

**1: in film - Wikipedia**

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By Norman Triplett Indiana University. First published in American Journal of Psychology, 9, This paper gives some facts resulting from a study in dynamogenic stimulation carried on in the Psychological Laboratory of Indiana University and their application to explain the subject of Pacemaking and Competition The work has been done under the direction of Dr. Bergstrom, to both of whom I am greatly indebted for the help rendered throughout its progress. A copy of the official bicycle records made up to the close of the season of was obtained from the Racing Board of the League of American Wheelmen, and from these records certain facts are given, which, with the help of the chart showing the times made for certain distances by professionals in the three kinds of races principally dealt with, will make clearer the discussion following. The lower curve of the chart represents the record for the distances given in the unpaced efforts against time. The middle curve the paced race against time, and the upper curve the best time made in competition races with pacemaker. The definition of these races may be given as follows: The unpaced race against time is all effort by a single individual to lower the established record. The paced race against time is also a single effort to make a record. It differs only in the fact that a swift multicycle, such as a tandem or "quod" "makes the pace" for the rider. If he has well trained pacers and is skillful in changing crews as they come on, so as to avoid losing speed, the paced man may reduce the mark for the distance ridden. The two kinds of efforts described are not really races but are called so for convenience. Both are run with a flying start. The third or paced competition race is a real race. Here, besides keeping up with the pacemaker, is the added element of beating the other contestants. No records are given for the unpaced competition race. This race will, however, be referred to in the course of this paper. It is often called a "loafing" race from the fact that the riders hang back and [p. There are, it is computed, over 2, racing wheelmen, all ambitious to make records. The figures as they stand to-day have been evolved from numberless contests, a few men making records which soon fall to some of the host who are pressing closely behind. Reductions now made, however, are in general small in amount. Were all the men engaged in racing to make an effort to reduce the time in the kinds of races named, it is probable that the records already made would stand or be but very little reduced while the present leaders and their closest competitors would again assert their superiority, each in his own style of race. Regarding the faster time of the paced races, as derived from the records, it may be asked whether the difference is due to pacing or to the kind of men who take part; and whether the argument ascribing the difference noted to pacing or competition should have less validity from the fact that different men hold the records in the different races. Men fast at one kind of racing are found to be comparatively slow at another. It is for this reason, perhaps, that Michael refuses to meet any one in an unpaced contest. The racer finds by experience that race in which he is best fitted to excel and specializes in that. The difference in time, therefore, between the paced and unpaced race, as shown by the records, is a measure of the difference between the experts in the two classes of racers. It seems probable that the same amount of difference exists relatively between the averages of the classes they represent. A striking practical proof that the difference between the paced and unpaced trials noted in the records is due to pacing, is found in the paced and unpaced time of some individual racers, given later, in which the difference in time corresponds closely to that of the records. The fact may be mentioned, too, that wheelmen themselves generally regard the value of a pace to be from 20 to 30 seconds in the mile. Since the records of unpaced efforts against time, shown on the lower curve of the chart, are given only to 25 miles, comparisons with the other races are made for the same distance. As is readily seen the time made here is much slower than in the paced race against time. The various factors advanced [p. It has been stated that the value of a pace is believed by racing men to be worth to the racer from 20 to 30 seconds in the mile, depending on the individual. The difference between the paced and unpaced race against time is, it is seen from these figures, somewhat greater. The paced record from the 3rd to the 10th mile inclusive, is held by Michael. His average gain per mile over Senn, the unpaced champion, is 4 seconds. From the 11th mile upward, a different man, Lensa, holds the paced records. Evidently the pace is not worth so much to him for

his average gain per mile is only That the ability to follow a pace varies with the individual is well known. As a rule the rider who is fast with a pace is slow without it, -- and the converse is believed to be true. This is the reason why the same man can never hold records in both paced and unpaced races. Walter Sanger is one of the fastest unpaced riders on the track, but he can ride only a few seconds better with the very best pacemakers, while Michael, whose ability as a "waiter" is almost marvellous, would fall a comparatively easy victim, his rivals think, in an unpaced race. Success in paced racing presupposes a well trained force of pacers. The last named rider has confessedly enjoyed greater advantages than his competitors in this respect. The regularity with which he rides is seen in his paced record from 3 to 10 miles. His average rate for these 8 miles was 1 min. However, ratios between records made by different men, even though they are the product of many riders and entitled to great consideration, have not the absolute certainty [p. Data on this point is difficult to obtain, however, as trackmen seldom follow both kinds of racing but specialize in that for which they are best fitted. The best times for one mile of two prominent racers who are good at both games have, however, been secured and are here given. The gain, in the case of the first, of the paced over the unpaced, is The second gains 28 seconds, nearly 22 per cent. He was a racing man himself and in his investigations made many tests on himself and others. Some figures showing the difference in time made by him at different distances, paced and unpaced, are given. In comparing them with the records of to-day it must be remembered that the wheel then used was heavy and fitted with cushion tires so that the time made in trials is slow as compared with the time made with the modern pneumatic wheel, and in consequence the value of the pace expressed in per cent. It is seen that as between distances paced and unpaced, his average gain per mile for the different trials varies all the way from The upper curve of the chart shows the records made in paced competition races. Here, besides beating the record, the racer is intent-on defeating his rivals. This race is started from the tape and in consequence is slightly slower for the first two or three miles than the time in the paced race against time with flying start. Thereafter the better time made witnesses to the power and lasting effect of the competitive stimulus. For 25 miles the time in this race averages 5. From the 3rd to the 10th mile the same man, Michael, [ 1 ] holds the record in both races. His time in the competition miles averages over 5 seconds faster than his [p. The fact that the same racing crews were used in both races suggests that in the latter race they also were responsive to the competition stimulus. Turner asserts that the causes operating to produce the differences noted between paced and unpaced races are directly due to the physiological effects of bodily and mental exercise. This excretion of nitrogenous products as shown by his experiments is directly proportional to the amount of work done. The blood, surcharged with the poisonous matter, benumbs the brain and diminishes its power to direct and stimulate the muscles, and the muscles themselves, bathed by the impure blood, lose largely their contractile power. He asserts further, that phosphoric acid is the principal product of brain work, and that carbonic acid, lactic acid and uric acid are excreted in greater quantities during brain work. Therefore, the man racing under conditions to produce brain worry will be most severely distressed. The production of phosphoric acid by brain work is, however, in dispute. Some observers have found the phosphates diminished, whilst others have found them present in larger quantities during intellectual labor. As James says it is a hard problem from the fact that the only gauge of the amount is that obtained in excretions which represent other organs as well as the brain. Basing his position on these physiological facts he states his thesis thus: Of the seven or eight not wholly distinct theories which have been advanced to account for the faster time made in paced as compared with unpaced competitive races and paced races against time as against unpaced races against time, a number need only be stated very briefly. They are grouped according to their nature and first are given two mechanical theories. Those holding to this as the explanation assert that the vacuum left behind the pacing machine draws the rider following, along with it. Those maintaining this theory believe that the racer paced by a tandem is at a disadvantage as compared with the racer paced by a quod or a larger machine, as the suction exerted is not so powerful. This is closely related to the foregoing. Turner accepts it as a partial explanation of the aid to be gained from a pace, holding that the pacemaker or the leading competitor serves as a shelter from the wind, and that "a much greater amount of exertion, purely muscular, is required from a man to drive a machine when he is leading than when he is following, on account of the resistance of the air, and the greater the amount of wind blowing the greater the exertion, and conversely, the greater the shelter

obtained the less the exertion. One of the champion riders of the country recently expressed this common view in a letter, as follows: The only reason I can give for this is just simply that they have not studied the way to follow pace so as to be shielded from the wind. No matter which way it blows there is always a place where the man following pace can be out of the wind. The presence of a friend on the pacing machine to encourage and keep up the spirits of the rider is claimed to be of great help. The mental disposition has been long known to be of importance in racing as in other cases where energy is expended. This theory shows why it is difficult for the leader in an unpaced competition race to win. For "a much greater amount of brain worry is incurred by making the pace than by waiting" following. The man leading "is in a fidget the whole time whether he is going fast enough to exhaust his adversary; he is full of worry as to when that adversary means to commence his spurt; his nervous system is generally strung up, and at concert pitch, and his muscular and nervous efforts act and react on each other, producing an ever increasing exhaustion, which both dulls the impulse-giving power of the brain and the impulse-receiving or contractile power of the muscles. A curious theory, lately advanced, suggests the possibility that the strained attention given to the revolving wheel of the pacing machine in front produces sort of hypnotism and that the accompanying muscular exaltation is the secret of the endurance shown by some long distance riders in paced races. Notice that Michael was able to make the last mile of his great 30 mile competition race the fastest of all and one of the fastest ever ridden. This is also a factor which favors the waiting rider, and gives him a marked advantage. The leader, as has been noted, must use his brain to direct every movement of his muscles. As he becomes more distressed it requires a more intense exertion of will power to force his machine through the resisting air. On the other hand, the "waiter" rides automatically. He has nothing to do but hang on. When he comes to the final spurt, his brain, assuming control again, imparts to the muscles a winning stimulus, while the continued brain work of the leader has brought great fatigue. These facts seem to have a large foundation in truth. The lesser amount of fatigue incurred in paced trials is a matter of general knowledge. It is a common experience with wheelmen, and within that of the writer, that when following a lead on a long ride the feeling of automatic action becomes very pronounced, giving the sensation of a strong force pushing from behind.

## 2: County Microfilm Results : Orange County

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## 3: List of Ports, Dates and Microfilm Reel Numbers - Library and Archives Canada

*Home > Research Our Records > Passport Applications > Passport Applications, 30, July 1 - 13, July 14 - 30, August 1.*

## 4: List of accidents and disasters by death toll - Wikipedia

*Hays County Records Available on Microfilm from Texas State Library and Archives Commission Please note that microfilmed records are available for loan to libraries only, not to individuals.*

## 5: Jedediah M. Grant - Willard Snow Company () - Pioneer Overland Travels

*Journals from the Office of the State Auditor, Series , contain daily accounts which include record of many of the warrants discussed here. Letterbooks from the Office of the State Auditor, Series , include outgoing correspondence sometimes referred to in the incoming correspondence present here.*

## 6: County Microfilm Results : Washington County

*Merchant who died 1 July at Prospect Hill Galway at Tuam to Mary O'Sullivan of O'SULLIVAN John J. 23 December Probate of the Will of John J. of county Kerry Farmer who died 27 April granted at cork to John W. O'Sullivan of Farmer*

and Michael O'Sullivan.

#### 7: Newspapers on Microfilm at the Texas State Library | TSLAC

*The passenger lists have been digitized and are now available online. For to , consult Passenger Lists, For to , consult Microform Digitization (Archived).*

#### 8: Round Rock Express Reveal Home Schedule | Express

*ILL indicates a copy is available for loan Local Records Categories and Contents; Reel No. Bonds/Commissions/Oaths: ILL: Bonds, No Index.*

#### 9: Classics in the History of Psychology -- Triplett ()

*History: National Advisory Council on International Monetary and Financial Problems established under the Bretton Woods Agreement Act (59 Stat. ), July 31, Abolished under Reorganization Plan No. 4 of*

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