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BY

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SECRETARY OF THE ASSOCIATION.

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Case list.

Representative meeting on 24 September 1888	1
The Root Vegetable Exhibition 22— 30 September 1888	11
End of ¹⁵ the association's participation in the 1888 exhibition	15
Trial cultivation with home-grown root vegetable seeds	17
Assessments at Grain and Seed Exhibitions	21
A few notes about Seed. message from Danish Seed Control	51
Cultivation trials with different pea varieties. message from Danish Seed Control	53
From the Root Fruit Exhibition. message from Danish Seed Control	73
Cross Fertilization in Carrots By AW Deichmann	77
The Association's Accounts for 1888	79
Home seed breeding in 1888. By Chr. P. Jacobsen	81
Cultivation trials with beets. By Chr. P. Jacobsen.	82
Cultivation trials with Clover. By Chr. P. Jacobsen	86
Analyzes of the seed distributed by the "Field Seed Office" in 1888	89
Account for those of the Association. t. Cult. Prob. in 1883 employed Dyrknings attempt. A f L. H e l w e g .	97
Germination time. message from Dansk Frøkontrol.	129
Experiment with clover from different breeding sites. A f E. R ostrup	134
About the works carried out in this country in recent years for the improvement of Agriculture's Cultivated Plants. Lecture by Chr. P. Jacobsen.	146
A couple of announcements from Dansk Frøkontrol	154
The home breeding of Frø in 1889. Ted Chr. P. J a c o b s e n	155
Cultivation trials with clover, grass and root vegetables. By Chr. P. Jacobsen	158
Analyzes of the wood distributed by the "Field Seed Office" in 1889	166
Square-head The history of wheat in Denmark and the significance of this wheat variety for our Agriculture. By J L Jensen.	175
The meaning of and the procedure for the provision of the refined product Seeds and seeds. From L. Helweg	187
Representative meeting on 13 Decbr. 1889	198
The association's accounts for 1889	202
List of members 1 June 1890	203
List of names	208

Square-head wheat in Denmark and the significance of this wheat variety for our agriculture.

(By J L Jensen).

In the month of July 1874, the recorder of these lines made a trip to England and Scotland to familiarize himself with the agriculture of these countries. I saw here for the first time with two Scotch country men the now so commonly known Square-head Wheat, namely with Mr. Samuel D. Shirriff, Saltcoats, Haddingtonshire, and at Mr. Robinson, Steward of Castlehill in Perthshire. The wheat looked excellent, both praised it as being the most fertile and beneficial they knew. On my return, I proposed to my employee Mr. Chr. P. Jacobsen to offer Danish farmers a batch of this wheat variety for trials. We then issued a circular in Fjrening, dated 9 September 1874, to c.1900 of the country's largest farms. Of this writing, which is probably still in the possession of some farmers, the following must be cited, which shows, among other things, that the most important advantages of wheat were immediately correctly pointed out. "On a trip to Scotland last summer, the undersigned J.L. Jensen had the opportunity to familiarize himself with the local farmers with a newer variety of wheat that seems to deserve the attention of Danish soil users. This wheat variety's name is Square-head, derived from the square shape of the ear. It is particularly praised for its stiffness in the straw, so that it is not prone to yield seed, hardness x) to the influence of winter and above all for a considerable fertility, as it was assured that a yield of 20 Tdr. per Td. Land (obviously under favorable conditions) was by no means rare Since we felt that this variety of wheat deserves a regular trial to ascertain whether the mentioned excellent properties, which we found well suited to the unusually strong and full appearance of the road and axis, will also stick with us - then we have secured a larger quantity from the farmers in question and hereby offer the same" etc.

As a result, orders came in from more than 100 farmers for between 200 and 300 tdr., which were processed through the field seed office, which has since worked for the propagation of this wheat variety for the past 15 years. The wheat was exclusively from Mr. Shirriff's breeding, and until a few years ago, when Mr. Shirriff relinquished his lease, we procured the square-head wheat from this source alone. We therefore believe that it can be said with relative certainty that almost all the Square-head Wheat that is now found in Denmark,

originates from Mr. Shirriff's Breeding The introduction of square-head wheat into Denmark soon proved to be a decided success, which in its kind probably has no parallel in our agricultural history. In each of the following years the Field Seed Office in this country distributed quite considerable quantities of square-head wheat. These deliveries were, as is easily understood, in the first years mainly of Scottish breeding, in so far as good quality corn could be obtained from them, and in so far as Scotland's poor harvest did not make timely delivery impossible. But gradually it became clear that here at home on many farms, through rational breeding, we see ourselves able to produce square-head wheat, for whose unmixedness and goodness in the whole you can obtain greater security than is normally possible to achieve in Scotland, the importation from that country has almost ceased. In addition, square-head wheat, which is grown for several years in Denmark, can reasonably be assumed to win in terms of winter security. The last somewhat larger distribution in this country of Scottish Square - head through the Field Seed Office took place in 1886, when 39,460 Pd. were deposited; last year only 1600 Pd were distributed. The same trend has been observed in sales abroad, which in recent years have almost exclusively stuck to Square-head wheat of Danish breeding. In this way, this year we set aside Pd 357,060 abroad. Danish Square head, but nothing of Scottish breeding. The distribution of square-head wheat, which the field seed office has provided in the past 16 seasons in this country, has always had importance as a seed grain, not only for further distribution as a whole, but also for the individual farm. We conclude this from the fact that even larger farms have as a rule limited themselves to an order of 2 to 3 Tdr. From these starting points, the spread has continued from farm to farm.

There are undoubtedly many who have imagined that the part the Field Seed Office has played in the introduction of Square-head wheat in this country, as far as the supply of stem grain is concerned, must have been very profitable for the Office, but according to what has recently is noted about the out-parceling in small quantities, it will already be understood that this is not the case. It might be of some interest in this historical overview to state that the Field Seed Office's average profit on square-head wheat in the 16 years has only been approx. DKK 400 annually, which is only very little in relation to the scope of the case and the forces that have been set in motion on this occasion. For the field seed office, the introduction of square head wheat in this country has therefore almost exclusively been a matter of agricultural economic interest. With regard to Abroad, the situation is different, as the delivered quantities have partly been significantly larger, and partly have been able to be disposed of in large total orders.

During the cooperation that the Field Seed Office has provided for the spread of Square-head wheat, it has of course been in our power, partly to provide all available security for pure and true-to-type goods, as far as possible by examining the wheat in the field, in case of lack through our knowledge of the grower and by sending larger average samples of ears of corn; on the other hand, we have endeavored to clarify the value of this wheat variety in relation to other cultivated wheat varieties by way of comparative research. This last question is, as we were to deal with in more detail later, dealt with in a more extensive and thorough manner by the Royal Decree. Danske Landhusholdningsselskab's Wheat Committee of 1882. For information

regarding this question, in 1877, i.e. the third year after the introduction of square-head wheat, we sent a letter of inquiry to wheat growers in Denmark and Germany. We thereby collected quite a considerable amount of material for information on the square-head wheat's performance and winter hardiness in comparison with other wheat varieties, and on these issues grouped information regarding the sowing, the soil and the weather. For the sake of compilation, all the material was given in numerical form, as far as the nature of the subjects permitted. The results were announced in *Landmands-Blade* for the said year, pages 433—43. The outcome of this investigation corresponded well to the many scattered messages that had come to us through the business correspondence and to our own observations in the field: Square-head wheat ended up giving a significantly higher average yield for the mentioned year, and its winter safety was only marginally behind that of the other wheat varieties as a group, since 85 pCt. of those who voted found Square-head wheat satisfactory in this regard, against 94 percent who thought the same about the other wheat varieties. Basing ourselves on this material and on what we knew in other ways about the performance of the wheat varieties, we expressed the following verdict, which was not later rejected: "We believe that we are justified in thinking that this wheat variety (Sq. hd.) is unsurpassed and perhaps hardly reached by any other wheat variety on good, well-drained and culturally vigorous wheat soils." We therefore worked with full conviction of the matter Goodness further towards the goal we wanted to reach: the general distribution of square-head wheat in the country. In 1879 we again collected statistical material concerning the Square-head Wheat. The results, which are reported in *Landmands-Blade* for the said year, (p. 658-60) showed that square-head wheat now took up well over half of the entire country's wheat area, and that the average yield was approx. 2 Tdr. larger per Td. of Square-head than of the other wheat varieties.

With these fold comparisons, it must be noted that they are for the most part based on a judgment on the part of the reporting farmers; and such an assessment will perhaps most often not give square-head wheat its full due, because it can be said with reason about this variety of wheat that it more fully than most other varieties of wheat keeps what it promises in the field in terms of grain yield. But we soon come to the Tai determined by actual weight and measure, and these Tai give a still stronger testimony to the demonstrated superiority of the Square-head Wheat over the other cultivated varieties of wheat.

From what has been stated, it is easily explained that the new variety of wheat constantly gained greater and greater distribution. But two years later, namely in 1881, came a bad trial year for square-head wheat. Not inconsiderable areas, judging by the statistics probably about one-eighth or one-ninth of the country's wheat area, had to be plowed up due to the destructive influence of the winter, and the wheat that remained standing produced an unsatisfactory crop in most cases.

Square-head wheat, however, had grown far too firmly in the favor of the farmers for this unfortunate year to shake their confidence in the new variety of wheat to any significant degree, and the spread therefore progressed, as far as can be seen, without any noticeable interruption. It had been experienced that for a number of years in diverse agriculture it had yielded 3, 4, 5 times more than the previously used wheat varieties, and it was realized that by re-ploughing a failed wheat field and sowing it with

Spring seed, especially barley, could make a reasonable difference in a particular way good crop, so that the loss from this re-sowing, distributed over the normal wheat years, would be comparatively small, compared to the advantages that the square-head wheat brought in rows of years. Moreover, people remembered on the fact that no variety of wheat completely resists the pressure that strings or Unlucky winters, especially with snow eggs on unfrozen ground with subsequent prolonged frost, or alternating frost and sunshine towards spring, exerts on all winter seed.

In addition, it was still fresh in my mind that the Wheatfields here The country in 1870 suffered to about the same extent from the winter as in 1881, so that, as far as the wheat's winter security was concerned, they were no better off with most of the then used, English wheat varieties than later with Square - head wheat, while this had a great advantage in its superior performance under normal conditions.

However, the unfortunate wheat year of 1881 caused Røre to appear and movement in the wheat question, especially also caused by the fact that some of the larger mills in this country made strong complaints that The square-head wheat gave flour with no baking ability, and that the flour of this land was difficult to dispose of at good prices. Similar complaints of the poor quality of the English wheat varieties also appeared in the unfortunate wheat year of 1870. The firm Puggaard & Hage in Nakskov thus complains in a letter to Ugeskr. f. Farmers (2 Vols 1870 p. 181— 82) strongly over the quality of Hallets wheat and states that their business friends in Scotland agreed with them in " wishing evil over all these "fruitful" angels happen Wheat varieties, if " real content Generality is bad

It follows from itself that the Mills' Opposition against Square-head wheat, not without further ado could be rejected, especially since foreign, in particular German millers made the same complaints. On the farmers did these complaints, however, make no strong impression; for experience had shown that there was nothing in the way to sell the Square-head Wheat to good prices compared to the regular listing. The misgivings that some farmers had about this wheat variety were mainly based on its possible unsatisfactory hardness under our climatic conditions. The consequence of the raised discussion became that it Danish Landhusholdningsselskab set up a committee for the investigation of the case, which committee was joined on behalf of the mills ^dMr. Møller A. Weis (Aarhus), A. Bay (Nakskov), Th. Rubow (Copenhagen harbour). This collective committee constituted itself at a meeting in Copenhagen d. 11 March 1882, where Etatsraad Tesdorpf was elected as chairman, and Candidate of Agriculture Chr. Sonne was accepted as the leader of the practical research. Docent Emil Gottlieb was attached to the Experiments as a chemist.

The wheat committee set itself two tasks: 1) to invent the wheat varieties that combine the highest possible performance with the best possible quality and hardness and 2) to elucidate the ability of the growing conditions to promote the properties thus sought.

As far as the last task is concerned, the influence of the soil, the amount of seed and the time of sowing was tried, by corresponding field trials. The result was that the quality of the wheat according to it expert practical judgment is only slightly affected by these factors in relation to the dominant influence exerted by the varietal peculiarities linked to the different varieties of wheat. As it was a clear and given case that the folding also in a strong

a prominent degree is linked to the variety, the Wheat Committee acknowledged after 4 years of trying, that the central question is not in V all of the H wheat variety used for D yrkning and the committee then concentrated its efforts on a thorough comparative trial of the wheat varieties which had proved to be the most promising among the large number (approx. 70) who had been included in the Committee's variety trials carried out so far.

They would then take care that some of them finally selected best Varieties were provided sufficiently Seed grain of good, clean and true to type Quality, for comparative Cultivation and Breeding for Agriculture. he lattee was sought to be achieved by creating a greater number of farms to cultivate a couple of Tdr. Land with each of them elected varieties for which the seed grain was supplied by the committee. Though this therefore became the predominant and closest main purpose of the experiments, then, however, they did not therefore completely abandon the qualitative cultivation experiments The importance of the amount of seed, the time of sowing, the choice of ears, the sorting, the time of harvest and the time of harvest. These studies were continued after a larger oMaalestok, after the Variety Trials in 1887 were brought to a relative close.

The Field Seed Office has had the honor of collaborating with the Wheat Committee on various points, partly in the procurement of some of the tested Varieties, partly by cleaning, equalization and distribution of the grain.

The historical starting point for the Wheat Committee's activities was, as we have seen, Square-head Wheat with its known and recognized Fortrin and the complaints that were made about the baking ability of its flour and over its probably lack of winter safety. The Wheat Committee's task can therefore probably also be expressed as follows: if possible, to invent a wheat variety that is justified by all considerations for the eye could be recommended as more attractive for cultivation in this country than Square-head wheat, or failing that, to demonstrate the insufficient justification of the complaints made or to present such experimental material on different varieties of wheat, so that the farmer could make his choice more clearly than before could happen.

The task must be said to have rested in extremely good hands and to be advanced with the Use of an uncommon Energy and with good understanding of the means that best led to the goal Let us therefore as briefly as possible, present the main results of the activities of the Wheat Committee, insofar as these are so far available to the public.

We begin with the demonstration of the quantitative Udbytte af Square - head wheat Sammenlign i n g med andre Wheat varieties.

There is first a series of experiments on this: 1883, 8 4 85 and ⁸ 6 , on Rodtenseje (Jutland), Ravnholt (Fyen), Gjorsløv (Zealand). For 1883, the harvest report for Rodtenseje seems to be missing from the published material, presumably due to the fact that the threshing did not completed when the Report for the Autumn of 1883 was given. Instead for this reason, there is an experiment in the said year at Kringelborg (Falster). The trial was conducted with Square-head from 4 domestic breeding sites, which, however, present overview be summarized, two for Foldrigdom famous English Varieties: Kent and Golden drops, as well as 2 Polish Varieties: Gaffker and Sandomir, which were supposed to give particularly good flour. The results of this comparison were the following:

Udbyttet pr. Td. Land i Tdr. à 216 Pd. paa 3 Gaarde.					
Hvedens Art.	1883.	1884.	1885.	1886.	1883—86.
Square-head	17,1	17,6	22,3	19,4	19,1
Kent	16,5	15,8	20,7	16,5	17,4
Golden drops	16,6	17,3	20,1	14,7	17,6
Gaffner	15,1	9,1	14,3	12,1	12,1
Sandmir	12,1	9,6	14,3	11,3	11,7

The square-head wheat has thus won here every year, and on average with an additional yield over the best variety of approx. $1\frac{3}{4}$ Td. per Td. Country. This means that Kent and Golden drops in 1883 sown per Td. Land 9 Skpr., but of Square-head Wheat 10 Skpr., while the sowing of all 3 varieties in the following years still was 10 Skp. We have therefore deducted 1 Skp. in the fold yield of Square-head for 1883. The two Polish varieties, for which the seed average was good 2 Skp. less, stand so far behind in dividends that there this reason cannot become a matter of their cultivation in this country, itself whether the flour had to be of the very best quality.

In addition to these quantitative experiments, many were carried out at the same time others with a larger number of varieties. But some of these had what it Quantitative concerns, mainly only Meaning by eliciting An interpretations for later Choices among the Sorts. Among these Attempts shall mention is made of trials in 1883 with 20 varieties at Birkholm, Rosenfeldt and Queen's Garden; Trial in 1885 on 5 farms with 10 varieties; Attempt the same year at the committee's trial area in Lyngby with 33 varieties; Attempt same place 1886 with 38 Varieties; Experiment in 1886 on 6 farms with 12 Varieties, some of which were not tried at every location. For the same Class must be considered trials in 1887 with 28 varieties on the committee's trial area in Lyngby.

The following experiments, by which the varieties are partly selected according to the hints obtained in the experiments just mentioned, are sufficiently realized that the results could be compared, as they either include several farms over several years, many farms for 1 year, or 1 Trial site (Lyngby) with multi-stage Trials on each individual variety for several years.

About a 3-year experiment, 1884-1886, at Kringalborg and Førsløv only needs to be stated that Square-head Wheat was No. 1, but only with V3 Td. above the second best (here Red prolific). In addition, 5 were made spread Experiment with 7 Varieties.

The most significant of the trials carried out were carried out in 1887 on 15 farms with the following 8 wheat varieties, and with the following Outcome.

Average dividend per Td. Country in Tdr. to 216 Pounds on 15 farms in 1887:

Square-head	22,3	Molds røde	19,2
Herefordshire	19,6	Kent	19,0
Golden drops	19,6	Molds hvide	18,7
Kolbehvede	19,2	Lys glass. østprøissisk	18,2

You will see that Square-head Wheat here claimed a strong superiority over the competing varieties, as it gave approx. 2 3/4 hours more than the most rewarding of these. On a 16th farm, only a few were tried of the 8 varieties, and this is therefore not included in the above table. Also tried at the same apartment Urtoba, Browick red, Chidham white, Red prolific and Gl. Danish brown wheat at 7, 4, 5, 1 respectively and 2 farms. We compare the Dividend of Square-head with the Dividend of each of the first-mentioned 3 Varieties on these respectively 7, 4 and 5 Farms.

{ Square-head	7 Gaarde gennemsnitlig	23 ⁶	Tdr. pr. Td. Land.
{ Urtoba	samme 7 Gaarde —	18 ⁸	— " " —
{ Square-head	5 Gaarde —	19 ⁹	— " " —
{ Chidham	samme 5 Gaarde —	16 ⁸	— " " —
{ Square-head	4 Gaarde —	24 ⁰	— " " —
{ Browick red	samme 4 Gaarde —	16 ⁸	— " " —

These varieties were also, as you can see, far surpassed by the Square-head Wheat. When Red prolific gave the second highest yield in the The previously mentioned 3-year trial at Kringelborg and Førsløv must be here only added as a note that it gave 4t/s Td. less than Square-head on the farm hinted at in the present Suite, Christianssæde, Lolland, and since approximately the same ratio appeared in subsequent tests, must the advanced place, which Red prol. intake in the above Trial on Kringelborg and F0rsl0v, is considered to be of a purely accidental nature.

We now come to 2 Lyngby trials, both of which are Breeding trials. The one whose main purpose was to investigate the effect of different seed quantity and different sowing time, included 7 varieties in 3 Years, 1885— 1887. In addition, several other varieties for which the experiment can be carried out for 1 or 2 years, and which are therefore not included in this compilation. Each of the 7 types of grain has been tested in 29 individual tests under the same changing conditions and could therefore be used in this quantitative study.

Average breeding per Td. Country. Lyngby 1885-87.

Square-head	3613	Pund	Lys glass. østpreiss.	3159	Pund
Molds røde	3306	—	Golden drops	2893	—
Kent	3276	—	Red prolific	2869	—
Molds hvide	3261	—			

The second Lyngby trial, carried out in 1887, set out to investigate the difference between the yield of grain taken from unequal sized ears, partly unsorted with regard to grain size, partly sorted so that

The grain size was made as nearly equal as possible. The experiment was carried out with 10 varieties, 6 times 1000 grains for each variety. The grains are dibble-sown with 3 inch spacing. This Distance corresponds to a Seed of approx. 3 V2 Skp. per Td. Land, and then the Square-head Wheat on the ground of a somewhat less bushy ability than several other varieties in A l-friendliness require closer sowing to get their due, it has

Interest to see how it fared in terms of the Dividend this Experiment. If we put the grain yield of Square-head equal to 100, the For team numbers were the following:

Square-head	100	Red prolific	90
Herefordshire	95	Golden drops	90
Kent	94	Urtoba	80
Lys glas. østpr.	91	Molds røde	79
Molds hvide	91	Gl. brun dansk	77

Partly in accordance with the comparative yield tests referred to in this way, partly with consideration of what was known or assumed about Winter safety of the varieties, finally with the support of an expert judgement about the quality, the Wheat Committee of the autumn of 1887 offered twelve varieties of wheat for further breeding. The orders were submitted to the Field Seed Office, from where the distribution took place. It turned out here, however, that the Farmers only in Few took advantage of this offer, because even though Square-head wheat had long since become common in the country, people kept distinguished to submit Orders on this. Some attention found Cob wheat and Urtoba, then light glass. Prussian Wheat; of the rest only a few sacks were distributed; of Chidham even only 10 pounds. This was further evidence that the Farmers were sticking to the Square-head Wheat, and that there was only a scattered desire to try some of the varieties that had evidence of greater winter security than the Square-head Wheat. The wheat committee's inconvenience with the procurement of seed grain therefore led only to a small degree to the intended result of getting more of the offered varieties tried in a larger number of breeding farms; but by the way it can probably be rightly said that the position of the farmers in this respect corresponded quite well to the present and later more precisely determined test results from baking experiments, even though the farmers

Restraint was somewhat more strongly marked than perhaps desirable. It is about the winter safety of the tested wheat varieties more difficult to provide specific information from the trials, as long as The test results for 1888 are not available, namely the years 1882 — 87 in its entirety had no winter dangerous to the wheat, whereas The winter of 1887-88 thinned out and severely depressed the Wheat. By, however, searching out among the experiments such individual localities where winter is expressly said to have destroyed some varieties (only 1 such case from 1883 is available) and by drawing conclusions from the yield figures in this direction, finally by taking into account the condition of the wheat varieties in 1888 on the Field Seed Office's experimental field at Øresundshøj and in the Landbo højskolen's experimental garden, from which two places, after careful The review was written down. Grades for the abundance of plants on the beds, who were partly heavily affected by the winter, thinks Ref. to be able to set up the following provisional scale for the winter security of the 12 wheat varieties, of which the Wheat Committee in 1887 distributed trial grain for further breeding: 1) Give. brown danish, 2) Light glass. East Prussian, 3) Cob wheat; these are definitely the most winter-proof; then follows 4) Urtoba, then the row off English wheat varieties: 5) Square-head, 6) Chidham, 7) Herefordshire, 8) Browick rode; the mutual order between the last 4 is however, only weakly based; more specifically the following 4 seem to occupy it bottom Place 9) Kent, 10) Golden drops, 11) Molds red and 12). Mold white When the Wheat Committee's report for 1888 and 89 — especially for the first-mentioned year — is available, the above list will possible at various points to be corrected, but there will hardly be a reason for any major re-ranking.

It will be remembered that Square-head Wheat came to us from Scotland with Testimony for Winter Safety, and this praise is later repeated from England. According to what is available so far, this praise must be acknowledged justified with the Conditions under which it is given, namely in comparison with other English bearing wheat varieties; for as you see, in accordance with the above arrangement it occupies the previous one or at least a very advanced place in this Class. — Winter

the security of a wheat variety dares, moreover, with a fair amount of certainty, be assumed to win by longer cultivation in the new home country, this is especially noted in the case of square-head wheat. Greater progress in this direction presumably occurs precisely in the unfavorable winters, as a number of weak plants perish and the stronger ones mostly survive the ordeal.

It still deserves to be strongly emphasized that the use, especially the strong use of blasting, to a very significant degree weakens the winter security of the wheat and thereby the fold yield, but that this weakening is avoided by the hot water method, which even in relation to the breeding according to the blasting method has manifested itself in a very noticeable improvement in the quality of the harvested wheat, judged from the millers' point of view. This was established by Ref's experiments in 1887 — 88. (Compare Kornsorternes Brand, Second Notice). Even in mild winters, an increase in the fold yield of wheat in this way must be considered highly probable, because such an additional yield was obtained, even to a considerable degree, both with barley and oats, which had not suffered from night frost.

The pickling issue thus intervenes deeply all the main points of the wheat question.

They investigated the quality of wheat varieties. The strong complaints that were heard from both Denmark and Germany on the part of the millers about square-head wheat seem to have been completely silenced in recent years. This is obviously connected to the fact that they have switched to a new grinding system, the roller system, whereby the strong heating of the flour, which the previous grinding method entailed, is avoided. The strong heating can damage the gluten of the wheat and destroy the baking ability of the flour. At the first major discussion meeting in Copenhagen, 14 December 1881, strong reference was made to this situation, especially on the part of the Ref. — 55). The fact that a number of foreign varieties of wheat, which were ground on the same mills, did not give cause for complaint, must be largely explained by the fact that, as a rule, they had been subjected to a longer period of drying and storage before they reached this point, whereby the resistance to wear on the then used grinders and therefore also the heating was less. In addition, flour, whether it is stored in and with the grain itself, or is left for a time after grinding, undergoes such internal changes that the baking ability gains significantly as a result; this too had to place the domestic wheat unfavorably in the judgment of the millers and bakers; because, as a rule, the imported wheat produced stored flour, but the domestic wheat, at least not until the autumn, produced non-stored flour. Threshers played a role in this, as with their help the farmer was able to thresh and sell his wheat shortly after harvest, and by accumulating it in the merchants' or millers' warehouses, the after-drying had to be far worse than by successive threshing and delivery in the course of the winter in the pile threshing Days, because in the latter case the wheat was dried in the straw and in the relatively thin spread on the farmers' Ceilings, with which also the storage before grinding was given. As an unfavorable moment in the judgment on the quality of square-head wheat, a circumstance that has been strongly highlighted by Mr. Chr. Sonne, namely, that the square-head wheat, on account of its thick, compressed ears, requires a considerably stronger weather in the harvest than any other known variety of wheat, and that the farmers until recent years have sinned greatly against this Demand.

The examination of the quality of the wheat has, apart from the practical assessment of the samples by expert miller's opinion, which indicated above, has been assigned to Docent Emil Gottlieb. Those of Mr. The investigations carried out by Gottlieb on this occasion are rather voluminous and in particular, the chemical analyzes represent a considerable amount of work. Dimensions, as over 300 complete chemical analyzes have been carried out of Wheat, Wheat flour, Gluten and Bran, in addition to chemical Investigations of smaller Scope. The essential purpose of these comprehensive investigations was to determine the chemical of the different wheat varieties and products Composition showing the influence of the place of growth, the seed grain, the amount of seed and the time of sowing on the same, and to ascertain whether the wheat Nitrogen content has a specific relationship to its baking ability.

The nitrogen issue thus became the most important point in this investigation. The main results were that the nitrogen content of wheat is determined to some extent by the wheat varieties, almost in the direction that they fold richest wheat varieties with the same growing conditions average wise the lowest Nitrogen content — Square - head The wheat thus had lowest average content of this substance — but that the nitrogen richness first and above all is determined by the fertility of the place of growth and increases or decreases with this. Square - head Wheat's nitrogen richness on a good fertilizing soil can thus be, and usually is, considerably larger than with otherwise more nitrogen-containing varieties when these are grown on soil i inferior Culture. As a result of the overwhelming influence of the soil in this direction, the nitrogen content of the grain has no significant impact on the horse's quality in this regard. The seed quantity only exerted a weak influence, on the other hand, it produced very little seed wheat with a higher nitrogen content than previously sown.

The provision of such comprehensive wheat analyzes depends in particular together with the assumption that the mills in particular previously proceeded from, and possible they do it yet, that the flour's good baking quality in addition to the nature of its gluten depended to a very considerable extent on whether the wheat was rich in nitrogen. To have this Theory examined, and to obtain clarity about how the farmer in his practical wheat cultivation could possibly be put in a position to take this into account was therefore a task of great importance.

But this theory did not find confirmation in the baking experiments compared with the analyses. Before this is announced, a few pieces of information must be provided about how these experiments were carried out. Some preliminary baking experiments were carried out by Docent Gottlieb in The experimental laboratory. The large series provisionally concluding Trials with approx. 200 Baking tests, which will be discussed here, were carried out at Master baker Cand. poly. CF Lichtenberg under Docent Gottlieb Supervision and Management. They were carried out with the wheat bred in 1887, mainly of the varieties that the committee offered the same year for comparative cultivation trials and further breeding. The flour for this was ground on a small trial mill with a rolling system acquired by the committee. There are gifts Character partly for the Dough, partly for the Bread. The bread rating happened partly according to the external appearance of the bread, so that the light, bright yellow bread is ranked highest, partly according to the internal appearance of the bread, where absolutely white bread is placed in the first class, partly according to porosity, being the lightest and most regular pipe bread was considered the best. Then give Numerical grades: excellent = 1, bright and good = 2, good = 3, somewhat Dark or less good = 4. Lower grades were not considered

wire to hand out. At the assessment, the judges were not knowledgeable about which wheat the dough and bread came from. Control experiments showed, that work was done with good security on this basis.

It was stated above that the wheat's nitrogen content first and mainly depends on the place of growth; on this basis is therefore notified best The ratio between the baking ability and that of the wheat or whatever quite parallel to this, the nitrogen content of wheat flour.

For 10 farms, the flour's baking character and nitrogen content were as follows:

Bagningskarakter			Kvælstof	Bagningskarakter			Kvælstof
			pCt.				pCt.
Gaard Nr.	1	1,6	1,07	Gaard Nr.	6	1,9	1,81
—	2	1,6	1,87	—	7	2,1	2,13
—	3	1,65	1,77	—	8	2,6	1,78
—	4	1,7	1,76	—	9	2,6	1,80
—	5	1,9	1,74	—	10	2,7	1,96

Although, as you can see, these Tai are not particularly regular, it cannot be denied that they are far from giving the The above-mentioned theory is supported, rather point in the direction that the nitrogen poorest wheat gives the best bread. Incidentally, this agrees with one probably a common assumption in the countryside: that rye comes from the sand Soil produces the most pleasant and beautiful bread.

Now, as we saw, the Square-head Wheat averagely stands lowest in nitrogen content, it must pass the new starting point already it is assumed that its flour must have a high baking ability. Exactly 8 years ago was also the outcome. The bread from Square-head got 8 times excellent, 12 Times very well, 2 Times less well, and the Square-head Wheat came to occupy the second highest place among the investigated varieties. First Place went to Herefordshire with 9 excellent, 7 very good, 2 less good; as you will see, they are roughly equal. Next follows, after Mr. Gottlieb's Settlement, Molds white, Light glass East Prussian and Cob wheat; then distinctly lower Golden drops, Molds red and Kent.

However, it must be added that Mr. Gottlieb takes a certain reservation against the general validity of these results.

The square-head wheat has therefore gone out with glory and victory this prolonged, careful and profound trial, where it has had to compete with the best and most fertile varieties of wheat available could ask. Of course, this is a great joy and satisfaction for those of us who have introduced and spread it in this country, whatever did not happen blindly, but, as proved, with the use of investigative

Criticism. Well, it can be assumed that in relation to the distinctly winter-proof Varieties it has fared somewhat less well in 1888, about which, as mentioned, detailed report not yet available, but this can i at least not to any significant degree affecting its position as that by far the best and most advantageous variety of wheat there has been so far known in this country.

Asking about which revenue increase Square - head The wheat has provided our agriculture, then it must first be noted that it can be regarded as fairly certain established that the already now in several Years, perhaps 4 - 5 years, have been cultivated on approx. 90 percent of the country's wheat area. After all that is available in the preceding comparative

Experiments and investigations, one cannot reasonably estimate the thereby provided additional yield from wheat cultivation at less than a couple of thousand. per Td. Country average, a Tai that must soon be considered too low. But if we go from here, the additional yield will correspond to approx. 225,000 Tdr. Wheat or approx. DKK 3 million annual.

The public harvest statistics will also be able to provide information on this progress to a certain extent. But there are two things to note here. The harvest statistics are based solely on reports, each of which gives an estimate, and there is probably a lot of reason for these estimates to not, on average, reach full height with the actual harvest. Next, there were no harvest statistics before 1875. However, since square-head wheat cannot have increased the average yield very much in the first 3 harvest years, we would use these as the basis for a comparison. We include as a control the rye harvest, which pretty much shares the conditions with the wheat. You then have the following Tai.

Average breeding of wheat and rye in Tdr. per Td. Country.

	Hvede	Rug
1875—77	10,5	8,6
1878—83	11,0	9,0
1884—88	12,8	8,6

It can therefore be seen that although the period 1884-88 includes a weak wheat year, the average crop is, however, 2.3 Tdr above the period 1875-77, which does not include any disturbing winter. The rye harvest was the same in both periods.

This study also fully confirms Square-head's great economic importance of wheat for the country.

OM
LANDBRUGETS KULTURPLANTER
OG DERTIL HØRENDE
FRØAVL.

UDGIVET
AF
FORENING TIL KULTURPLANTERNES FORBEDRING
(FORENING FOR INDENLANDSK FRØAVL).

Nr. 8.

BERETNING

OM

VIRKSOMHEDEN I AARENE 1888—1889.

VED

E. ROSTRUP,
FORENINGENS SEKRETÆR.

KJØBENHAVN.
TH. LINDS BOGHANDEL.

Trykt hos J. Jørgensen & Co. (M. A. Hannover).

1890.

LANDSCAPE CULTIVATION

ON THE ART OF

FRUIT

AND

OF

FRUITING THE CULTIVATION OF FRUIT

FRUITING FOR INDIVIDUALS AND SOCIETIES

No. 8

REVISED

BY

THE COMMITTEE OF THE BOARD OF AGRICULTURE

AND

E. BOSTON

THE BOSTON SOCIETY OF FRUIT CULTIVATION

REVISED

IN THE BOSTON SOCIETY OF FRUIT CULTIVATION

1880

Sag-Portegnelse.

	Side
Repræsentantmøde den 24. September 1888	1.
Rodfrugt-Udstillingen 22—30. September 1888	11.
Afslutning af Foreningens Deltagelse i Udstillingen 1888	15.
Prøvedyrkning med hjemmeavlet Rodfrugtfrø	17.
Bedømmelser ved Korn- og Frø- Udstillinger.	21.
Et Par Notitser ang. Frø. Medd. fra Dansk Frøkontrol	51.
Dyrkningsforsøg med forskellige Ærtesorter. Medd. fra Dansk Frøkontrol	53.
Fra Rodfrugt-Udstillingen. Medd. fra Dansk Frøkontrol	73.
Krydsbefrugtning hos Gulerødder Af A. W. Deichmann	77.
Foreningens Regnskab for 1888	79.
Hjemmeavlen i 1888. Ved Chr. P. Jacobsen	81.
Dyrkningsforsøg med Roer. Ved Chr. P. Jacobsen	82.
Dyrkningsforsøg med Kløver. Ved Chr. P. Jacobsen	86.
Analyser af det ved „Markfrøkontoret“ i 1888 fordelte Frø	89.
Redegjørelse for de af Foren. t. Kult. Forb. i 1883 anstillede Dyrknings-	
forsøg. Af L. Helweg	97.
Spiringstid. Medd. fra Dansk Frøkontrol	129.
Forsøg med Kløver fra forskellige Avlssteder. Af E. Rostrup	134.
Om de her i Landet i de senere Aar udførte Arbejder til Forbedring af	
Landbrugets Kulturplanter. Foredrag af Chr. P. Jacobsen	146.
Et Par Meddelelser fra Dansk Frøkontrol	154.
Hjemmeavlen af Frø i 1889. Ved Chr. P. Jacobsen	155.
Dyrkningsforsøg med Kløver, Græs og Rodfrugter. Ved Chr. P. Jacobsen	158.
Analyser af det ved „Markfrøkontoret“ i 1889 fordelte Frø	166.
Square-head Hvedens Historie i Danmark og denne Hvedesorts Betydning	
for vort Landbrug. Ved J. L. Jensen	175.
Betydningen af og Fremgangsmaaden ved Tilvejebringelsen af forædlet	
Sædekorn og Frø. Af L. Helweg	187.
Repræsentantmøde den 13 Decbr. 1889	198.
Foreningens Regnskab for 1889	202.
Medlemsfortegnelse 1. Juni 1890.	203.
Navneliste	208.

Square-head Hvedens Historie i Danmark og denne Hvedesorts Betydning for vort Landbrug.

(Ved J. L. Jensen).

I Juli Maaned 1874 foretog Nedskriveren af disse Linier sig en Rejse til England og Skotland for at gjøre sig bekendt med disse Landes Agerbrug. Jeg saa her for første Gang hos to skotske Landmænd den nu saa almindeligt bekendte Square-head Hvede, nemlig hos Mr. Samuel D. Shirriff, Saltcoats, Haddingtonshire, og hos Mr. Robinson, Bestyrer af Castlehill i Perthshire. Hveden saa fortrinligt ud, begge roste den som den frugtbareste og fordelagtigste, de kjendte. Ved min Hjemkomst foreslog jeg min Medarbejder Hr. Chr. P. Jacobsen at tilbyde danske Landmænd et Parti af denne Hvedesort til Forsøg. Vi udsendte da i Förening en Rundskrivelse, dateret 9. September 1874, til c. 1900 af Landets største Gaarde. Af denne Skrivelse, der vel endnu findes i en Del Landmænds Besiddelse, skal følgende anføres, der blandt andet viser, at Hvedens væsentligste Fortrin straks bleve rigtigt paapegede. „Paa en Rejse i Skotland i afvigte Sommer havde medundertegnede J. L. Jensen Lejlighed til hos derværende Landmænd at gjøre sig bekendt med en nyere Hvedesort, der synes at fortjene Opmærksomhed hos danske Jordbrugere. Denne Hvedevarietetets Navn er Square-head, stammende fra Aksets firkantede Form. Den rostes navnlig for Stivhed i Straaet, saa at den ikke er tilbøjelig til at give Lejesæd, Haardferhed¹⁾ over for Vinterens Indflydelse og fremfor alt for en betydelig Frugtbarhed, idet man forsikrede, at et Udbytte af 20 Tdr. pr. Td. Land (naturligvis under gunstige Betingelser) ingenlunde var sjældent Da vi formene, at denne Hvedevarietetet fortjener en almindelig Prøvelse for at faa konstateret, hvorvidt de nævnte fortrinlige Egenskaber, som vi fandt vel stemmende med Straaets og Aksets ualmindelig kraftige og fyldige Udseende, ogsaa vil holde Stik hos os — saa have vi sikret os et større Kvantum fra vedkommende Landmænd og tilbyde herved samme“ etc.

Der indkom som Følge heraf Bestillinger fra noget over 100 Landmænd paa mellem 200 og 300 Tdr., der ekspederedes gennem Markfrøkontoret, som siden gennem de nu forløbne 15 Aar har virket for denne Hvedesorts Udbredelse. Hveden var udelukkende af Mr. Shirriff's Avl, og indtil for nogle Aar siden, da Mr. Shirriff fratraadte sin Forpagtning, hidskaffede vi Square-head Hveden alene fra denne Kilde. Vi tro derfor, at det med temmelig Sikkerhed kan siges, at saa godt som al den Square-head Hvede, der nu findes i Danmark,

¹⁾ Under engelsk-skotsk Klima.

stammer fra Mr. Shirriffs Avl. Square-head Hvedens Indførelse i Danmark viste sig snart som en afgjort Succes, der i sin Art vistnok næppe har noget Sidestykke i vor Landbrugshistorie. I hvert af de paafølgende Aar fordelte Markfrøkontoret her i Landet ret betydelige Mængder af Square-head Hvede. Disse Leveringer vare, som det let forstaas, i de første Aaringer hovedsagelig af skotsk Avl, for saa vidt der heraf kunde skaffes Korn af god Kvalitet, og for saa vidt Skotlands sildige Høst ikke umuliggjorde rettidig Levering. Men efterhaanden som det blev klart, at vi herhjemme paa mange Gaarde gennem rationel Avl se os i Stand til at producere Square-head Hvede, for hvis Ublandethed og Godhed i det Hele man kan skaffe sig større Sikkerhed end det i Reglen er muligt at opnaa i Skotland, er Indførselen fra dette Land næsten ophørt. Hertil kommer endnu, at Square-head Hvede, der dyrkes i flere Aar i Danmark, med Grund kan antages at vinde i Retning af Vintersikkerhed. Den sidste noget større Fordeling her i Landet af skotsk Square-head gennem Markfrøkontoret fandt Sted i 1886, da 39460 Pd. bleve afsatte; ifjor fordeltes kun 1600 Pd. Samme Udviklingsgang har der været i Afsætningen til Udlandet, der i de senere Aar næsten udelukkende har holdt sig til Square-head Hvede af dansk Avl. I indeværende Aar afsatte vi saaledes til Udlandet 357060 Pd. dansk Square-head, men intet af skotsk Avl. Den Fordeling af Square-head Hvede, som Markfrøkontoret i de forløbne 16 Sæsoner har besørget her i Landet, har stadigt havt Betydning som Stamkorn, ikke blot til videre Udbredelse i det Hele, men ogsaa for den enkelte Gaard. Vi slutte dette deraf, at selv større Gaarde som Regel have indskrænket sig til en Bestilling paa 2 à 3 Tdr. Fra disse Udgangspunkter er Udbredelsen gaaet videre fra Gaard til Gaard.

Der er uden Tvivl mange, der have forestillet sig, at den Del, Markfrøkontoret har havt i Square-head-Hvedens Indførelse her i Landet, hvad Leveringerne af Stamkorn angaar, maa have været meget indbringende for Kontoret, men efter hvad der nylig er bemærket om Udparcelleringen i smaa Kvantiteter, vil det allerede skjønnes, at det ikke forholder sig saa. Det turde maaske være af en vis Interesse i dette historiske Overblik at oplyse, at Markfrøkontorets Gjennemsnitsfortjeneste paa Square-head Hvede i de 16 Aar kun har været ca. 400 Kr. aarlig, hvad der jo kun er meget lidt i Forhold til Sagens Omfang og de Kræfter, der i denne Anledning ere satte i Bevægelse. For Markfrøkontorets Vedkommende har Square-head Hvedens Indførelse her i Landet derfor saa godt som alene været en Sag af landøkonomisk Interesse. Over for Udlandet stiller det sig anderledes, idet de leverede Kvantiteter dels have været betydelig større, dels ere blevne afsatte i store samlede Ordre.

Under den Medvirken, Markfrøkontoret har ydet til Square-head Hvedens Udbredelse, har det selvfølgelig været os magtpaaliggende, dels at fremskaffe al opnaaelig Sikkerhed for ren og typetro Vare, saa vidt muligt ved Undersøgelse af Hveden paa Marken, i manglende Fald gennem vort Kjendskab til Avleren og ved Tilsendelsen af større Gjennemsnitsprøver af Aks; dels have vi bestræbt os for ad den sammenlignende Undersøgelser Vej at komme til Klarhed over denne Hvedesorts Værd i Forhold til andre dyrkede Hvedevarieteter. Dette sidste Spørgsmaal er, som vi senere nærmere skulde omhandle, paa mere omfattende og indgaaende Maade optaget af det kgl. Danske Landhusholdningsselskabs Hvedeudvalg af 1882. For at faa Oplysninger

vedrørende dette Spørgsmaal udsendte vi i 1877, altsaa tredie Aar efter Square-head Hvedens Indførelse, et Forespørgselsbrev til Hvededyrkere i Danmark og i Tyskland. Vi indsamlede herved et ret betydeligt Materiale til Oplysning om Square-head Hvedens Ydeevne og Vintersikkerhed i Sammenligning med andre Hvedesorter, og om disse Spørgsmaal grupperede sig Oplysninger vedrørende Saaningen, Jorden og Vejrliget. Det hele Materiale blev for Sammenarbejdningens Skyld givet i Talform, saa vidt Emnernes Natur tillod det. Resultaterne bleve meddelte i Landmands-Blade for nævnte Aar Side 433—43. Udfaldet af denne Undersøgelse svarede godt til de mange spredte Meddelelser, der vare indgaaede til os gennem Forretningskorrespondancen og til vore egne Iagttagelser i Marken: Square-head Hveden sluttedes at give et betydelig større Gjennemsnitsudbytte for det nævnte Aar, og dens Vintersikkerhed stod kun ubetydeligt tilbage for de andre Hvedesorters taget som én Gruppe, idet 85 pCt. af de Voterende fandt Square-head Hveden tilfredsstillende i dette Punkt imod 94 pCt., der mene det samme for de andre Hvedesorters Vedkommende. Støttende os til dette Materiale og til, hvad vi ad andre Veje kjendte til Hvedesorternes Ydeevne, udtalte vi følgende Dom, der ikke senere er bleven underkjendt: „Vi tro at være berettigede til at mene, at denne Hvedevarietet (Sq. hd.) er uovertruffen og maaske næppe naaet af nogen anden Hvedesort paa gode, dræned og kulturkræftige Hvedejorder.“ Vi arbejdede altsaa med fuld Overbevisning om Sagens Godhed videre henimod det Maal, vi ønskede at naa: Square-head Hvedens almindelige Udbredelse i Landet. I 1879 indsamlede vi atter et statistisk Materiale vedrørende Square-head Hveden. Resultaterne, der ere meddelte i Landmands-Blade for nævnte Aar, (p. 658—60) udviste, at Square-head Hveden nu indtog godt og vel Halvdelen af hele Landets Hvedeareal, og at Gjennemsnitsudbyttet var ca. 2 Tdr. større pr. Td. af Square-head end af de andre Hvedesorter.

Ved disse Foldsammenligninger maa det bemærkes, at de for den allerstørste Del grunde sig paa et Skjøn fra de indberettende Landmænds Side; og et saadant Skjøn vil maaske som oftest ikke give Square-head Hveden sin fulde Ret, fordi det med Grund kan siges om denne Hvedesort, at den i fuldere Maal end de fleste andre Hvedesorter holder, hvad den paa Marken lover i Retning af Kornudbytte. Men vi komme snart til Tal, der ere bestemte gennem virkelig Vægt og Maal, og disse Tal give et endnu stærkere Vidnesbyrd om Square-head Hvedens paaviste Overlegenhed over de andre dyrkede Hvedesorter.

Af det oplyste er det let forklarligt, at den nye Hvedesort bestandig vandt større og større Udbredelse. Men to Aar senere, nemlig i 1881, kom et slemt Prøveaar for Square-head Hveden. Ikke ubetydelige Arealer, efter Statistikken at dømme vistnok omtrent Ottende- eller Niendedelen af Landets Hvedeareal, maatte ompløjes paa Grund af Vinterens ødelæggende Indflydelse, og den Hvede, der blev staaende, gav i de fleste Tilfælde en utilfredsstillende Afgrøde.

Square-head Hveden var imidlertid vokset alt for fast i Landmændenes Gunst til, at dette uheldige Aar i nogen væsenlig Grad kunde rokke deres Tillid til den nye Hvedesort, og Udbredelsen skred derfor frem, saa vidt skjønnes uden nogen kjendelig Afbrydelse. Man havde oplevet, at den i en Række Aar i mangfoldige Landbrug havde givet 3, 4, 5 Fold mere end de tidligere benyttede Hvedesorter, og man indsaa, at man ved at ompløje en mislykket Hvedemark og besaa den med

Vaarsæd, navnlig Byg, kunde gjøre rimelig Regning paa en særdeles god Afgrøde, saa at Tabet ved denne Omsaaning, fordelt paa de normale Hvedeaaar, vilde være forholdsvis ringe, sammenlignet med de Fordele, Square-head Hveden bragte i Aarrækker. Desuden huskede man paa, at ingen Hvedesort helt modstaar det Tryk, som strænge eller uheldige Vintre, navnlig med Snelæg paa ufrossen Jord med efterfølgende langvarig Frost, eller ved afvexlende Frost og Solskin henimod Foraaret, udøver paa al Vintersæd.

Hertil kom, at det endnu var i frisk Minde, at Hvedemarkerne heri Landet i 1870 led omtrent i samme Grad ved Vinteren som i 1881, saa at man, hvad Hvedens Vintersikkerhed angik, ikke var bedre stillet med de fleste af de da brugte, engelske Hvedesorter end senere med Square-head Hveden, medens denne havde et stort Fortrin i sin overlegne Ydeevne under normale Forhold.

Imidlertid bevirkede det uheldige Hvedeaaar 1881, at der kom Røre og Bevægelse i Hvedespørgsmaalet, navnlig ogsaa fremkaldt derved, at nogle af de større Mølleries heri Landet førte stærke Klager over, at Square-head Hveden gav Mel med slet Bagningssevne, og at Melet af denne Grund var vanskelig at afsætte til gode Priser. Lignende Klager over ringe Kvalitet hos de engelske Hvedesorter vare dog ogsaa fremkomne i det uheldige Hvedeaaar 1870. Firmaet Puggaard & Hage i Nakskov klager saaledes i et Brev til Ugeskr. f. Landmænd (2 Bind 1870 p. 181—82) stærkt over Halletshvedens Kvalitet og oplyser, at deres Forretningsvenner i Skotland vare enige med dem i „at ønske ondt over alle disse „frugtbare“ engelske Hvedesorter, hvis virkelige Indhold i Almindelighed er daarligt“.

Det følger af sig selv, at Møllernes Opposition imod Square-head Hveden, ikke uden videre kunde afvises, især da udenlandske, navnlig tyske Møllere istemte de samme Klager. Paa Landmændene gjorde disse Klager dog ikke noget stærkt Indtryk; thi Erfaringen havde vist, at der ikke var noget i Vejen for at sælge Square-head Hveden til gode Priser i Forhold til den almindelige Notering.

De Betæneligheder, som enkelte Landmænd nærede overfor denne Hvedesort, vare væsentligst begrundede i dens mulig utilfredsstillende Haardfærdighed under vore klimatiske Forhold. Følgen af den rejste Diskussion blev, at det kgl. danske Landhusholdningsselskab nedsatte et Udvalg til Sagens Undersøgelse, hvilket Udvalg paa Møllernes Vegne tiltraadtes af d'Hr. Møllere A. Weis (Aarhus), A. Bay (Nakskov), Th. Rubow (Kjøbenhavn). Dette samlede Udvalg konstituerede sig paa et Møde i Kjøbenhavn d. 11 Marts 1882, hvor Etatsraad Tesdorpf valgtes som Formand, og Landbrugskandidat Chr. Sonne antoges som Leder af de praktiske Forsøg. Docent Emil Gottlieb knyttedes til Forsøgene som Kemiker.

Hvedeudvalget stillede sig to Opgaver: 1) at udfinde de Hvedesorter, som med den stærst mulige Ydeevne forbinde bedst mulig Kvalitet og Haardfærdighed og 2) at belyse Dyrkningsvilkaarenes Evne til at befordre de saaledes søgte Egenskaber.

Hvad den sidste Opgave angaar, da forsøgte man navnlig Jordbundens, Saamængdens og Saatidens Indflydelse, ved dertil svarende Markforsøg. Resultatet blev, at Hvedens Kvalitet i Henhold til den sagkyndige praktiske Bedømmelse kun i ringe Grad paavirkedes af disse Faktorer i Forhold til den dominerende Indflydelse som de til de forskellige Hvedesorter bundne Varietetsejendommeligheder udøvede. Da det derhos var en klar og given Sag at Foldrigigheden ogsaa i en stærk

fremtrædende Grad er knyttet til Varieteten, saa erkjendte Hvedeudvalget efter 4 Aars Forsøg, at det centrale i Hvedespørgsmaalet ligger i Valget af den Hvedevarietet, der anvendes til Dyrkning, og Udvalget samlede da sine Bestræbelser om en indgaaende sammenlignende Prøvelse af de Hvedevariteter, der havde vist sig som de mest lovende blandt det store Antal (ca. 70), som havde været optaget i Udvalgets hidtil udførte Varietetsforsøg.

Man vilde dernæst drage Omsorg for, at der af de endeligt udpegede bedste Sorter tilvejebragtes tilstrækkeligt Sædekorn af god, ren og typetro Kvalitet, til sammenlignende Dyrkning og Videreavl for Landbruget. Det sidstnævnte Maal søgtes opnaaet ved at formaa et større Antal Gaarde til at dyrke et Par Tdr. Land med hver af de udvalgte Sorter, hvortil Sædekornet leveredes af Udvalget. Skjønt dette altsaa blev Forsøgenes overvejende og nærmeste Hovedformaal, saa opgav man dog ikke derfor helt de kvalitative Dyrkningsforsøg over Saamængdens, Saatidens, Aksvalgets, Sorteringens, Høsttidens og Høstmaadens Betydning. Disse Undersøgelser ere fortsatte efter en større Maalestok, efter at Varietetsforsøgene i 1887 vare bragte til en relativ Afslutning.

Markfrøkontoret har havt den Ære paa forskellige Punkter at samarbejde med Hvedeudvalget, dels ved Fremskaffelsen af nogle af de prøvede Varieteter, dels ved Rensning, Egalisering og Fordeling af Sædekornet.

Det historiske Udgangspunkt for Hvedeudvalgets Virksomhed var, som vi have set, Square-head Hveden med dens kjendte og erkjendte Fortrin og de Klager, der førtes over Bagningsevnen af dens Mel og over dens formentlig manglende Vintersikkerhed. Hvedeudvalgets Opgave kan derfor formentlig ogsaa udtrykkes saaledes, at den gik ud paa om muligt at udfinde en Hvedevarietet, der med alle berettigede Hensyn for Øje kunde anbefales som mere attraaeværdig til Dyrkning heri Landet end Square-head Hveden, eller i manglende Fald, at paavise de fremkomne Klagers utilstrækkelige Begrundelse eller dog fremlægge et saadant Forsøgsmateriale over forskellige Hvedesorter, at Landmanden herigjennem kunde træffe sit Valg med mere klar Bevidsthed, end det tidligere kunde ske.

Opgaven maa siges at have hvilet i særdeles gode Hænder og at være fremmet med Anvendelsen af en ualmindelig Energi og med god Forstaaelse af de Midler, der bedst førte til Maalet. Lad os altsaa i muligste Korthed fremdrage Hovedresultaterne af Hvedeudvalgets Virksomhed, for saa vidt disse hidtil foreligge for Offenheden.

Vi begynde med Paavisningen af det kvantitative Udbytte af Square-head Hveden i Sammenligning med andre Hvedesorter.

Der foreligger herom først en Række Forsøg: 1883, 84, 85 og 86, paa Rodstenseje (Jylland), Ravnholt (Fyen), Gjersløv (Sjælland). For 1883 synes Høstberetningen for Rodstenseje at mangle i det offentliggjorte Materiale formodentlig foranlediget ved, at Udtærskningen ikke var tilendebragt, da Beretningen for Høsten 1883 blev givet. I Stedet herfor haves et Forsøg i nævnte Aar paa Kringelborg (Falster). Forsøget skete med Square-head fra 4 indenlandske Avlssteder, som dog i nærværende Oversigt blive sammendragne, to for Foldrigdom berømte engelske Varieter: Kent og Golden drops, samt 2 polske Varieteter: Gaffker og Sandomir, der antoges at give særlig godt Mel. Resultaterne af denne Sammenligning var følgende:

Udbyttet pr. Td. Land i Tdr. à 216 Pd. paa 3 Gaarde.

Hvedens Art.	1883.	1884.	1885.	1886.	1883—86.
Square-head	17,1	17,8	22,3	19,4	19,1
Kent	16,5	15,8	20,7	16,5	17,4
Golden drops	16,0	17,3	20,1	14,7	17,0
Gaffker	13,1	9,1	14,2	12,1	12,1
Sandomir	12,1	9,8	14,3	11,2	11,7

Square-head Hveden har altsaa her sejret hvert Aar, og gennemsnitlig med et Merudbytte over den bedste Sort af ca. $1\frac{3}{4}$ Td. pr. Td. Land. Herved er at mærke, at der af Kent og Golden drops i 1883 udsaaedes pr. Td. Land 9 Skpr., men af Square-head Hvede 10 Skp., medens Udsæden af alle 3 Varieteter i de derpaa følgende Aar stadig var 10 Skp. Vi have derfor fradraget 1 Skp. i Foldudbyttet af Square-head for 1883. De to polske Sorter, hvortil Udsæden gennemsnitlig var godt 2 Skp. mindre, staa saa langt tilbage i Udbytte, at der af denne Grund ikke kan blive Tale om deres Dyrkning her i Landet, selv om Melet maatte være af allerbedste Kvalitet.

Foruden disse kvantitative Forsøg blev der samtidig udført mange andre med et større Antal Sorter. Men nogle af disse havde, hvad det Kvantitative angaar, hovedsagelig kun Betydning ved at fremkalde Antydninger til senere Valg blandt Sorterne. Blandt disse Forsøg skal nævnes Forsøg i 1883 med 20 Varieteter paa Birkholm, Rosenfeldt og Dronninggaard; Forsøg i 1885 paa 5 Gaarde med 10 Sorter; Forsøg samme Aar paa Udvalgets Forsøgsareal i Lyngby med 33 Sorter; Forsøg sammesteds 1886 med 38 Sorter; Forsøg i 1886 paa 6 Gaarde med 12 Sorter, hvoraf nogle dog ikke prøvedes paa hvert Sted. Til samme Klasse maa regnes Forsøg i 1887 med 28 Sorter paa Udvalgets Forsøgsareal i Lyngby.

Følgende Forsøg, ved hvilke Varieteterne for en Del ere udvalgte efter de ved de nys nævnte Forsøg opnaaede Antydninger, ere tilstrækkelig gennemførte til at Resultaterne kunne jævnføres, idet de enten omfatte flere Gaarde gennem flere Aar, mange Gaarde i 1 Aar, eller 1 Forsøgssted (Lyngby) med mangleddede Forsøg over hver enkelt Varietet i flere Aar.

Om et 3-aarigt Forsøg, 1884—1886, paa Kringelborg og Førslev skal kun fremføres, at Square-head Hveden blev Nr. 1, dog kun med $\frac{1}{3}$ Td. over den næstbedste (her Red prolific). Desforuden gjordes 5 spredte Forsøg med 7 Sorter.

Det betydeligste af de gennemførte Forsøg blev foretaget i 1887 paa 15 Gaarde med følgende 8 Hvedevarieteter, og med følgende Udfald.

Gjennemsnittsudbytte pr. Td. Land i Tdr. à 216 Pund
paa 15 Gaarde i 1887:

Square-head	22,3	Molds røde	19,2
Herefordshire	19,6	Kent	19,0
Golden drops	19,5	Molds hvide	18,7
Kolbehvede	19,2	Lys glass. østpreissisk	18,2

Man vil se, at Square-head Hveden her hævdede en stærk Over-

legenhed over de konkurrerende Sorter, idet den gav ca. $2\frac{3}{4}$ Tdr. mere end den mest givende af disse. Paa en 16de Gaard prøvedes kun nogle af de 8 Sorter, og denne er derfor ikke medtaget i ovenstaaende Tabel. Desuden prøvedes ved samme Lejlighed Urtoba, Browick red, Chidham white, Red prolific og Gl. dansk brun Hvede paa henholdsvis 7, 4, 5, 1 og 2 Gaarde. Vi sammenstille Udbyttet af Square-head med Udbyttet af hver af de førstnævnte 3 Varieteter paa disse henholdsvis 7, 4 og 5 Gaarde.

{ Square-head	7 Gaarde	gjennemsnitlig	23,6	Tdr. pr. Td. Land.
{ Urtoba	samme 7 Gaarde	—	18,8	— " " —
{ Square-head	5 Gaarde	—	19,9	— " " —
{ Chidham	samme 5 Gaarde	—	16,8	— " " —
{ Square-head	4 Gaarde	—	24,0	— " " —
{ Browick red	samme 4 Gaarde	—	16,8	— " " —

Ogsaa disse Sorter bleve, som man ser, langt overgaaede af Square-head Hveden. Da Red prolific gav næsthøjeste Udbytte i de før omhandlede 3 Aars Forsøg paa Kringelborg og Førslev, skal her kun tilføjes som Anmærkning, at den gav $4\frac{1}{3}$ Td. mindre end Square-head paa den i nærværende Suite antydede Gaard, Christianssæde, Lolland, og da omtrent samme Forhold viste sig i efterfølgende Forsøg, maa den fremskudte Plads, som Red prol. indtog i ovennævnte Forsøg paa Kringelborg og Førslev, betragtes som af ren tilfældig Natur.

Vi komme nu til 2 Lyngbyforsøg, der begge ere Forædlingsforsøg. Det ene, hvis Hovedformaal var at undersøge Virkningen af forskjellig Udsædsmængde og forskjellig Saatid, omfattede 7 Sorter i 3 Aar, 1885—1887. Desuden adskillige andre Sorter, for hvilke Forsøget kun gennemførtes i 1 eller 2 Aar, og som derfor ikke medtages i denne Sammenstilling. Hver af de 7 Kornsorter er prøvet i 29 Enkelt-Forsøg under samme vexlede Betingelser og kunne derfor vel benyttes i denne kvantitative Undersøgelse.

Gjennemsnitsavl pr. Td. Land. Lyngby 1885—87.

Square-head	3613 Pund	Lys glass. østprøiss.	3159 Pund
Molds røde	3306 —	Golden drops	2893 —
Kent	3276 —	Red prolific	2869 —
Molds hvide	3261 —		

Tallene behøve ingen Kommentar.

Det andet Lyngbyforsøg, udført i 1887, gik ud paa at undersøge Forskjellen mellem Udbyttet af Korn tagne fra ulige store Aks, dels usorterede med Hensyn til Kornstørrelse, dels sorterede saaledes, at Kornstørrelsen gjordes saa nær som muligt lige. Forsøget udførtes med 10 Sorter, 6 Gange 1000 Korn for hver Sort. Kornene dibbelsaaedes med 3 Tommers indbyrdes Afstand. Denne Afstand svarer til en Udsæd af ca. $3\frac{1}{2}$ Skp. pr. Td. Land, og da Square-head Hveden paa Grund af en noget mindre Buskningsevne end adskillige andre Varieteter i Almindelighed kræver tættere Saaning for at komme til sin Ret, har det Interesse at se, hvorledes den i Henseende til Udbyttet klarede sig i dette Forsøg. Sætte vi Kornudbyttet af Square-head lig 100, var Forholdstallene følgende:

Square-head	100	Red prolific	90
Herefordshire	95	Golden drops	90
Kent	94	Urtoba	80
Lys glas. østpr.	91	Molds røde	79
Molds hvide	91	Gl. brun dansk	77

Dels i Henhold til de saaledes refererede sammenlignende Udbytteforsøg, dels med Hensyntagen til, hvad der vidstes eller antoges om Sorternes Vintersikkerhed, endelig med Støtte af et sagkyndigt Skjøn om Kvaliteten, tilbød Hvedeudvalget af Høsten 1887 tolv Hvedesorter til Videreavl. Bestillingerne indsendtes til Markfrøkontoret, hvorfra Fordelingen fandt Sted. Det viste sig dog her, at Landmændene kun i ringe Grad benyttede sig af dette Udbud, thi skjendt Square-head Hveden jo forlængst var almindelig udbredt i Landet, holdt man sig dog fornemlig til at indsende Bestillinger herpaa. Nogen Paaagtning fandt Kolbehvede og Urtoba, dernæst lys glass. østprøjssisk Hvede; af Resten fordeltes kun nogle faa Sække; af Chidham endogsaa kun 10 Pund. Dette var et nyt Vidnesbyrd om, at Landmændene holdt fast ved Square-head Hveden, og at der kun fandtes spredte Ønsker om at prøve nogle af de Sorter, der havde Vidnesbyrd for større Vintersikkerhed end Square-head Hveden. Hvedeudvalgets Ulejlighed med Fremskaffelsen af Sædekorn førte altsaa kun i ringe Grad til det tilsigtede Resultat at faa flere af de udbudte Sorter prøvede i et større Antal Avlsbrug; men iøvrigt kan det vistnok med Rette siges, at Landmændenes Stilling i saa Henseende svarede ganske godt til de foreliggende og senere ved Bagningsforsøg nærmere bestemte Forsøgsresultater, om end Landmændenes Tilbageholdenhed var noget stærkere markeret end maaske ønskeligt.

Om de prøvede Hvedesorters Vintersikkerhed er det vanskeligere at give bestemte Oplysninger ud af Forsøgene, saalænge Forsøgsresultaterne for 1888 ikke foreligger, idet nemlig Aarene 1882—87 i sin Helhed ikke havde nogen for Hveden farlig Vinter, hvorimod Vinteren 1887—88 udtyndede og trykkede Hveden stærkt. Ved imidlertid at udsege blandt Forsøgene saadanne enkelte Lokalteter, hvor Vinteren udtrykkeligt siges at have ødelagt nogle Sorter (kun 1 saadant Tilfælde fra 1883 foreligger) og ved af Udbyttetalene at drage Slutninger i denne Retning, endelig ved at tage Hensyn til Hvedesorternes Stand i 1888 paa Markfrøkontorets Forsøgsmark ved Øresundshøj og i Landbohøjskolens Forsøgshave, fra hvilke to Steder der efter omhyggeligt Gjennemsyn blev nedskrevet Karakterer for Plantefylden paa Bedene, der for en Del vare stærkt medtagne af Vinteren, tror Ref. at kunne opstille følgende foreløbige Skala for Vintersikkerheden af de 12 Hvedesorter, hvoraf Hvedeudvalget i 1887 fordelte Forsøgskorn til Videreavl: 1) Gl. brun dansk, 2) Lys glass. østprøjssisk, 3) Kolbehvede; disse ere afgjort de mest vintersikre; derefter følger 4) Urtoba, saa Rækken af engelske Hvedesorter: 5) Square-head, 6) Chidham, 7) Herefordshire, 8) Browick red; den indbyrdes Ordensfølge mellem de 4 sidstnævnte er dog kun svagt baseret; mere bestemt synes følgende 4 at indtage den nederste Plads 9) Kent, 10) Golden drops, 11) Molds røde og 12) Molds hvide. Naar Hvedeudvalgets Beretning for 1888 og 89 — navnlig for det førstnævnte Aar — foreligger, vil ovenstaaende Opstilling mulig paa forskellige Punkter være at rette, men nogen større Omrangering vil der dog næppe blive Anledning til.

Det vil erindres, at Square-head Hveden kom til os fra Skotland med Vidnesbyrd for Vintersikkerhed, og denne Ros er senere gentaget fra England. Efter hvad der hidtil foreligger, maa denne Ros erkjendes berettiget med de Forudsætninger, hvorunder den er givet, nemlig i Sammenligning med andre engelske rigtbærende Hvedesorter; thi som man ser, indtager den i Henhold til ovenstaaende Opstilling den første eller i hvert Fald en meget fremskudt Plads i denne Klasse. — Vinter-

sikkerheden af en Hvedevarietet tør iøvrigt med temmelig Sikkerhed antages at vinde ved længere Tids Dyrkning i det nye Hjemland, særlig er dette bemærket for Square-head Hvedens Vedkommende. Større Fremskridt i denne Retning sker formodentlig netop i de ugunstige Vintre, idet en Mængde svage Planter da gaa til Grunde, og de stærkere fortrinsvis overleve Prøvelsen.

Endnu fortjener det stærkt at fremhæves, at Brugen, især den stærke Brug af Blaastensbejsning i meget væsenlig Grad svækker Hvedens Vintersikkerhed og derved Foldudbyttet, men at denne Svækkelse undgaaes ved Varmvandsmethoden, som tilmed i Forhold til Avlen efter Blaastensmethoden har yttret sig i en meget kjendelig Kvalitetsforbedring af den indhøstede Hvede, bedømt fra Møllernes Synspunkter. Dette konstateredes ved Ref.s Forsøg i 1887—88. (Sammenlign Kornsorternes Brand, Anden Meddelelse). Endog i milde Vintre maa en Forøgelse af Foldudbyttet af Hvede ad denne Vej anses som højest sandsynlig, thi et saadant Merudbytte opnaaedes, tilmed i en ikke ringe Grad, baade ved Byg og Havre, der ikke havde lidt af Nattefrost.

Bejsningspørgsmaalet griber saaledes dybt ind i alle Hvedespørgsmaalets Hovedmomenter.

De undersøgte Hvedesorters Kvalitet. De stærke Klager, der baade fra Danmark og Tyskland fra Møllernes Side lød over Square-head Hveden, synes i de senere Aar at være helt forstummede. Dette hænger aabenbart sammen med det Forhold, at man er gaaet over til et nyt Formalingssystem, Valsesystemet, hvorved den stærke Opvarmning af Melet, som den tidligere Formalingsmethode medførte, undgaaes. Ved den stærke Opvarmning kan Hvedens Gluten tage Skade og Melets Bagningssevne ødelægges. Der blev paa det første større Diskussionsmøde i Kjøbenhavn, 14. December 1881, stærkt henpeget paa dette Forhold, særlig fra Ref.s Side (se Ugeskr. f. Landmænd 1881, 2, p. 304 og Landmands-Blade 1881 p. 854—55). At en Del fremmede Hvedesorter, der jo maaledes paa de samme Kværne, ikke gav Anledning til Klage, maa i væsenlig Grad forklares af, at de som Regel havde været underkastet længere Tids Tørring og Lagring, inden de naaede hertil, hvorved Knusningsmodstanden paa de da brugte Kværne og altsaa ogsaa Opvarmningen blev mindre. Hertil kommer, at Mel, hvad enten det er lagret i og med selve Kornet, eller henligger en Tid efter Formalingen, undergaar saadanne indre Forandringer, at Bagningssevnen vinder væsenlig herved; ogsaa dette maatte stille den hjemlige Hvede ugunstigere i Møllernes og Bagernes Dom; thi som Regel gav den indførte Hvede lagret Mel, men den hjemlige, i hvert Fald først paa Efteraaret, ulagret Mel. Tærskværkerne spillede herved en Rolle, idet Landmanden ved deres Hjælp saa sig i Stand til at tærske og sælge sin Hvede kort efter Høst, og ved Ophobning i Kjøbmændenes eller Møllernes Pakhuse maatte Eftertørringen blive langt ringere end ved successiv Tærskning og Levering i Vinterens Løb i Plejltærskningens Dage, thi i sidstnævnte Tilfælde tørredes Hveden i Straaet og i den forholdsvis tynde Spredning paa Landmændenes Lofter, hvormed ogsaa Lagringen før Formalingen var givet. Som et ugunstigt Moment i Dommen over Square-head Hvedens Kvalitet maa endnu nævnes en Omstændighed, der er bleven stærkt fremhævet af Hr. Chr. Sonne, nemlig den, at Square-head Hveden, paa Grund af sit tykke sammentrængte Aks, kræver en væsenlig stærkere Vejring i Høsten end en hvilken som helst anden kjendt Hvedesort, og at Landmændene indtil de seneste Aar have syndet stærkt imod denne Fordring.

Undersøgelsen af Hvedens Kvalitet har, bortset fra den praktiske Bedømmelse af Prøverne ved sagkyndigt Møllerskjøn, som foran antydet, været overdraget til Docent Emil Gottlieb. De af Hr. Gottlieb i denne Anledning udførte Undersøgelser ere meget omfangsrige og navnlig repræsenterer de kemiske Analyser en Arbejdssum af betydelige Dimensioner, idet der er udført over 300 fuldstændige kemiske Analyser af Hvede, Hvedemel, Gluten og Klid, foruden kemiske Undersøgelser af mindre Omfang. Disse omfattende Undersøgelser væsentligste Formaal var at bestemme de forskellige Hvedesorters og Produkters kemiske Sammensætning med Paavisning af Voksestedets, Saakornets, Saamængdens og Saatidens Indflydelse paa samme, og at konstatere, om Hvedens Indhold af Kvælstof staar i et bestemt Forhold til dens Bagningssevne. Kvælstofspørgsmaalet blev altsaa det vigtigste Punkt i denne Undersøgelse.

Hovedresultaterne vare, at Kvælstofindholdet af Hvede vel bestemmes i nogen Grad af Hvedesorterne, nærmest i Retning af, at de foldrigeste Hvedesorter med samme Voksebetinger gennemsnitlig vise det laveste Kvælstofindhold — Square-head Hveden havde saaledes lavest Gjennemsnitsindhold af dette Stof — men at Kvælstofrigdommen først og fremmest bestemmes af Voksestedets Frugtbarhed og tiltager eller aftager med denne. Square-head Hvedens Kvælstofrigdom paa en god gødningskraftig Jord kan saaledes være og er i Reglen betydelig større end hos ellers kvælstofholdigere Sorter, naar disse dyrkes paa Jord i ringere Kultur. Som Følge af Jordbundens overvældende Indflydelse i denne Retning giver Saakornets Kvælstofindhold intet væsentligt Udslag med Hensyn til Høstens Kvalitet i saa Henseende. Udsædskvantummet udøvede kun en svag Indflydelse, derimod gav sildig saæt Hvede et større Kvælstofindhold end den tidligere saaede.

Tilvejebringelsen af saa omfattende Hvedeanalyser hænger navnlig sammen med den Antagelse, som især Møllerne tidligere gik ud fra, og mulig gjøre de det endnu, at Melets gode Bagningskvalitet foruden af Beskaffenheden af dets Gluten for en meget væsentlig Del beroede paa, om Hveden var rig paa Kvælstof. At faa denne Theori undersøgt, og at skaffe Klarhed over, hvorledes Landmanden i sin praktiske Hvededyrkning mulig kunde sættes i Stand til tage Hensyn hertil, var altsaa en Opgave af stor Betydning.

Men denne Theori fandt ikke Bekræftelse i Bagningsforsøgene sammenholdt med Analyserne. Før end dette paavises, maa der forudskikkes et Par Oplysninger om, hvorledes disse Forsøg iværksættes. En Del foreløbige Bagningsforsøg vare af Docent Gottlieb udførte i Forsøgslaboratoriet. Den store Række foreløbigt afsluttende Forsøg med ca. 200 Bagningsprøver, som her skal omhandles, udførtes hos Bagermester Cand. polyt. C. F. Lichtenberg under Docent Gottliebs Tilsyn og Ledelse. De udførtes med den i 1887 avlede Hvede, fornemlig af de Sorter, som Udvalget samme Aar udbød til sammenlignende Dyrkningsforsøg og Videreavl. Melet hertil blev malet paa en af Udvalget anskaffet lille Prøvemølle med Valsesystem. Der gaves Karakter dels for Dejgen, dels for Brødet. Brødbedømmelsen skete dels efter Brødets ydre Udseende, saaledes at det lyse, straagule Brød sattes højest, dels efter Brødets indre Udseende, hvor det absolut hvide Brød sattes i første Klasse, dels efter Porositeten, idet det letteste og mest regelmæssig pibrede regnedes som det bedste. Herefter gaves Talkarakterer: udmærket = 1, lyst og godt = 2, godt = 3, noget mørkt eller mindre godt = 4. Lavere Karakterer blev der ikke An-

ledning til at uddele. Ved Bedømmelsen vare Dommerne ikke vidende om, fra hvilken Hvede Dejgen og Brødet stammede. Kontrolforsøg viste, at der arbejdedes med god Sikkerhed paa dette Grundlag.

Det blev ovenfor oplyst, at Hvedens Kvælstofindhold først og fremmest afhænger af Voksestedet; paa dette Grundlag paavises derfor bedst Forholdet mellem Bagningsevnen og Hvedens eller, hvad der gaar temmelig parallelt hermed, Hvedemelets Kvælstofindhold.

For 10 Gaarde stillede Melets Bagningskarakter og Kvælstofindhold sig som følger:

Bagningskarakter			Kvælstof	Bagningskarakter			Kvælstof
			pCt.				pCt.
Gaard Nr. 1	1,6		1,67	Gaard Nr. 6	1,9		1,81
— 2	1,6		1,67	— 7	2,1		2,13
— 3	1,66		1,77	— 8	2,6		1,78
— 4	1,7		1,76	— 9	2,6		1,80
— 5	1,9		1,74	— 10	2,7		1,96

Skjönt, som man ser, disse Tal ikke ere synderlig regelmæssige, saa lader det sig dog ikke nægte, at de langt fra at give den ovennævnte Theori Medhold, snarest pege i Retning af, at den kvælstoffattigste Hvede giver det bedste Brød. Dette stemmer iøvrigt med en vistnok almindelig udbredt Antagelse paa Landet: at Rug fra sandet Jord giver det behageligste og smukkeste Brød.

Da nu, som vi saa, Square-head Hveden gjennemsnitlig staaar lavest i Kvælstofindhold, maa det gennem det nye Udgangspunkt allerede formodes, at dens Mel maa have en høj Bagningsevne. Netop saaledes blev ogsaa Udfaldet. Brødet af Square-head fik 8 Gange udmærket, 12 Gange meget godt, 2 Gange mindre godt, og Square-head Hveden kom til at indtage næst højeste Plads blandt de undersøgte Sorter. Første Plads fik Herefordshire med 9 udmærket, 7 meget godt, 2 mindre godt; som man vil se, staa de omtrent lige. Dernæst følger, efter Hr. Gottliebs Opgjørelse, Molds hvide, Lys glasset østprøjssisk og Kolbehvede; saa kjendeligt lavere Golden drops, Molds røde og Kent.

Det maa dog tilføjes, at Hr. Gottlieb tager et vist Forbehold over for Almengyldigheden af disse Resultater.

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Square-head Hveden er altsaa med Glans og Sejr gaaet ud af denne langvarige, omhyggelige og dybtgaaende Prøve, hvor den har maattet konkurrere med de bedste og frugtbareste Hvedesorter, man har kunnet opspørge. Selvfølgelig er dette en stor Glæde og Tilfredsstillelse for os, der have indført og udbredt den her i Landet, hvad der da heller ikke skete i Blinde, men, som paavist, med Anvendelse af undersøgende Kritik. Vel kan det antages, at den i Forhold til de udpræget vintersikre Sorter har klart sig noget mindre godt i 1888, hvorom, som nævnt, detailleret Beretning endnu ikke foreligger, men dette kan i hvert Fald ikke i nogen væsenlig Grad berøre dens Stilling som den gennemgaaende bedste og fordelagtigste Hvedesort, der hidtil har været kjendt her i Landet.

Spørger man om, hvilken Indtægtæftsforøgelse Square-head Hveden har skaffet vort Landbrug, da maa det først bemærkes, at det kan anses som temmelig sikkert konstateret, at den allerede nu i flere Aar, maaske 4—5 Aar, er dyrket paa ca. 90 pCt. af Landets Hvedeareal. Efter alt hvad der foreligger i foranstaaende sammenlignende

Forsøg og Undersøgelser, kan man ikke med Grund anslaa det derved tilvejebragte Merudbytte af Hvededyrkningen til mindre end et Par Tdr. pr. Td. Land gjennemsnitlig, et Tal, der snarest maa anses for at være for lavt. Men gaa vi ud herfra, vil altsaa Merudbyttet svare til ca. 225,000 Tdr. Hvede eller ca. 3 Millioner Kr. aarlig.

Den offentlige Høststatistik vil ogsaa til en vis Grad kunne give Oplysning om denne Fremgang. Men der er herved to Ting at bemærke. Høststatistiken hviler alene paa Beretninger, der hver for sig udtale et Skjøn, og der er vistnok megen Rimelighed for, at disse Skjøn gjennemsnitlig ikke naar op i fuld Højde med den virkelige Høst. Dernæst eksisterede der ingen Høststatistik før 1875. Da Square-head Hveden imidlertid ikke i de første 3 Høstaar kan have hævet Gjennemsnittsavl en ret meget, ville vi gaa ud fra disse som Grundlag for en Sammenligning. Vi medtage som Kontrol Rughøsten, der jo saa temmelig deler Vilkaar med Hveden. Man har da følgende Tal.

Gjennemsnittsavl af Hvede og Rug i Tdr. pr. Td. Land.

	Hvede	Rug
1875—77	10,5	8,6
1878—88	11,0	9,0
1884—88	12,8	8,6

Det ses altsaa, at skjønt Perioden 1884—88 indbefatter et svagt Hvedeaar, staar dog Gjennemsnittsavl en 2,3 Tdr over Perioden 1875—77, som ikke indbefatter nogen forstyrrende Vinter. Rughøsten stod i begge Perioder lige.

Ogsaa denne Undersøgelse bekræfter altsaa tilfulde Square-head Hvedens store økonomiske Betydning for Landet.