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STOCK EXCHANGE CLEARING HOUSES.

CLEARING HOUSES for stock-exchange transactions, like the earlier-established clearing houses for bank transactions, are an outgrowth first of the conveniences, and finally of the necessities of trade. Originally, all clearing houses have been voluntary and more or less limited associations, founded to economize for a few in labor or in risk. But a short experience has in every case led to the adoption of the system as a uniform rule of trade. Business has adapted itself invariably to the system, and in such a degree that a return to old methods would be as impossible as a return to primitive practices of barter. These facts have shown themselves of equal application in stock clearing houses and in bank clearing houses.

The one intent and purpose of the clearing system is to reduce, so far as may be possible, the necessity for the physical transfer of commodities or money, or of that which represents them. The organized system of bank clearings, which is little more than a century old, marks an advance over the old plan of bank exchanges quite analogous to that made when the use of bank checks by individuals was substituted for the practice of paying debts with bags of gold or silver. Before the days of bank-deposit checks, the canvas bag of coin, buried in the garden or hidden behind a loose brick in the chimney-piece, fairly represented the machinery of exchange between individuals. But on a larger scale, the machinery of exchange between banks, before the days of clearing houses, was of an almost identical character. A check drawn upon one bank and deposited in another, was in those days presented by the deposit bank's messenger at its fellow-institution, to be redeemed at once in coin or legal tenders. As the business conducted through bank checks grew larger, the inconvenience and risk of this system became more obvious. Not only were there the

factors of delay and possible loss, but the requirements of money to be kept on hand or in transit under the old plan grew so extensive as to be in themselves an element of danger. In time of panic, the system became absolutely hopeless. Actual money which was needed in assured centres, where it could be readily accessible, would on such occasions be on its way back and forth throughout the city. A bank would be sending out hundreds of thousands in specie and notes at the very moment when similar amounts were on the way to it from the very institutions to which its messengers were destined. The whole system was primitive and clumsy, and the establishment of the bank clearing system in London in 1775 was at once recognized as the solution of a grave problem.

In the market for international exchange, the use of the clearing system grew up naturally, and without the need of any formal association. Old-fashioned maritime commerce was of course very largely a matter of simple barter. A vessel sailing from London with a cargo of cotton and iron goods to sell in Portugal, would practically trade its cargo for an equivalent in wines, to be brought back to England. But exact barter being often impossible, for reasons of bulk and value, the necessity arose of paying differences in money. Originally this payment was made in actual gold or silver. Thus it happened that almost every vessel sailing between the chief commercial ports carried during part of its journey a load of specie. The question of insurance and risk being a serious matter in this ocean transit, banks on which bills of exchange could be drawn grew up in all the principal cities, almost pari passu with the development of modern commerce. Of this the natural result was to restrict specie shipments merely to the difference between bills drawn against and bills drawn in favor of a given port — in short, to strike the balance of the port's entire commerce. In other words, the clearing-house system arose in a highly perfected form, and London became by common consent the clearing house of the commercial world. Under this system the reduction in the amount of actual money exchanged between nations was almost as great as the reduction in the case of the bank

exchanges. In the foreign commerce of the United States, for example, the combined exports and imports of merchandise, including silver, during the fiscal year 1891-92, aggregated \$1,000,000,000. The movement of securities and the transfer of credits, could it be reported, would greatly increase even this enormous total. Yet the actual exchange of gold, imported and exported, between the United States and foreign nations during this same period, was less than \$100,000,000. average of our annual gold shipments and receipts has been far below this figure. Actual money exchanges in our own foreign commerce, therefore, are brought down by the clearing system to five per cent of the reported trade transactions, and probably in fact to a far lower percentage. It is perhaps interesting to note that in New York City the bank clearing system has reduced cash payments between banks in almost exactly the same degree, the average daily percentage of clearing-house balances to total exchanges ruling between four and five per cent.

The great pressure of business on a large stock exchange, within a strictly defined limit of time, made necessary the contrivance of a very careful and accurate system, quite outside the machinery of a stock clearing house. It will be well, before discussing the plans for stock clearings, to observe the advantages and disadvantages of this original system. method of settling balances on the New York Stock Exchange, prior to the adoption of the stock-exchange clearing house, was the best illustration of the old plan. Under the rules of the exchange, purchases and sales are to be settled for on the next business day. The messenger of the broker through whom the sale was made, having delivered the securities contracted for, received in payment and returned to his own employers the check of the purchasing broker. If a broker had purchased from a fellow-member of the exchange a hundred shares of New York Central stock at 110, the messenger of the seller was bound, at some time prior to 2.15 P.M. on the ensuing day, to present these hundred shares at the delivery window in the office of the purchaser, and for this he would

receive a check for \$11,000. As the daily sales on the stock exchange vary from 100,000 shares to nearly a million, it is clear that an enormous amount of daily check exchanges are necessitated. Supposing 400,000 shares to be the daily average of sales, and 60 to be the average price of all the stocks sold, the checks paid out every day for stocks alone would amount to \$24,000,000. The average daily sales of bonds would increase this total by two or three million dollars.

Now the flaw in this plan is easily detected. While it is true that through the system of bank clearings there is avoided the transfer of enormous amounts of coin and legaltender notes, the difficulty thus escaped by the bankers was transferred in a measure to the brokers. Here was a cumbrous machinery of exchange, by which it was continually necessary for a broker to have subject to his order very large deposit balances in bank. It did not of course follow that the broker must have his own money thus prepared for use. If he had bought, for himself or for a customer, a thousand shares of New York Central at the price above named, it was not essential that he should possess independently \$110,000 of idle money. On the contrary, the stock exchange's machinery was and is carefully adjusted so as to admit of his borrowing this amount on the pledge of the very stocks purchased. the so-called "loan crowd" of the exchange, the broker, now "long" of 1000 New York Central, could offer to lend his stocks, borrowing the \$110,000 against them from other brokers "short" of the stock, or from banks or individual lenders. Nevertheless, it is clear that the demands of a day when there were \$26,000,000 in security sales must involve somewhere the actual holding, subject to the demands of the daily loan market, of \$26,000,000 in bank deposits.

In times of quiet business, the only disadvantage in all this was the clumsy mechanism of transfer. But a time of panic altered the outlook materially. When call money was bid up to an exorbitant rate, or refused on certain classes of collateral, or, worst of all, when the money market was "cornered," as happened accidentally in 1887 and through deliberate pur-

pose at other times, the "shifting" of loans, on such an expanded basis, became a very serious problem. On the day of the famous "flurry" in Manhattan Elevated stock, July 15, 1887, when the losses of one financier in the grain market were made good by the calling in of stock-exchange loans outstanding to the credit of another financier, the market rate for loans on all classes of security went up to three-eighths of one per cent a day. There were brokers active in the market whose purchases of stock that day amounted to, say \$600,000, and whose sales amounted to \$400,000. Under the then existing system, checks to the amount of a million dollars passed through the hands of such a broker, and the total of payments represented substantially a million dollars obtained by one party or the other in the loan market. The structure of outstanding loans having, for causes both unusual and unexpected, suffered violent disturbance, a very large percentage of these million dollars in loans, arising from the trades of a single broker, had to be renewed in the midst of a chaotic money market. it was obvious that whatever had been this broker's money transfers in fact, in theory he had only paid out a balance of \$200,000. If it had been possible to strike off a balance sheet of his transactions for the day, the settlement would have involved his payment of that amount and that only. If, for example, all of his million dollars' worth of purchases and sales had been transacted with one other broker, the day's business might readily have been settled by the simple payment of a single check for \$200,000. It is the fundamental purpose of the New York Stock Exchange Clearing House to strike such balances for every exchange member, precisely as if his dealings had been with a single other member. shape or another, this has been the intent of the stock clearing-house system, in all its various forms and applications.

The system of clearing houses for stocks is not new. It was adopted in the New York Stock Exchange only in the early months of 1892, but it has been in existence elsewhere for at least twenty-five years. The earlier arrangements for this purpose, however, by no means did away with all the

difficulties above described. Ordinarily, in the first experiments, they took the form of the so-called "ringing out" of contracts in the same security. By this plan, if A had sold B a given amount of one security, and if B had presently sold the same amount to C, the series of trades could be personally adjusted between the three traders, so that the only actual exchange required would be the transfer of the securities from A to C. Of course the number of traders in the series might be extended indefinitely; for the system did not require that the prices at which the trades were made should have been uniform. B may owe to A a thousand dollars for the first purchase of the block of stock, and C may owe to B twelve hundred for the second purchase, by reason of an advance in the price between sales. But this two hundred dollars difference would not affect the "ringing out" of the contracts. Money balances would still be settled individually between the contracting brokers; the unofficial clearing system would merely avoid the necessity of frequent transfers. In substance, this is the system used by the New York and other produce exchanges for the clearing of grain transactions; but it has been improved upon in practically all the prominent stock exchanges.

The improvement, however, has been chiefly in the line of extending the principle so as to apply to the whole membership of a stock exchange, and this has necessitated the establishment of regular clearing houses for stocks. The first official establishment of this kind in Europe was founded at the Handelskammer of Frankfort in May, 1867, principally for the purpose of dealing in government securities, United States bonds in particular. A brief experiment here showed that a "settlement" involving the exchange on brokers' books of \$250,000,000 in securities could be carried out by the actual delivery of not more than \$5,000,000. The Berlin exchange adopted the system in 1869, Hamburg in 1870, Vienna in 1873 and London in 1876. The Paris Bourse, owing to its peculiar system of limitation on exchange membership, has never established a regular clearing house for stocks; but the same

ends are attained by a voluntary comparison of accounts by brokers' representatives, similar in its general workings to the system of bank clearings.

It should be noticed, as the principal feature of the European stock clearing houses, that their purpose is to deal with exchanges, not of money, but of securities. Their work is made up solely of a comparison of contracts to receive and to deliver securities between the brokers concerned. The principle is thus merely an extension of the "ringing-out" plan already described. In London and in most of the continental cities, the scope of the clearing is made broader through the system of a fortnightly settlement of stock-exchange accounts. In the course of two weeks, it will naturally follow that one broker will have contracted on different days to buy and to sell, in considerable quantities, the same security. Supposing him in that period to have contracted for the purchase of half a million in consols, and to have entered on contracts for the sale of an exactly equal amount, his clearing-house accounts will balance, and he will not be obliged to make or to receive any deliveries whatever. The series of transactions may have brought him or his customers a handsome profit, or they may have involved a heavy loss; of this the clearing house can take no notice. Following the plan adopted in all stock clearing houses, the several securities are entered on the books at an arbitrary and uniform clearing price, and on this basis the accounts are squared. The London brokers do indeed undertake to clear their money exchanges outside of the clearing house, but the system is of less general application, and is not practiced by all the exchange membership. The Vienna exchange clears its stocks every second day, instead of every fortnight, but its methods are identical with the others.

The system of clearing brokers' accounts both for securities and for money seems to have taken root nowhere but in our own country. Curiously enough, the principle of clearings for brokers' money transactions actually preceded in its application, by several years, the establishment of regular stock clearing houses. But it was not applied to trading in securities. The

rise of the enormous speculation in gold, during the later years of our Civil War, was the occasion for this undertaking. members of the New York City Gold Exchange early discovered the advantages attainable under such a system; and indeed, its simplicity in the case of an institution where only one commodity was traded in gave particular grounds for recommending But along with many of the proper methods of the clearing system, a very pernicious principle was adopted. Brokers were required to make actual deliveries of gold or currency at the clearing house, and could not discharge their mutual obligations or even regain possession of their property until the clearinghouse accounts had been tallied and the actual amounts payable or receivable by the various brokers had been ascertained. As the process of balancing the books might be delayed by pressure of work or by clerical errors, the danger of this practice in time of excitement ought to have been manifest. The gold clearing house was, in a secondary capacity, responsible for much of the panic and distress of "Black Friday," and this solely because, so long as the gold and currency were out of the possession of their owners, doubt and uncertainty prevailed regarding every maturing contract. But the gold clearing house, like the institution from whose business it sprang, passed away with the resumption of specie payments and the rise of currency to par.

It was in the Consolidated Stock and Petroleum Exchange of this city that a system of clearing both stocks and money for a board of brokers was first put into successful operation. The Philadelphia Stock Exchange had taken some steps in the same direction, but the arrangements were somewhat crude. The Consolidated Exchange introduced its system in June, 1886, and it is this system which in most of its arrangements has since been adopted by the New York Stock Exchange. The clearing-house arrangements of the Consolidated Exchange provide for delivery of stocks once a week—on Mondays—the result of which is that the average trade is made on three days' time. This, it will be seen, differs from the plan later adopted by the larger exchange,

which clears stocks daily. The difference arises mainly from the varying rules of the two exchanges prior to the introduction of the clearing house. Money balances, however, are settled daily, and there is still a considerable difference of opinion on the question of the daily clearing of stocks. The merits of this controversy need not here be discussed, except to say that the weekly system lends some ease to the carrying forward of arrangements by which money is borrowed to buy and hold stocks, while it might conceivably have the disadvantage, in a time of panic, of making impossible an immediate closing up of accounts to prevent trouble from the failure of a fellow-broker. This objection, however, does not hold under the rules of exchanges now using the system, where accounts of bankrupt brokers are closed out immediately for cash.

Several attempts were made, without success, to graft the stock clearing-house system upon the New York Stock Exchange, before the present clearing house was established. was the apathy among the members of the exchange which chiefly stood in the way of these undertakings. committee was appointed to investigate the problem in all its phases, and a report was submitted in March, 1892. The discussion continued to excite a rather languid interest among brokers, but the co-operation of the governing committee was secured and the plan was formally proposed by them to the exchange. It is a law of the New York exchange that a constitutional amendment submitted by the governing committee becomes a law unless vetoed by a majority vote of the exchange. Under this provision, the existing apathy helped in the ratification of the plan. The opponents of the clearing house mustered only 244 votes out of the 1100 members entitled to a voice. Therefore, although the plan was not called for even by an actual majority vote of the exchange, it became a law. voting ended April 20, 1892, and the plan was put into formal operation on Monday, May 16. At the start, the clearing house was used on the basis of formal membership by only 340 brokers, and but four stocks were subjected to its operations.

At the close of 1892, there were 427 brokers in the clearing-house membership—embracing practically all the active operators—and at the present date twenty-one stocks are cleared daily.

This clearing house is managed by a committee of five stockexchange members, appointed by the governing committee of the exchange. Under their direction a manager was appointed, and a room was engaged a short distance from the stockexchange. Members of the exchange having an office near the exchange and a proper clerical force, are admitted to clear in their own names, and members not possessing such facilities may use the clearing house on the written engagement of a fellow-member, with office and clerks, to handle exchanges for them. To meet the expenses of the clearing house, a charge of two and one-half cents is imposed on every hundred shares of stock, including balances, and without regard to par value. The broker who undertakes to use the clearing house is provided with "clearing sheets," tickets and drafts, for use as stipulated in the rules. Before 4.15 P.M. on all full business days, and before I.I 5 P.M. on the Saturday half-holiday, the seller of stocks sends to the office of the buyer his "deliver ticket"; this being evidence that the transaction is duly entered on his books. The buyer at the same time sends to the seller's office his "receive ticket." This exchange of tickets suffices for purposes of comparison, and the tickets, sent at the proper time to the clearing house along with the brokers' sheets, serve to keep track of the transactions at headquarters.

A longer time is allowed to brokers for the preparation of their sheet of the day's transactions. These sheets must be delivered at the clearing house before 7 P.M. on Mondays, Tuesdays, Wednesdays and Thursdays, and before 4 P.M. on Saturdays. On Saturdays, however, there is no formal clearing; but Friday's transactions are compared by exchange of tickets on Friday afternoon and entered on Monday's sheet The clearing-house sheet of a broker comprises the record, made up into "receive" and "deliver" columns, of all his transactions for the day. As this sheet will ordinarily include trades in a

considerable number of securities, the transactions in each separate security are to be grouped together. All transactions having been entered in one or the other column, the balance is struck. If the sheet as drawn up by the clearing house shows a debit balance, the difference is entered as "Balance cheque," and the sheet presented at the clearing house must be accompanied by a check for the balance on a clearing-house association bank near Wall Street, drawn to the order of the stock exchange clearing house's own bank. If on the other hand the sheet shows a credit balance, it must have with it a draft on the clearing house's own bank for the amount of the difference.

Precisely here comes in the interesting mechanism of the money clearings It does not by any means follow that the purchase, on one day, of securities greater in value than the amount sold, involves a debit balance on the clearing-house sheet, and the consequent requirement of a check to the order of the clearing-house bank. This depends chiefly upon the question whether the broker is "odd" or "even" in his transactions in stocks of one kind. Let us suppose, first, a sheet in which the broker was "even."

Received from			Pr.	Amount.	Delivered to			Pr.	Amount.
A. B. C., D. & Bros., A. Bros., B.C.& Co.,	500 100	Lk. Shore	80 1 80 1 135	40,125 13,500	A. Bros., A. & Co., C. & Son,	300	St. Paul Lk. Shore New Eng.		\$47,400 40,200 4,750
K.N.& Co.,	Į.	1			Bal.Cheque				1,225 \$93,575

It will be noticed in this table that the sheet shows transactions in every stock for an equal amount of shares on each side of the account. Of St. Paul 600 shares were bought, 600 sold. The transactions in Lake Shore and in New England balanced similarly. So far as concerns the amount of the several stocks coming into or passing out of his hands, the broker is therefore

in exactly the same position at the close of the day's business as he was at its opening. Under the old system of stock-exchange transfers, it would have been necessary for him to have received 1000 shares of stock, and to have delivered 1000. Under the clearing-house plan, he neither receives nor delivers a share of stock. This is an obvious gain. But the prices at which he bought were not those at which he sold. At the contracted prices, his purchases demand payment of \$93,575, while his sales entitle him to \$92,350. Under the old system he would have been required for purposes of settlement to issue five checks and to receive three, and bank balances to the aggregate amount of \$185,925 would have been drawn upon to settle the day's transactions. The clearing house makes possible the settlement of his whole day's trading in a single check for the small balance of \$1,225.

But suppose that the amount of his transactions in each of the several stocks does not balance. The following sheet may serve as illustration:

RECEIVED FROM			Pr.	Amount.	Delivered to			Pr.	Amount.
S. Bros. T. & W.	100 1000 1000 200	St. Paul " No. West. New Eng. Mo. Pac.	80 2 119	8,075	l .	1000 400	St. Paul No. West. Mo. Pac.	ı	\$40,250 118,000 23,600
Bal. deliver DeliveryPr. Bal. draft.	1	Mo. Pac.	57	11,400 775 270,850	Bal. receive DeliveryPr. "	500	St. Paul New Eng.	80 49	40,000 49,000 270,850

In glancing over this sheet, it will be observed that the transactions in Northwestern stock comprised 1000 shares bought and 1000 shares sold. Under the clearing-house system, therefore, there will be neither receipts nor deliveries of this stock by the broker presenting the sheet. But with the other stocks traded in, the case is different. Of St. Paul stock, 1000 shares in all were bought and only 500 sold.

There is left in this stock, therefore, after the clearing-house operations, a balance of 500 shares to be received. Similarly, in the case of New England stock, of which 1000 shares were bought and none sold, the broker must receive 1000 shares. In Missouri Pacific stock, on the other hand, 200 shares were bought against 400 sold; so that the broker concerned has left a balance of 200 Missouri Pacific to deliver. These balances are duly entered, as the specimen sheet indicates, on their respective sides of the account.

Two further points in the clearing-house arrangements must here be noticed. One is, that the brokers between whom given amounts of stock are to be actually exchanged are named arbitrarily by the clearing-house manager. Any broker having 500 shares of St. Paul to deliver may be directed to deliver it to the broker presenting the above sheet. He may have had no personal transaction with the broker assigned to him; that is a matter of no concern. The clearing-house deals with exchanges, not with bargains — with balances, not with persons; and so long as the entire list of deliveries due is assigned in correct proportion to the items in the list of receipts due, the clearing-house books balance and every broker will have received the stock to which he is entitled.

The other point is, that in assigning balances of stock for receipt or delivery, the clearing-house authorities reckon the value by use of an arbitrary price. The custom is to take the even price nearest to the quotation of the day's last sale in the stock concerned, and these prices are made public immediately after the close of the exchange, and are sent out on the tape of the official "ticker." This "delivery price" is not necessarily, and, indeed, not usually, the actual price at which the sales were made. In the specimen sheet above, for example, the three actual transactions in St. Paul were made, respectively, at 80, 80¾ and 80½. The arbitrary "delivery price" was 80, which is not even an average price. This fact, however, can make no difference in the accuracy of the final result, because the amount of the clearing-house check or draft assigned to balance the sheet is larger or smaller according as the arbitrary clearing-house

values for delivery vary from the actual values. A moment's study of the sheet will prove this. Suppose, for example, that all the transactions in St. Paul had been made at 80, both those in Northwestern at 119, that in New England at 48, and those in Missouri Pacific at 57, and that these figures had also been selected for the "delivery prices." It is clear that when the "deliver balance" of 200 Missouri Pacific, and the "receive balance" of 500 St. Paul and 1000 New England had been added to their respective sides of the account, the sheet would then have balanced, and that no draft would have been required. For the "receive" and "deliver" balances checks must, of course, pass between the brokers assigned for exchange of stocks, precisely as was done on a far larger scale under the old system. The "balance draft" or "balance cheque," as the case may be, merely offsets the natural discrepancy arising from the use of an arbitrary price in calculating the money value of stock balances.

This ingenious book-keeping device extends to the process of money exchanges all the economical advantages earlier secured in the exchange of stocks. The shares bought and sold in this sheet do not offset one another, as they did in the preceding table, but the amount of deliveries made necessary by the recorded transactions is reduced from 5100 shares, under the old system, to 1700 shares under the new. The exchange of checks, meantime, is economized in similar measure. old system would have required the issue of checks for \$258,675, and the receipt of checks for \$181,850 - a draft upon money balances amounting in all to \$440,525. Under the system of clearings, checks for only \$89,000 need be issued by this broker, and checks for only \$12,175 received — a total of \$101,175. Here is a saving of more than seventy-five per cent in the amount of money which a broker must be able to command for use in his day's settlements. Again assuming twenty-five million dollars to be a fair average of a day's total sales of securities, the immense saving to the money market through the operations of the clearing house will readily be understood. The clearing-house authorities have computed that the saving in certifications, or, in other words, in the drawing of checks, since the system went into operation has been no less than \$5,000,000,000—an average of \$400,000,000 per month.

It remains only to consider several objections which were raised against the clearing-house plan at the time of its proposal in the New York Stock Exchange, and to see how far these objections have proved of force. The doubts which existed in the minds of brokers familiar only with the old gold clearing house have been dissipated. It has already been explained that the radical defect of that system—the actual entrusting of securities and money to the clearing-house authorities - is altogether avoided by the machinery of the present plan. A more serious objection was that of publicity, the brokers fearing that clearing-house clerks, seeing all the sheets of the day's business, would be able to get important information regarding transactions which the principals wished This fear has so far proved groundless. to keep secret broker does not "give up" the name of his customer on the sheet; hence all that can be known is how much any one broker is doing on either side of the account. But a stock exchange member on the floor has only to note down the bids and offers of a fellow-broker to arrive at exactly this information; hence it can hardly be said that the risk of publicity is increased by the intervention of a clearing house. As a matter of fact, no suspicion of the kind has ever yet rested on the institution.

There was also a legal objection, based on the theory that as the state law requires in all contracts "an intent to deliver," transactions merely cancelled from both sides of the general balance-sheet would fall outside the provision of the statute. A multitude of decisions, however, affecting both stock and grain exchanges, have defined the law as applicable to contracts where actual delivery is enforceable. This is plainly the case, under the stock exchange's own rules, with every bargain made on its fioor. Whether or not, through the balance-sheet operations of the clearing house, the stocks contracted for are in

the end delivered, it remains true that the contract was entered upon with "intent to deliver," and that the seller was at the time of contracting compelled to put himself in such position that deliveries could have been made.

It is interesting to observe that many brokers and clerks opposed the clearing-house system bitterly, even after its introduction, on the ground that it made their presence almost useless early in the day, and extended considerably the later hours of business. But this opposition has now almost wholly disappeared, the system's practical operation having shown that while it does necessitate later working hours than of old for clerks, it brings relief from a pressure of business that at times used to strain the facilities of an office almost beyond endurance. Scenes such as were witnessed in Wall Street in 1884 and 1887, when cashiers and clerks worked all night over the books, and when extra messengers for deliveries could hardly be had for money, are not likely to be witnessed again. The language used by the special committee in introducing the new rules is therefore in a fair way to receive unquestioned justification:

If this exchange is to take its proper place in the future among the stock markets of the world, a system of doing business will be required which will stand the strain of a volume of business larger than any heretofore known.

ALEXANDER D. NOYES.