have a machine available can utilize some of these principles with your barbell training. We can only guess as to how soon these can be ready as Mr. Jones's time is limited. We will have an announcement when they are ready. Many people call us and ask us what we think of the machines. I can only say I have not personally used them, and may not since I no longer have ambitions for larger muscles, but I have talked to people who have used them and own them and they seem quite satisfied. One gym operator just told me that he would not trade any other machine in his gym for the Pullover Torso machine.

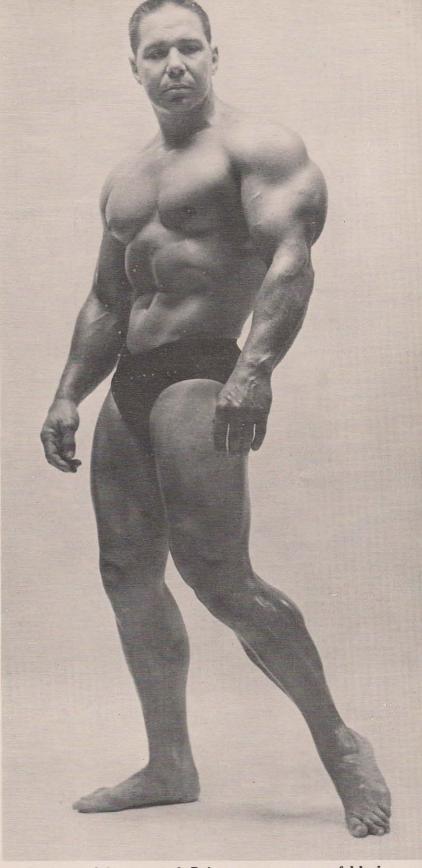
the force is primarily being ex-

quence, a very large part of the force being produced is wasted is doing nothing in the way of moving the resistance. And secondly, in some important areas of the exercise movement - and as it happens these are the most important areas - the direction of resistance application is fully 90 degrees out of phase with the direction of force application; and thus, obviously in such a situation there is literally NO resistance in those positions - not, at least, insofar as the muscles you are trying to work are concerned - and without resistance there is no possibility of benefit from the exercise in those positions, in the very positions where greatest benefit is both possible and desirable, in the only position where it is even possible to involve ALL of the muscles in the exercise.

And while the above paragraph should take care of one meaning of the word "direct," it still remains necessary to explain the same word in another sense - a sense that is of equal importance in this instance. To be direct in this sense, exercise must be applied directly to the muscles being worked - rather than indirectly; the exercise must not involve, be dependent upon, nor be limited by, other, weaker muscles - not, at least, if you are trying to build the greatest possible degree of strength and/or size. Because a chain is only as strong as its weakest link - and you will fail in any exercise at the point where the weakest involved muscular structure runs out of steam; and when such a muscle is much smaller and weaker than another muscle being used in the same exercise, then the larger and stronger muscle will not be - literally cannot be - worked anywhere near the point that is required for inducing maximum possible muscle growth stimulation.

In the case of the squat, this usually happens when the lower back muscles reach a point of exhaustion - or cannot handle the load involved in a heavy single attempt; although, in single-attempt squats carried to the proper low point, the lower back is usually not the limiting factor since, in that position, the thighs are in the most disadvantageous position possible in this exercise, for three reasons. First, the moment-arm of the resistance is at or near its maximum point, and thus effective resistance is at its highest level (or very near it) second, the moment arm "within"

(Continued on page 69)



Bill Pearl, one of the greatest of all time, now a very successful business man and gym operator, has decided to try for the Mr. Universe again against you fellows half his age, and is now starting heavy training toward this end. Bill is 40, and in superb condition already. He has many of the Nautilus machines in his gym. Photo by Stern.

fair. I urge you to follow this routine just as I have set it up for you. Neither take from it nor add to it. Be sure to always use the heaviest poundages you can during all of these movements and rest for about two minutes between each set.

CHEST AND SHOULDER SPECIALIZATION ROUTINE

Monday and Thursday: Sufficient work for the rest of the body. (A) Full Squat: five sets of 5-7 reps using all the weight you can

(B) Bent Over Rowing: three sets of 8-10 reps using all the weight you can possibly handle.

(C) Barbell Curl: three sets of 8-10 reps using all the weight you

can possibly handle.
(D) Lying Triceps Curl: three sets of 8-10 reps using all the weight you can possibly handle. (E) Situps or Leg Raises: 3 sets of as many reps as possible.

Tuesday and Friday: Direct chest and shoulder work.

(A) Bench Press: Three sets of 5-7 reps using all the weight possible.

(B) Decline Flying Motion: three sets of 5-7 reps using all the weight possible.

(C) Press Behind Neck: three sets of 5-7 reps using all the weight possible.

(D) One Arm Press: standing, use a dumbbell, perform three sets of 5-7 reps using all the weight possible.

(E) Heavy Bent Arm Pullover: three sets of 5-7 reps using all the

weight possible.

(F) Stiff Leg Deadlift: one set of 20 reps taking five deep breaths between each repetition. Use all

the weight possible.

(G) Light Pullovers: Lie on a decline bench and use 10 lb. dumbbells. Perform three sets of 10-15 reps using a deep stretch and really deep breathing.

These two workout schedules will work your entire body adequately. They will also put quite a bit of work on your chest and shoulders. All three sections of the deltoids are attacked adequately by using the bent over rowing (posterior deltoid), the press behind neck (lateral deltoid) and the one arm press and bench press (anterior deltoid). The chest muscles are also attacked by using the bench press, the decline flying motion, the heavy bent arm pullovers, and the rib box is worked quite hard by both the heavy bent arm pullovers and the light dumbbell pullovers at the



THE SECRETS OF **MY STRENGTH** by Paul Anderson

For many years I have been asked thousands of questions concerning my weight training. Naturally these inquiries are prompted because of my success in weightlifting and more especially because my success was so rapid. For I started breaking was so rapid. For I started breaking welghtlifting records eight and one-half months after my first training session. Some have passed off my immediate and continued success in lifting by saying that I was just naturally strong. This is not true. As a small boy I was fuite sickly and weak. I first started overcoming this with a unique diet which allowed me to participate in athletics and win a college football scholarship. There I was introduced to weight training and soon went into a daily iscaused the instructions I had pre-

training and soon went into a daily viously received, and started a system of my own. By doing this and continuing my personal unique diet. I became the World's Strongest Man and the Olympic champion and have retained the title of World's Strongest Man for over fifteen years. I have never before offered a publication of my training and diet secrets because of a contract I had with a company forbidding such activities. Now this contract has expired and I am free to offer this book compiled from my private journal. I feel that it is a must for all advanced weight lifters, beginners, or for the athlete who desires to enhance his athletic ability through weight training. It is fully illustrated, as I personally perform the exercises. You may obtain "Secrets of My Strength" by sending a minimum donation of \$6.95 to the — Paul Anderson Youth Home, Inc., P.O. Box 525, Vidalia, Georgia 30474

end of the routine.

I am sure, if you follow the dietary principles which I have tried to tell you about in this article, and if you possess the proper mental attitude, this routine will work wonders for your physique. But most important of all: it will fully and properly develop your chest and deltoids.

ANOTHER MUSCLE BUILDING DRINK

(Continued from page 25) vanilla), one or two bananas (two if you really like them, as I do), 1 egg, ½ pint of cream, ½ cup of yoghurt (this also may be flavored to give the drink extra flavor; I prefer strawberry yoghurt), one package or cup of powdered skim milk, and one quart of milk.

This drink is very tasty. It is high in protein content, high in calories and great for energy.

I usually take the drink at breakfast, during the day, and after a workout at night. Also, if one expects to see the most in gains, careful attention is to be paid to one's diet, Without this the battle is lost.

Well Peary, I hope you can use this information about the drink in your fine magazine. I hope you continue with your fine editorials, your gossip columns, and your articles on muscle building drinks.

Yours truly, Bernie Booth

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P.S. Last September, Peary, managed to place 3rd in the Mr. America in the short height class in New York City (IFBB). As of October 5. I am in the United States Navy. I hope to continue my training.

I have enclosed a photo in hope you can use it.

A SECOND LOOK . . .

(Continued from page 23)

the muscular mass itself, the moment arm of the angle of insertion of the muscular attachments, is in its worst possible position, in the position where anything near full utilization of existing strength is literally impossible - third, the muscle is then in an extended position, and it is literally impossible to involve more than a fairly low percentage of the total number of muscular fibers in the exercise, since the centrally located fibers cannot become involved

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in the work until a position of contraction is reached, after the movement has progressed very near the fully-upright position.

Actually, in most currently-practiced styles of squatting, the movement is not carried low enough for the above three factors to become deciding factors—thus, in practice, the lower back is the limiting factor. And before somebody leaps on an apparent mistake on my part, I want to mention that the second of the three factors listed is misdescribed above—purposefully; in fact,

the "worst possible" position for the angle of insertion momentarm factor is the fully erect position — but by that point in a normal squat, you don't need any strength, since there is no resistance in that position.

So where does that leave us?

Well, that simply means that your lower-back muscles are too weak to enable you to do squats hard enough for the production of best possible results.

And how do you get around that — while using conventional equipment; quite simply — if perhaps not "easily." But remember, we are not looking for easy

exercises.

First you do a set of leg presses carried to the point of failureperforming at least twenty full repetitions against the most resistance that you can handle, and then as many partial repetitions as you can squeeze out, stopping only when it is utterly impossible to move the weight at all in any position. Then - IMMEDIATE-LY, without even two seconds of rest — you perform a set of thigh extensions; again doing at least twenty full repetitions, and again continuing with partial movements until a point of utter exhaustion is reached. Then — again IMMEDIATELY, without even one second of rest this time - start your squats, with a weight tbat you think you can do at least ten full repetitions with, and again carry them to the point of utter failure, so that the weight must be removed from your shoulders in the low position. Then — and yet again IMMEDI-ATELY — step under a much heavier squat bar and do partialrange movements near the top of the squatting position — going as low as possible while still managing to come erect again, trying to make each repetition as hard as possible.

How many cycles? Are you kidding? Even one such cycle done in that fashion without careful break-in training might well kill you — and it will certainly put you on the floor for quite a while, probably in a dead faint, certainly very near a state of shock; and if you think not, just try it — exactly as outlined above.

Eventually — after careful break-in training — you can work up to two such cycles; but at first, one cycle will be more than enough for anybody — King Kong not excluded.

How often? Probably not more than twice a week — with three days between workouts once each week, and four days between workouts during the other weekly "off period." That is to say; train Monday and Thursday — or Tuesday and Friday. But under no circumstances more than three such workouts in any given week — and probably not more than six weeks of such training in a row, with a full week of rest afterwards before any training is done again.

After the above outlined leg workout — after you finally get into such condition that you can do "anything" afterwards except lie on the floor and curse me then add two sets of heavy stifflegged deadlifts to the routine; because the above routine does little or nothing for the lower back it is designed to remove the weak link of the involvement of the lower back, in order to make it possible to exercise the frontal thigh muscles as strongly as it is possible to do with conventional equipment. But if you make the mistake of overdeveloping the muscles of the thighs in relation to the muscles of the lower back, then you have created a literally dangerous situation — a condition that could easily result in very serious injury, up to and not excluding the possibility of breaking your back.

If you are willing to make proper utilization of the above outlined routine, then you probably don't even need a squat machine; because, while the schedule above will not produce anything close to the degree of development producible with the squat machine — or, at the very least, not in anything close to the same elapsed training time -- it certainly will build your thighs far larger and stronger than any other possible routine involving conventional equipment. And after all, how big do you want your thighs,

But, if you simply won't be satisfied with halfway measures—if you just must have the best—there is only one remaining logical choice; but, of course, my "saying" that it is the only logical choice doesn't make it a fact—so let us logically look at the squat machine in its present state of development, which, quite frankly, I think is very close to its ultimate state of development, insofar as function is concerned at least.

Thus we must ask, "... what are the advantages, and the disadvantages?"

The only realistic disadvantage is cost — the machine is not quite

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And while it might appear that "the more orders received, the slower delivery will be" - in fact, the exact opposite appears to be the case in this situation; because a high enough volume of orders will make it possible for us to interest a major manufacturer of equipment — and thus a high number of orders would probably be delivered earlier than a much lower number of orders.

But it should be obvious that the lower on the list a name appears, the slower delivery will be — and vice versa. And in view of the amount of interest shown in this machine up to this moment of writing, I feel safe in estimating that at least a thousand orders will be received within a reasonably short period of time.

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as inexpensive as a barbell, to put it mildly; and a possible disadvantage is size - if you live in a phone booth, then you will be a bit crowded if you add a squat machine.

But the advantages are a bit harder to explain - since a clear explanation will necessarily involve more than simple statements if this is really to even approach a logical examination. But I will do the best I can in that direction poorly as that may be in fact.

To begin with, the resistance is not provided in line with the spine - and this provides improvements in both comfort and safety, simply enormous improvements; since it totally eliminates - not reduces, ELIMINATES -the compression of the spine. The resistance is provided in two sep-

arate areas of contact - against the fronts of the calves, in a manner somewhat similar to that used in thigh-extension machines, and against the entire surface of the back.

And since this not only totally removes the compression force from the spine, thus greatly reducing the danger of injury, but increases the "area of contact" by a ratio of at least 100 to 1, it also provides almost ultimate "totality of comfort." Instead of having several hundred pounds of force concentrated on an area of a few square inches, you have the force spread out over an area of literally hundreds of square inches, almost the entire surface of the back — as well as a good part of the surface of the fronts of the calves. This reduces the pres-

sure in any one area something in the vicinity of 99% - any significant additional reduction of pressure would involve total elimination of resistance, which is, of course impossible while still providing "exercise."

So -- any danger previously resulting from compression of the spine has been removed, and comfort has been provided almost

to the ultimate degree.

Secondly, the resistance is provided "directly" - in both senses of the word; it is directed against the possible directions-ofmovement — and it does not reach the major muscular structures involved only after being filtered through the previously-existing chain of related muscles.

This requirement (actually, these requirements) was met by

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providing a rotary form of compound omni-directional resistance apparently the only possible way that this problem could be approached logically.

In effect, rotational resistance is provided in two opposite directions at the same time — the lower legs, powered by the frontal thigh muscles, rotate forward around the axis of the knees and the entire torso, powered by the buttock muscles and the muscles of the lower back, simultaneously rotates towards the rear around the axis of the hips.

But since such movement of the resistance (a common source of resistance, as it must be in this case) is powered by both oppositely-rotating body-part movements, and since we are again dealing with the characteristics and requirements of spiral pulleys that are the only practical method of providing the requirement for automatically variable resistance, and since the inherent characteristics of spiral pulleys are "interesting," to say the least, we are brought face to face with some

rather highly technical situations.

It would have made the situation a great deal easier if the "hip axis to knee axis length" was exactly the same in all people - or, if we were dealing with round pulleys, it would have been a simple matter even without standardsized people. But since people come in a great variety of sizes, and since we were dealing with spiral pulleys, we had our work cut out for us. Arrogant as this must unavoidably sound, it is nevertheless perfectly true that it is at least highly "unlikely" that any possible reader of this article will have any slightest idea of, or appreciation for, the scope of the problems introduced by the use of spiral pulleys in this instance nor will I do much in the direction of trying to make such an appreciation possible; for any readers who are sincerely interested, I will point out that doing computer-type problems in your head is easy by comparison to an attempt to understand all of the possibilities inherent in spiral pulley applications. While a spiral

pulley — in effect, a form of cam - is one of the most simple-appearing shapes in existence, it may well be the most complex shape to work with - and if not, be good enough not to tell me about whatever is, since I have enough problems already.

But it wasn't an impossible problem - even if, as happened to be the case, it certainly appeared to be for a while; but it did lead to the conclusion - apparently the only possible conclusion that a "straight rise" form of resistance was a distinct requirement in this application, and that it must also be a common source of resistance.

So we ended up with a machine apparently the only possible practical form for such a machine which restrained the thighs, while permitting full range, rotary form, automatically variable, double balanced, compound resistance application. In effect, the muscles are worked against constant, direct, automatically varying resistance over their full possible ranges of movement — so

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WE ARE INTERESTED in your ideas or in merchandising your products in the health reducing line. Send information to "Sta-Trim Inc." 28 E. Jackson Blvd., Suite 1204, Chicago, Ill. 60604. 30-4 that all of the involved muscles are meeting maximum-possible degrees of resistance throughout the movement — from a starting position of full extension to a finishing position of full contraction.

An additional safety factor is introduced by the fact that it is impossible to go too low in this machine — thus any possible danger to the knee attachments is greatly reduced, if perhaps not entirely removed; since some people can apparently manage to hurt themselves with anything — a friend of mine recently strained his back while brushing his teeth.

Thus — insofar as I am aware — this machine provides literally ALL of the requirements for inducing increases in muscular size and/or strength; while removing most of the previously-existing danger factors, and greatly reducing all of them, and while increasing the comfort factor to a degree that literally must be experienced to be believed.

If this machine "fails" to meet any requirement — or even fails to provide for any "desirable feature" — then I am simply una-

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ware of any such shortcoming. It is, I think, as close to being perfect as a machine intended for this purpose can ever be — or certainly, ever will be.

But please don't believe in this machine simply because you want to — probably because you hate regular squats so much; instead, try to understand it — it is absolutely worthy of full understanding, and it will certainly become one of the most important contributions to physical training within this century, and perhaps literally for all time.

And if you think otherwise—then attack it with all due vigor; but I clearly warn you in advance, any such efforts would be better directed towards an attempt to tear down the pyramids with your bare hands. In some other instances involving the applications of these same principles, we are still a long way from final solutions—but in this case, we are "there," this is literally the ultimate development, the final breakthrough.

And when will such machines at least be available in most large gyms? Well -- now THAT is a problem that we haven't solved yet; but we are working on it negotiations are already under way with a major industrial firm for the large-scale manufacture of this machine. Just when this will bear fruit is still an undecided point - soon, I hope; but the eventual result is inevitable, within a couple of years, these machines will be freely available as an "off the shelf" item -and not long afterwards, they will be in use in every major gym, almost every school, and in many private homes.

And while some few (actually only one that I can remember) people have been outraged by my announcements of developments "before they were immediately available for widespread use," I think that such prior notice is the only honest course; after all, it should now be obvious that investing your savings in stock in a used-squat-rack business would hardly be wise.

BODY WRAPPING ...

(Continued from page 21) of thousands all over the world who train regularly with weights. As one gym operator put it: "it's amazing how many people come in to take a body wrap and lose