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WEEKLY ATHLETIC NOTES BY

JOE BINKS

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THE SCOTS ATHLETE

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Photo by A. Pryde.

The Victor's Laurel Wreath for ALAIN MIMOUN (France) winner of the International C.C. Race at Hamilton. On his left is Van de Wattyne (Belgium) runner-up, and right, B. Driss (France), 3rd.

JOHN EMMET FARRELL'S
RUNNING COMMENTARY.

A TRAINING GUIDE FOR COACHES AND
ATHLETES by H. A. L. CHAPMAN.
SPRINTERS BODY-LEAN.
OUR POST.

GLASGOW HIGHLAND GATHERING

(Under S.A.A.A., S.W.A.A.A., S.N.C.U., and S.A.W.A. Rules)

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(Glasgow Branch) and MARYHILL HARRIERS.

IBROX STADIUM

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SATURDAY, 31ST MAY, 1952,
AT 2 P.M.

ATHLETIC EVENTS:

OPEN HANDICAPS.—100 Yds. (Youths) ; 300 Yds. (Junior)
100 Yds., 220 Yds., 880 Yds., 1 Mile, High Jump, Pole Vault,
Putting 16-lbs. Ball, 16-lbs. Scots Hammer, 56-lbs. Weight
over the Bar (Scratch), Tossing the Caber.

INVITATION.—Schools, Junior and Senior Relays ; Women's
100 and 200 metres (Scratch).

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Catch-As-Catch-Can (11 st. 7 lbs.), Cumberland (Catchweight),
Cumberland (10 st. 7 lbs.) Scottish Championship.

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THE SCOTS ATHLETE

TO STIMULATE INTEREST IN
SCOTTISH AND WORLD ATHLETICS

"Nothing great was ever achieved without enthusiasm."

EDITED BY - WALTER J. ROSS

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JOHN EMMET
FARRELL'S



THOUGH we are passing through a comparatively quiet period with little to report there is intense activity behind the scenes especially for the ambitious athlete with Olympic aspirations.

The Dream and the Awakening.

Three athletes can represent Britain in each event but in view of the expense, the athlete will have to demonstrate to the selectors not only that he is at least the 3rd best in Britain, but that he (or she) has attained a proficiency worthy of Olympic selection.

Naturally many are called but few chosen.

Individual Approach by Athletes.

Despite the generally accepted recognition of fundamentals of training the first class athlete maintains an amazingly independent and personal approach not only to his training but also his racing programmes.

For example, Roger Bannister our great hope for 1,500 metres has his own ideas of his requirements, and his training

certainly seems to be much less strenuous than modern conception demands ; but Bannister says that like Lovelock he can reach only one peak per season, runs on his nervous energy which he cannot afford to dissipate with too much racing or too much fast work.

Again it is reported that McDonald Bailey and Len Eyre have accepted an invitation to compete at Los Angeles. There will be controversial opinions regarding the possible benefits or disadvantages of this in view of the proximity of the Games. Will the travelling and dissipation of energy be compensated for by the psychological and other benefits of atmosphere and the big occasions ?

Bailey incidentally must improve his starting to have a real chance especially in the shorter sprint. Recently he has shown a tendency to be left at the blocks which would be fatal against the Yanks. Perhaps then his 200 metres chance would be preferred.

Some athletes keep us guessing as to their choice of events. Will Len Eyre go for 1,500 or 5,000 metres. Parlett for 800 or 1,500 metres; and what of Chataway equally brilliant at both—who did a 4. 10.2 mile in the far from merry month of March?

Scots Round-Up.

Double cross-country champions Victoria Park failed to add the unofficial British Road Relay Championship to their honours list but their 3rd place to the redoubtable Birchfield and Belgrave teams in the London-Brighton classic was a meritorious one for the club and for Scotland.

Forbes' Grand Lap.

Whilst well-balanced team running gave them their minor success Andrew Forbes' grand running in the 6 mile sector in 30 mins. 17 secs. just one second behind Jim Peter's, equally great effort deserves special mention.

Ferguson's Southern Success.

Andrew Ferguson whose inability to run for Scotland at Hamilton was such a distinct loss had a grand win in the Southern 6 miles championship in 30 mins. 41.4 secs., defeating such well-known runners as holder R. Robins, F. Sando, and Harry Hicks.

What a race should Forbes and Ferguson meet in either 3 or 6 miles in the S.A.A.A. championships. Undoubtedly the Scottish record for the 6 miles would be in danger.

Ellis Wins—But Record Stands.

In the annual 1 hour run and attempt on record at Ashfield Speedway, 6 mile champion Jim Ellis put in a very sweet run to outpace Harry Howard attempting a gallant come-back after his recent bad foot accident. Only other runners to finish were myself, Alex. Kidd and Andy Arbuckle. Ellis and Howard provided a stirring race, yet I was somewhat disappointed that the present record of 11 miles 287 yards was not more closely approached as conditions were perfect, warm with no wind.

Hannah Showed Promise.

Willie Hannah now of Maryhill H. took a tumble when lying 3rd, just behind leaders Ellis and Howard and striding easily. This improving runner looks a definite distance prospect with added experience of racing tactics.

Another Wooderson?

In the London A.C. Schools' championships we had the usual crop of grand performances interposed with records: P. J. Brimson of St. Dunstan's cleared a record 6 ft. 0½ ins. in the high jump, but perhaps the high-light was the performance of I. H. Boyd of Wellington G.S. who ran a record mile in 4 mins. 24.8 secs. His slight build as well as his devastating speed reminded many forcibly of the inimitable Sydney Wooderson who was himself a precocious athlete who developed to world class.

From the Scottish viewpoint, the high-light was the 12 lb. Hammer event. The two Fettes boys, C. W. Lyon-Brown and I. S. Bain, the present A.A.A. junior champion, rather continuing the Scottish Clark—Douglas tradition, with the former creating a new best junior performance of 160 ft. 2½ ins. as against Bain's 150 ft. 0 ins.

Championships at Meadowbank.

This year's S.A.A.A. championships venue changes from the established Hampden Park, Glasgow, to the New Meadowbank ground, Edinburgh, and with the earlier date—6th and 7th June, championship contenders will barely have had the feel of the track season, before striving for the coveted national honours.

Nevertheless, these coming weeks should reveal form to give pointers to the likely victors of what will surely prove, a most eventful meeting.

Courage and Determination Win Through.

Congratulations are due comparative newcomer C. W. Ellick of Sefton in winning the Doncaster-Sheffield Marathon in the fine time of 2 hrs. 41 mins. 24 secs. beating such exponents as Jackson, Kelly and Lawton. Despite finding it difficult to fit in a schedule of training owing to working conditions, Ellick was encouraged to keep trying and it is grand to record such a success due largely to courage and perseverance in face of difficulties.

Jim Peters' Finchley Record.

Jim Peters ran a wonderful "20" in the annual Finchley event to take 69 secs. off Holden's record in 1 hr. 49 mins. 39 secs., yet so highly is the Essex man rated that his performance created little surprise. It was almost taken for granted

NEW-MEADOWBANK RECORDS

The following New Meadowbank (Edinburgh) ground records listed as the result of investigation by Mr. D. A. Jamieson, an Hon. Life V.P. of the S.A.A.A., confirms the adequate suitability of this ground from a competitive angle, to house the S.A.A.A. Championships on 6th and 7th June.

TRACK EVENTS.

100 Yards—10.1 secs. E. Macdonald Bailey, 5th July, 1947, Triangular International. (It is noteworthy that Alan Watt at the Edinburgh L. & C. Sports in 1941 was credited with 9.9 secs. off the half yard mark).
120 Yards—12.4 secs. C. B. Holmes, 14th July, 1945.....Victory Gymkhana.
220 Yards—22.7 secs. W. Henderson, 7th June, 1951.....E. D. Championships.
440 Yards—49.7 secs. J. Reardon, 5th July, 1947.....Triangular International.
880 Yards—1 min. 57.4 secs. J. Smart, 8th June, 1950.....E. D. Championships.
One Mile—4 mins. 16.3 secs. D. G. Wilsson, 14th July, 1945.....Victory Gymkhana.
Three Miles—14 mins. 32 secs. H. A. Olney, 5th July, 1947, Triangular International.
Ten Miles—53 mins. 0.4 secs. W. Sutherland, 13th April, 1935, S.A.A.A. Championships (Opening year of the ground).
120 Yards Hurdles—15.3 secs. J. P. McAslan, 7th June, 1951...E. D. Championships.
440 Yards Hurdles—56.2 secs. D. K. Gracie, 5th July, 1951.....S.A.A.A. v. Atalanta.
Relays—4 x 110 Yards—43.4 secs. Edinburgh University, 8th July, 1950, S.A.A.A. Championships.
Mile Medley—3 mins. 31.7 secs. Edinburgh Southern H., 7th July, 1951, S.A.A.A. Championships.

FIELD EVENTS.

High Jump—6 ft. 6 ins., A. S. Paterson, 18th June, 1949, Edinburgh L. & C. Sports.
Long Jump—23 ft. 5½ ins. Prince A. F. Adedoyin, 5th July, 1947, Triangular International.
Hop, Step & Jump—45 ft. 11½ ins. W. N. Laing, 5th July, 1951, Atalanta v. S.A.A.A.
Pole Vault—11 ft. 2½ ins., H. Hood, 27th July, 1938, British Police Championships.
Wire Hammer—179 ft. 10 ins., E. C. K. Douglas, 16th June, 1951.....Edin. L. & C.
Discus—151 ft. 2½ ins., H. I. Duguid, 5th June, 1951.....E. D. Championships.
Javelin—185 ft. 9½ ins., M. V. Chote, 5th July, 1947.....Triangular International.
16-lb. Shot—46 ft. 11 ins., D. Guiney, 5th July, 1947.....Triangular International.

which is perhaps the greatest of compliments. The consistent Iden finished a grand 2nd, but R. McMinnis' steady pacing prevailed over Cox's more erratic running. It developed into a four man race that appears to show that McMinnis is going to be a distinct threat to the official Olympic probables in the British championship and trial in June.

More Zatopek Rumours!

It is only natural that rumours should follow such a remarkable runner and personality as Emil Zatopek, perhaps the most astounding athlete of the present day. But the latest that the Czech may try the 5,000 metres, 10,000 metres and the marathon appear quite fantastic, especially as the former necessitates heats.

The 10,000 metres and marathon, however, seem quite within his compass as the 10,000 metres takes place on the opening day and the marathon on the

closing one. But I will delay an estimation of his prospects till more definite news of his intentions.

Cerutti and Newton in Conference?

Percy Cerutti, famous coach of distance runners, Macmillan, Perry, Landy, and Prentice, is accompanying the Australian Olympic party to Britain on their way to Helsinki.

The news that Arthur Newton has extended an invitation to his pen companion Cerutti is most interesting. Both have definite conceptions of the fundamentals of athletic training and both are remarkable veterans. But best of all they are Peter Pans in their enthusiasm and love of athletics. How I would dearly love to hear them argue and discuss. Of one thing I feel certain, I would not be bored. The young men whom they have helped and encouraged in this great sport of ours are a living memorial to these grand sportsmen.

A TRAINING GUIDE FOR COACHES AND ATHLETES

SUGGESTIONS FOR FORMULATING SCHEDULES

By H. A. L. CHAPMAN

(Chief Athletic Coach for Scotland).

[This is the fourth published part of a complete study by our Chief Coach, previous parts appearing in the January, February and March issues. It should be referred to as a whole.]

We emphasize, as Mr. Chapman points through out, these schedules are not meant to be followed to the letter but serve only as a guide for the preparation of same.—Editor.]

If the athlete is to be primarily a track runner during the summer season then he should avoid cross-country racing but enjoy plenty of cross-country running!

During the winter months I see many groups of runners setting out for a run sometimes in the evenings. The weather is often bitterly cold and they are all frozen stiff in their singlets and shorts—this unpleasant business is liable to discourage not a few from taking part but also does the athlete no good—get the boys to wrap up well in a track suit, if they have one, or a long sleeved sweater—with slacks and socks—with even an old pair of gloves or mittens. Do some exercises with the squad in the Club House to get the circulation going before setting out—they will then not notice the cold and do themselves a lot more good.

Wind: The athlete becomes winded when he cannot get rid of the "exhaust" (carbonic acid) through the exhaust pipe (exhalation of the lungs): as rapidly as it is produced in the body. Lungs are trained to breathe large volumes of air; the heart is trained to pump large volumes of blood rapidly but too little attention is paid to the chemistry of elimination of the poisonous carbonic acid (exhaust) which causes a man to become winded.

The carbonates chiefly those of sodium potassium and magnesium are concerned with the elimination of carbonic acid (exhaust) from the body. The action of all carbonates may be illustrated by that of Sodium Carbonate. There are two carbonates of Sodium (1) Sodium Carbonate, in an impure form known as washing soda; (2) Sodium bi-carbonate or baking soda. Carbonic acid is formed by the oxidation of food (use of the

muscles) in the tissues throughout the body. Sodium carbonate is carried in the blood stream and is put in the blood stream by soda-like compounds which are found most abundantly in most fruits and vegetables. When carbonic acid is formed in the blood stream because of the tissues using food it unites with the Sodium Carbonate and makes Sodium bi-carbonate. The blood stream carries the Sodium bi-carbonate to the lungs where the Carbonic Acid is released to be exhaled as Carbon Dioxide plus water leaving the original Sodium Carbonate free in the blood stream to circulate for another load. This explains, I think, two things (a) the reason for relaxation and (b) not smoking!!!

Training diets, therefore, should contain an ample amount of these soda like compounds which are found mostly in fruit and vegetables.

For the rest as far as diet is concerned—I would say:—

- (1) Eat plenty of Fruit and Vegetables plus Fruit Drinks.
- (2) Only eat at meal times and have them as regular as possible.
- (3) Avoid large or heavy meals late at night so that the stomach and digestion may rest as well as the rest of the body.
- (4) Do not eat when fatigued.
- (5) Always make certain that whatever is eaten is properly masticated.
- (6) Stick to plain wholesome food.

Teeth: It is an established fact that tooth decay and the poisonous toxins formed are the cause of many muscle injuries.

Teeth are the gateway to the whole intestinal tract.

Bleeding gums or "pink tooth brush" is an indication that something is wrong, and although there may be "top form" appearance the body will get some toxic effect.

If decay is not checked early it will penetrate the centre of the tooth wherein lies the nerve and blood stream—the infection is then taken directly into the blood stream and will strike at the athlete's weakness which is the most vulnerable. In order then not to suffer any ill effects that will be injurious to physical strength—the teeth should be examined regularly.

Shin Splints: One of the most painful of ailments for a runner is shin splints which are sore legs along each side and under the "shin bone." The cause may be running on hard tracks or roads or ground.

The main muscles concerned are:—
Flexor digitorum Longus;
Tibialis Anticus.

This ailment often afflicts the athlete at the commencement of training after a lay-off. Two or three days rest with heat application and massage will usually relieve it though a longer rest is sometimes needed. Iodine painted along either side of the shin bone is good.

Massage: My view is that in the treatment of muscle injury—for example that mentioned in shin splints—massage can be of great value but otherwise not—If an athlete's training programme is a good one and is progressive then he should have no need of massage—Soreness in muscles as a result of training is caused by the presence of waste products—these waste products may be dispersed by gentle jogging on the part of the athlete at the end of his training session (already mentioned). However, if massage is used then make certain that the person doing it is fully qualified and knows what he is doing—Beware of the well meaning but ignorant muscle slapper!!

Now I will produce some example schedules to give an idea of what sort of thing is required—It will be appreciated I'm sure that I could not give examples of preliminary, early, middle, late season schedules for all events—this would be almost impossible—what I have tried to do is to give information about what must be considered and what must be included when schedules are formed. Coaches must make programmes for the individuals they know and be ready to change them if they don't suit.

Example of Preliminary Season Training.
1st January to end of February—4 days per week.

This should be done by all Field event and Sprint athletes as a squad irrespective of their particular event as it is the general fitness building period—They should start specialised training after this:—

1st Day.

Warm up by gentle jog 440y, 30y hopping—bounding—left foot then right.

5 minutes general exercises, e.g., full squat— $\frac{1}{2}$ squat—trunk twist—push ups, etc.

Easy jog 220y.
Shower.

2nd Day.

Warm up—jog 220y.

Run 150y at $\frac{1}{2}$ effort along white line (accurate strides and synchronised arm movement) Repeat twice.

4 or 5 standing long jumps (spring).

5 minutes exercises, e.g., Running on Spot, High gymnastic jumping, deep breathing, etc.

Easy jog 350y—400y.
Shower.

3rd Day.

Warm up.

Alternate jog and run over 25y stretches—repeat 5 times.

3 minutes of inverted running—with clear cut leg action.

Run through 150y gradually increasing in speed.

5 minutes exercises for arm and shoulder strength.

5 minutes stretching exercises.
Jog 150y.
Shower.

4th Day.

Warm up.

Run 150y at easy pace (line).

Hop and bound 40y.

Run two easy 100y—Rest 3 minutes.
100y at $\frac{7}{8}$ th speed.

Jog 200y.
Shower.

This Schedule may include 10 minutes of weight training each day or on two days only or you could cut one day's athletic training and substitute weight training instead. There should be no full

effort sprinting or sprint starts at this stage—the athlete must be basically fit first.

Now here is an example of early season training which follows the preliminary stuff and I have taken Shot for this example—

5 days per week up to the beginning of Competition.

1st Day.

Warm up.

Practise holding the Shot different ways and with different Shot—Brass, Iron, etc.

12 Standing putts—concentrate on leg and body action.

Hold Shot high in air with putting hand. Grasp firmly the forearm with the opposite hand. Snap the wrist forward and see how far Shot goes (only a few feet)—repeat 5 or 6 times.

Spend 5 minutes with High Jumpers, gradually increase the height of bar.

Jog 250y.

Shower.

2nd Day.

Warm up.

Skiping 3 minutes.

10 minutes weight training.

Take 3 Starts with Sprinters.

10 standing putts—work on elbow on and arm movements.

Jog 100y hop and bound 25y.

Shower.

3rd Day.

Warm up.

Jog 100y—walk 40y—sprint 25y.

10 minutes body building exercises.

Putt 15-20 times standing (Concentrate on 1 or 2 points of technique).

Experiment with various angles of release—Note results.

Rest 3 minutes.

8 or 10 putts using the glide, and if you are on cinders note the foot movements on each trial—always brush circle clean. Experiment with different ways of using the free leg.

Jog 440y.

Shower.

4th Day.

Warm up.

Skip 2 minutes.

5 minutes shoulder and arm exercises (fast).

6 putts without glide (work on thrust from right hip).

8-10 putts using glide. Start slowly but gradually increase speed. Keep relaxed until final heave.

Rest 3 minutes.

Take 6 putts with glide at full effort. Always look at the Shot from the moment it leaves your hand. Keep that front foot on the ground until the Shot has left.

Jog 400y.

Shower.

5th Day (Mock Competition).

Warm up (lighter than on previous days).

10 putts without glide (easily)—concentrate on form.

4 putts with glide (easily).

4 putts with glide (faster).

Rest 3 minutes.

6 putts at full effort—as in Competition.

Jog 400y.

Shower.

I hope that these examples will be sufficient to give some guide as to what is required—I know that most Clubs train two nights per week—well, to be quite frank this is not good enough. Far better to spend 10 or 15 minutes five times a week, than 1 hour twice a week.

To become a champion performer, in fact, 1 hour 5 times a week is about the usual.

Nemeth (Hungary), Hammer Thrower, trains 3 hours every day.

Savidge (Great Britain), Shot, trains 1½ hours 3 times per week.

Zatopek (Czech.), 10,000 and 5,000 metres, trains over about 15-20 miles 5 times per week.

Most American training programmes are for 5 days per week and many of them are for 6.

However, if only 2 days can be managed then these schedules must be cut.

Please remember, however, that they are only a guide.

(To be continued).

SPRINTERS' BODY-LEAN

A MATHEMATICAL STUDY

By J. V. LYONS

HAVING read R. W. Adams' article on body-lean (Feb. 1951, Scots Athlete) it struck me that this subject is one where many misconceptions prevail which might be cleared up by a mathematical approach.

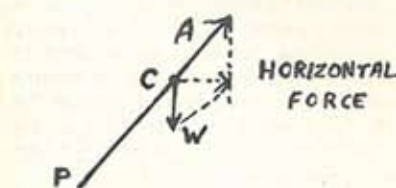
The study of bodies in motion did not become scientific until Isaac Newton (1642-1727) stated his three laws of motion with his deductions from them. On his ideas all modern mechanics and dynamics are based. I decided to regard a sprinter as one of Newton's bodies in motion and the conclusions reached were very enlightening.

First, it must be stated that all forces acting on a body are taken as acting through the centre of gravity (C.G.), the point at which the weight of the body is regarded as being centred. In an erect human being the centre of gravity may be taken as just behind the navel.

Now take a man standing erect and perfectly balanced. His C.G. is directly above his point of support P. His weight acting downwards is exactly equal to the thrust of his legs acting upwards. As

long as he is perfectly balanced, there is no horizontal force, so he cannot move either backwards or forwards. Further if he is actually moving horizontally he cannot increase or decrease his speed as long as he is perfectly balanced.

Suppose he is off balance and leaning forward. The thrust of his legs will



produce a force A. acting from his feet through his C.G. along the line P.C. His weight acts vertically downwards through

his C.G. By using the correct amount of thrust we can obtain a purely horizontal force as shown. A greater thrust will not increase the horizontal force appreciably but will cause the runner to rise from the ground (bounding).

Notice that for every angle of forward lean, there is only one value of A, which will produce a horizontal force. The greater the lean the greater must A, be, but the greater will be the resulting horizontal force. Hence to get up speed a runner must lean as far forward as possible as long as the force A, is not beyond the maximum he can exert.

Now take an athlete who is running at full speed. According to Newton, he will continue running at full speed unless some force stops him. The only force acting in a backward direction, i.e., tending to slow him down is the pressure of the air. He must lean at a certain angle and exert a certain thrust to balance this pressure. If he is more upright the air pressure will slow him down. If he leans further, his speed will increase and we have already said he is at top speed.

The weight of one cubic foot of air is .0807 lbs. Assume that the sprinter presents a cross section of six square ft. and is running at 20 m.p.h. It is easy to calculate that the pressure of the air is equal to approximately 15 lbs. weight. Take the runner's weight as being 150 lbs., look up the horizontal tables and we find that the correct angle at which he must lean to maintain top speed is 82 deg. with the horizontal, i.e., only 8 deg. forward from the vertical. When I reached this stage, the result took my breath away and I checked all my calculations. They're correct, and if you think of a skater gliding along at 20 m.p.h. in an upright position, it seems less unreasonable.

Of course, we have been talking mathematically assuming the possibility of applying a constant force all the time. Actually the runner can thrust only part of the time and part of the time he is in

the air where his C.G. rises and falls in a parabola like any missile and he loses speed owing to air pressure. The interesting point is this. He cannot exert sufficient thrust to balance air pressure unless the angle from his foot to his C.G. is 82 deg. or less with the horizontal. By using trigonometrical tables, we find that this means that until a sprinter's foot is about five inches behind his C.G., he cannot exert sufficient thrust to maintain his speed. As long as his foot is on the ground in front of this point he cannot possibly develop sufficient forward force to overcome air pressure.

Let's apply these results to the two types of sprinters—the upright and the forward-leaning. Our calculations concern only the position of the C.G. and from the point of view of mechanics it does not matter in the least whether he is upright, leans forward, or leans backward. What really is important is that his C.G. should be ahead of his foot when he makes his thrust.

Consider the physical implications of the two styles.



First, try this yourself. Stand normally erect, then bend forward from the hips. Try to rotate your hips backward and forward about a vertical axis. Stand erect and try it again. You can attain at least twice the range of movement when you are upright. Try bending from the waist. It comes between the other two positions and is most uncomfortable. This experiment seems to indicate that the most powerful running muscles can work over their fullest range only when the body is upright. With the leg at its limit angle, the hips can give a powerful flick which is impossible in other positions. This action is most easily observed in some middle distance runners.

In (3) the leg begins its recovery by pure reflex action, in (4) it has to be recovered forcefully. As a result in (3) the foot comes to the front of the body

in a natural curve allowing for a gradual progressive change of action in the muscles, whereas in (4) the foot is forced to keep closer to the ground, involving a sudden reversal of forces as it reaches the ground.

In (3) the leg drive, owing to the mobility of the hips, extends further back and this extra force is applied more horizontally. In an attempt to compensate for this, the runner in (4) has to begin a forceful drive as soon as possible and may tend to pound the track.

Ideally, a runner whose feet landed straight in front of one another from start to finish is best placed to take advantage of his leg drive. Our physical build makes this impossible, but in (3) the rotation of the hips carries the knee and foot close to the centre line. In (4) the feet follow two parallel lines several inches apart so that the runner is following a more zig-zag course. This leads to a difference in arm action. The balancing effect of the arms is an effort to keep the runner's C.G. moving steadily along a straight line. In (3) this requires very little cross action so that most of the arm drive can be used to assist the recovery of the legs. In (4) there must be cross arm drive to counteract the greater deviation.

Further with the body leaning forward a backward and forward drive is not efficient after the elbow has passed the vertical line through the shoulder as the backward drive forces the shoulders downwards. To obtain an efficient arm drive in this position, the arms would have to begin their action above the head as is seen in the crouch start.

In addition the upright position leaves the upper part of the body free to carry on its normal functions in relation to breathing, while the other has a tendency to round the shoulders and restrict the chest. This will have little effect on the 100 yards men but might be important in the longer sprints.

It seems to me that on every count the upright position scores, but notice that it is founded on maximum mobility



of the hips. Once that is established the other points I have mentioned follow as logical deductions.

It seems to me that the older style of running is founded on the ideas taught by Euclid, who over 2000 years ago, taught that the shortest distance between two points is a straight line. Hence runners aimed at moving their feet in a straight line from one stride to another. This requires considerable force, with the result that the foot was carried ahead of the body and tended to reach the ground ahead of the centre of gravity. The obvious solution was taken. Lean

forward and advance the C.G. so that it now is ahead of the foot. But modern scientists has taught us that, though Euclid was perfectly correct as he was dealing with space, in practical life we deal with space allied to mass and time. In other words before discussing the movement of the foot during a stride, we should consider the distance, the time, the relative masses of the thigh, lower leg and foot and what each was doing immediately before the time and will be doing immediately after. Then we may find that for our purposes the shortest distance is not the quickest path for the foot.

Are Supplementary and Extraneous Exercises Beneficial to Runners?

By L. H. WEATHERILL.

THE question, really, is whether a runner will get the best results by sticking, in his preparation, entirely to running.

Comparatively little is known on the subject. Most runners confine their energies mainly to running but few do not indulge in, at least, some voluntary walking. Arthur Newton put in a colossal amount of running for a number of years and took practically no other exercise at the time; he achieved most satisfactory results. But he was running very long distances and possesses remarkable mental powers.

Do most athletes benefit from some variation in their training?

I am going to mention a number of exercises in which runners are apt to indulge and discuss very briefly the possibility of their helping in training—

1. **Running up Stairs and Climbing Hills.** Whatever the general public may think about these exercises I have no doubt that most runners will feel that they are undoubtedly helpful to training in almost all branches of pure athletics.
2. **Skipping.** If it is indulged in on a soft surface, e.g., a coconut mat, skipping is no doubt better than no exercise at all. If you skip

on, say, concrete, you undoubtedly do much more harm than good. Surely a natural exercise, i.e., running, is better than a stationary one.

3. **Walking.** I do not agree with Newton that walking is of no benefit to a runner. In most cases slow running will do more immediate good, but walking has great advantages. It is, for instance, almost impossible to do too much walking, whereas one can easily run too far, or rather, too hard. Walking, to my mind, is so closely related to running that it amounts almost to a variation of the same exercise. This, no doubt, is especially so, if, as I do, one runs flat-footed.
4. **Dancing.** I am doubly prejudiced against dancing, as, owing to a complete lack of musical sense, I am unable to dance and also because I loathe the smell of smoke which is the habitual accompaniment of the dance hall. Nevertheless, I feel that logically dancing may be quite good supplementary exercise for a runner. The atmosphere is usually decidedly warm and after

a run, no doubt favours relaxation of muscles. It is quite likely that the very moderate exercise given by modern dancing may be beneficial after a race.

5. **Games.** I suppose there will always be controversy as to whether a runner should indulge in games. Surely this is a matter for the individual athlete. He is an amateur and, if, for instance, he prefers to play rugby during the winter, why shouldn't he do so. Any benefit in the purely athletic sense is probably psychological only. The risk of some games should be taken into account.

6. **Cycling.** It is generally thought that cycling is harmful to running. Tentatively, I doubt this. Firstly, I believe quite a number of runners normally cycle to and from work and, also, to and from running meetings, without noticeable detriment. Again, one or two experiments of my own suggested that cycling might be helpful (especially if the cycling is done on high-gear) to road-runners, by taking jarring pressure off the calf muscles but giving good exercise to the thighs.

Cycling, of course, has its drawbacks as training for runners: It is too easy and, owing to the cramped position adopted, not a healthy exercise anatomically. But it does give a maximum of fresh air in a limited time.

7. **Swimming.** Swimming again, is generally held to be inimical to running. Once more I must say that I do not feel this is necessarily correct. I remember one champion marathon runner who swam quite a long way, quite fast, nearly every day and a cross-country international who did a lot of swimming. Probably a heavy muscular man would be better to avoid swimming, as that exercise generally tends to cause weight to increase.

8. **Throwing Exercises.** To my mind exercises of this type are of value only to those who intend to compete seriously in the particular exercise itself.

9. **Physical Training (P.T.).** This is a highly controversial business. My experience is that P.T. in the usual form is valueless and probably harmful to the runner, as it is inclined to use up time he should be devoting to running training.

It is only fair to say that that remarkably fit man, R. R. Sutherland, told me he found the same thing on taking up a hard course of P.T.: he quite lost his running form. But after doing the P.T. for two years he was running better than ever and found the wide physical education most helpful. He thought most runners would come to the same conclusion.

10. **Breathing Exercises.** These are only of value in extremis, i.e., when one cannot get any active exercise. If one is confined in a prison cell, snowed up or immobilised by a broken leg they are no doubt most valuable. In other circumstances one should try to get the breathing exercise normally and naturally (i.e., incidentally).

11. **Bending Exercises.** If one is suffering from stiffness bending exercises may help to remove the trouble. I am inclined to think some of these exercises are useful for training, especially if indulged in slowly.

12. **Full Knee Bends, etc.** Exercises of this kind are, of course, strictly supplementary. If regarded in this limited light they are, no doubt, helpful.

13. **Weight Lifting.** Personally, I am in favour of weight-lifting, in moderation, and, of course, provided that it does not distract the runner from his running. I used to do full knee bends, etc., with a weight of about 20 lbs. in each hand, for 2 or 3 minutes in the afternoon. This strengthens the stomach muscles, and would almost certainly be helpful to some distance runners. But don't do much more than that without careful thought.

I now include two other matters which are not exercises at all, though they are aids to the runner.

14. **Massage.** This is of value in case of injury and, if not overdone, after training. Before running, it is of doubtful worth. I have, however, found it helpful to massage one's own calf muscles before running on a cold day.

15. **Baths.** Fifty or sixty years ago it appears that baths were considered a dreadfully bad thing for runners! Luckily the outlook has changed now. I speak, of course, of hot, or rather warm baths. Cold baths are anathema to me, though I know of one most distinguished runner who has had a cold bath each morning since the age of three!

All these extraneous exercises and aids must be thought of as supplementary to one's actual running training. The important thing is to run, and keep on running, day in and day out. In certain cases walking may be a satisfactory training in itself for running. In his heyday, Jack Winfield, for instance, did all his training for cross-country running

in the form of walking, mostly at 5 miles an hour.

There is however, one exercise I have seen mentioned which I regard as decidedly wrong for runners: it is running backwards. Before long anyone who indulges in the curious pastime is pretty sure to trip up or run into something or someone and do himself an injury. Athletically, I should rank this form of occupation with pole-squatting or running half-a-mile on one leg!

Perhaps a safe rule for the mature athlete is to ask himself, before indulging in extraneous exercises, whether he is going to find time for say nine training runs during the week. If he is not, I suggest he is, athletically speaking, wasting his time if in preference to running, he turns aside to other exercises. I feel that if he is one of the rare individuals who has, or can make enough time to get other exercise after doing all the running training he should he will probably benefit.

Taking advantage of a slightly quieter period of athletic activity this issue covers for April and May to enable an extra number after the Olympic Games.

SPORTS DIARY

May.

- 17.—Vale of Leven A.A.C.—Alexandria.
- Larkhall Sports Association—Larkhall.
- 20.—Glasgow Inter-Club Contest—Glasgow.
- 24.—Scottish Y.M.C.A. Championships—Alloa.
- Bellahouston Harriers—Ibrox Park.
- London Caledonian Games.
- 28.—Cowan Trophy Contest—Penicuik.
- 30.—Edinburgh Boys' Brigade Championships.
- 31.—Inter-University Championships—St. Andrews.
- Milton A.W. & A. Club Sports—New Meadowbank.
- Glasgow Highland Gathering—Ibrox Stadium.

June.

- 6.—Hawick Common Riding—Hawick.
- 6/7—SCOTTISH A.A.A. SENIOR CHAMPIONSHIPS & JUNIOR RELAY CHAMPIONSHIPS—NEW MEADOWBANK.
- 7.—Singers A.C.—Clydebank.
- 9/11—"Sports Dispatch" Trophy—Saughton.
- 9.—Renfrew A.A.A. Championships—Renfrew.
- 10.—Glasgow Corporation Transport Dept. A.C.—Helensvale, Glasgow.
- 11.—Lanarkshire A.A.A. Championships.
- 13/14—A.A.A. DECATHLON CHAMPIONSHIP.
- 14.—A.A.A. MARATHON CHAMPIONSHIP—WINDSOR—CHISWICK.
- Babcock & Wilcox A.C.—Renfrew.
- W.A.A.A. CHAMPIONSHIPS—WHITE C., LONDON.

Bathgate St. Mary's A.A.C. Sports—Bathgate.

Bowhill Highland Games—Bowhill.

Inter-Works Association Sports—New Meadowbank.

Motherwell & Wiahaw Police—Motherwell.

17.—Scottish National Cyclists' Union, Helensvale Park, Glasgow.

18.—Ben Nevis Hill Race—Port William.

20/21—A.A.C. CHAMPIONSHIPS—WHITE C., LONDON.

21.—Edinburgh Lighting and Cleansing W.A.C. Sports—New Meadowbank.

SCOTTISH SCHOOLS' A.A.A. CHAMPIONSHIPS—WESTERLANDS, GLASGOW.

Tillicoultry and Hillfoots A.C.—Tillicoultry.

Lanarkshire Constabulary—Shawfield Park, Glasgow.

24.—Heriot Trophy Contest—New Goldenacre.

25.—Inter-Counties Contest—Renfrew.

28.—SCOTTISH WOMEN'S A.A. CHAMPIONSHIPS—SAUGHTON.

Inverness Highland Games—Inverness.

Glasgow Police A.A.—Ibrox Stadium.

Stewarton Bonnet Guild—Stewarton.

Inter-County Youth Sports—Glasgow.

=: Our Post =:

Sir,

May I be allowed to make the following comments on Mr. H. A. L. Chapman's article in your March issue:—

1. When dealing with the accumulation of lactic acid in the muscles, he states that lactic acid is "half as strong as sulphuric acid." Under what circumstances? Superficially this would appear to be approximately correct since 90 grams of lactic and 49 grams of sulphuric acid are required to neutralise 1 litre of normal alkali solution. However, if the statement is not to be altogether pointless and misleading, it should be relevant to the context which, to anyone knowing the destructive effect of sulphuric acid on body tissue, is clearly absurd.

2. It would appear to me that Mr. Chapman's knowledge of distance running is largely theoretical. He says that flexibility of the joints, and particularly of the hip joints, brings increase in optimum stride length. From his other writings, I take it he would advise exercises designed to give this flexibility. One has only to observe the uncoordinated running action of the trained contortionist to doubt the wisdom of stretching ligaments and tendons beyond that naturally accruing from practising running. In any case the modern trend, which is definitely a marked advance, is the more continuous traction as exemplified by the short, quick-striding action of Mimoun and Zatopek.

3. Mr. Chapman's advice on monotony I consider to be well "off the beam." To pre-suppose monotony and offer up "sacrifices" to appease the monster is both physically and psychologically unsound. Man is naturally lazy and reluctant to exercise beyond a certain point so that, to provide him with ways and means of knocking off when he feels like it (playing around with a ball, leap frog, etc.), is not liable to produce the physical and mental toughness needed in distance running. I'm sure that men like Holden, Peters and Zatopek never bothered looking around for groups to train with or played ball en route in case the monster monotony collared them—they faced up boldly to this danger in repetitional work and, having conquered it, emerged as athletic giants. The athlete with a streak

of laziness, and without the urge and incentive to greatness within him, will get bored whether or not he includes "play-time" in his training.

I wish to make it clear that these comments are meant to be constructive and are made with all goodwill towards Mr. Chapman and admiration for the grand work he and his fellow National coaches are doing for our sport. In conclusion and for reasons which you, Mr. Editor, will have considered adequate should this letter appear in print, I wish to sign myself,

Yours sincerely,

DANIEL.

THE SWEAT-SUIT ARGUMENT

Dear Sir,

Mr. Arthur Newton's letter in the February number has pleased me very much on one point. His third paragraph puts the case for "warming up" before a race admirably. I had thought he did not approve of this!

Again, he appears to agree that the wearing of sweat suit conserves heat "by preventing the outside air from removing the moisture carrying the heat." True, he does not approve of this, because he feels it is flouting nature and preventing her being at her best. Well my answer to that is that she is not meant to be at her best! In other words, you don't expect to put up a best time while wearing a sweat suit.

Lately I have become more than ever convinced of the folly, if one is stiff or weary of putting in a moderate sprint over 300 yards in order to get warm on a cold day, rather than turn out properly clothed for the circumstances, i.e., wearing a sweat suit.

I would repeat that the wearing of a sweat suit on some training runs has not noticeably reduced my ability to adapt myself in ordinary life much more quickly than most folk to changes of temperature without change of clothing. I also still don't think that hard sweating is wrong or harmful.

I am afraid that my friend Arthur Newton and I will continue to differ on these points.

Yours etc.,

L. H. WEATHERILL.

SCOTTISH AMATEUR ATHLETIC ASSOCIATION.

SIXTIETH ANNUAL CHAMPIONSHIP MEETING

NEW MEADOWBANK, EDINBURGH,
FRIDAY AND SATURDAY,
6TH & 7TH JUNE, 1952

(FRIDAY, 7 P.M. and SATURDAY, 2.30 P.M.)

FRIDAY PROGRAMME:

ELIMINATING EVENTS (If and as required by entries)—
220 Yards; 440 Yards; 880 Yards; 1 Mile; 440 Yards
Hurdles; Long Jump; High Jump; Hop, Step and Jump;
Pole Vault; Throwing the Javelin; Throwing the Discus;
Throwing the Hammer.

FINAL—Six Miles.

JUNIOR RELAY CHAMPIONSHIPS WILL BE HELD IN
CONJUNCTION.

ENTRIES close definitely on SATURDAY, 24th MAY,
1952, with Hon. E.D. Secretary, C. M. RAINBIRD,
19 Craiglockhart Loan, Edinburgh, 11, from whom Entry
Forms can be obtained.

ADMISSION:

FRIDAY, 6th JUNE—GROUND, 1/- ENCLOSURE, 1/-
SATURDAY, 7th JUNE—GROUND, 1/6, ENCLOSURE, 1/6
JUVENILES—GROUND, FRIDAY, 6d. SATURDAY, 1/-